Teaching Excellence Showcase

Learner Engagement in Challenging Times

Insights from national AAUT award winners

December 1, 2021

QUT Learning and Teaching Unit

ACKNOWLEDGEMENT OF TRADITIONAL OWNERS

QUT acknowledges the Turrbal and Yugara, as the First Nations owners of the lands where QUT now stands. We pay respect to their Elders, lores, customs and creation spirits. We recognise that these lands have always been places of teaching, research and learning.

QUT acknowledges the important role Aboriginal and Torres Strait Islander people play within the QUT community.

Teaching Excellence Showcase

Professor Robina Xavier

Deputy Vice-Chancellor and Vice-President (Education), QUT

QUT Learning and Teaching Unit

Teaching Excellence Showcase

Showcase Program

Professor
Angela Carbone
RMIT, AAUT

A/Prof
Jack Wang
(SFHEA)
University of Queensland

A/Prof
Amy Maguire
(SFHEA)
University of Newcastle

A/Prof
Alice Payne
(SFHEA)
QUT

Professor
Richard John
Griffith University

QUT Learning and Teaching Unit

Teaching Excellence Showcase

Professor Angela Carbone

Associate DVC Learning Teaching & Quality, STEM College **RMIT**

QUT Learning and Teaching Unit

Teaching Excellence Showcase

A/Prof Jack Wang

School of Chemistry and Molecular Biosciences, University of Queensland

Recipient in 2020 of the:

- Australian Society for Microbiology David White Teaching Excellence award,
- the Australian Awards for University Teaching (AAUT) Award for Teaching Excellence (Biological and Health Sciences)
- AAUT Australian University Teacher of the Year.

QUT Learning and Teaching Unit

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
CREATE CHANGE

STUDENT ENGAGEMENT IN THE DIGITAL ERA:

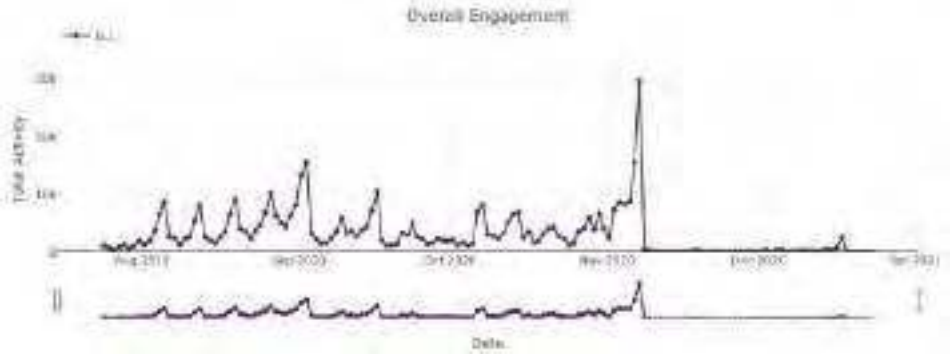
Closing the gap between online and physical classrooms

Associate Professor Jack Wang

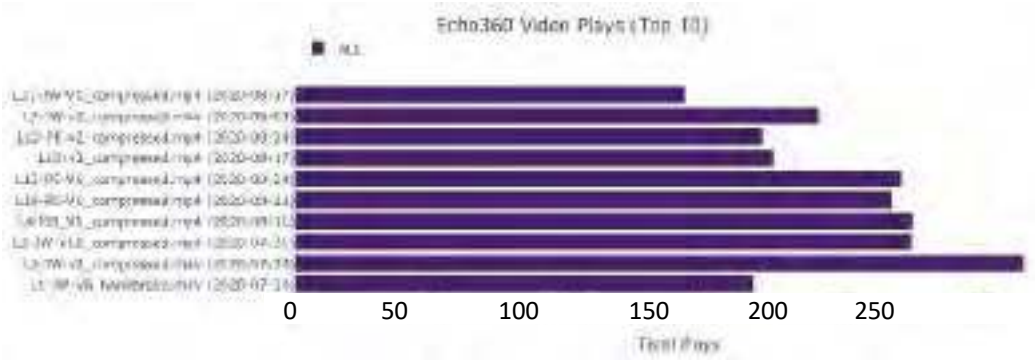
School of Chemistry and Molecular Biosciences

How do we know what's working?

LMS "clicks"



Course Videos

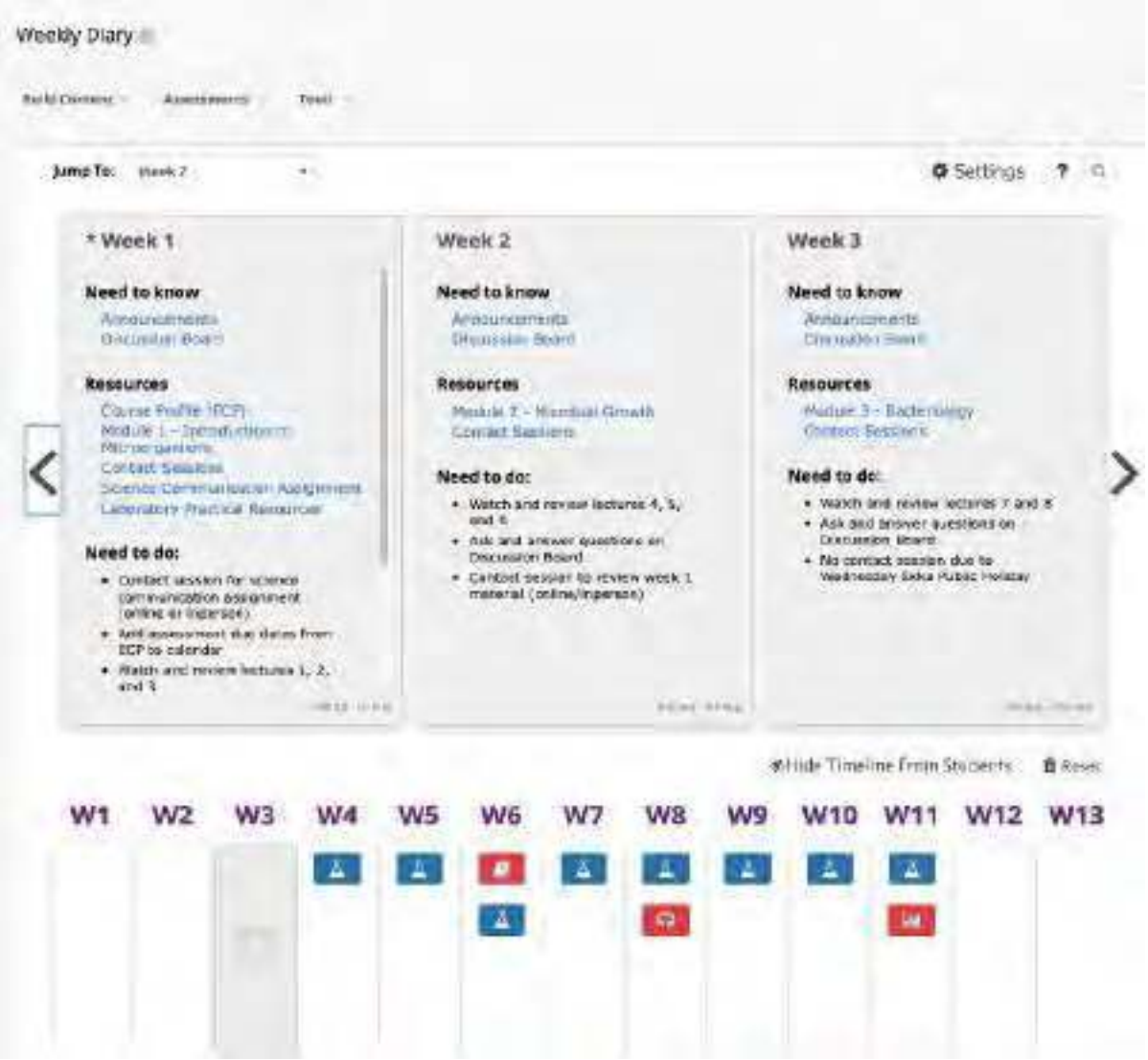


Q1: At what times of the semester did LMS activity "peak"?

Q2: What proportion of LMS access is on or off campus, in Australia or overseas?

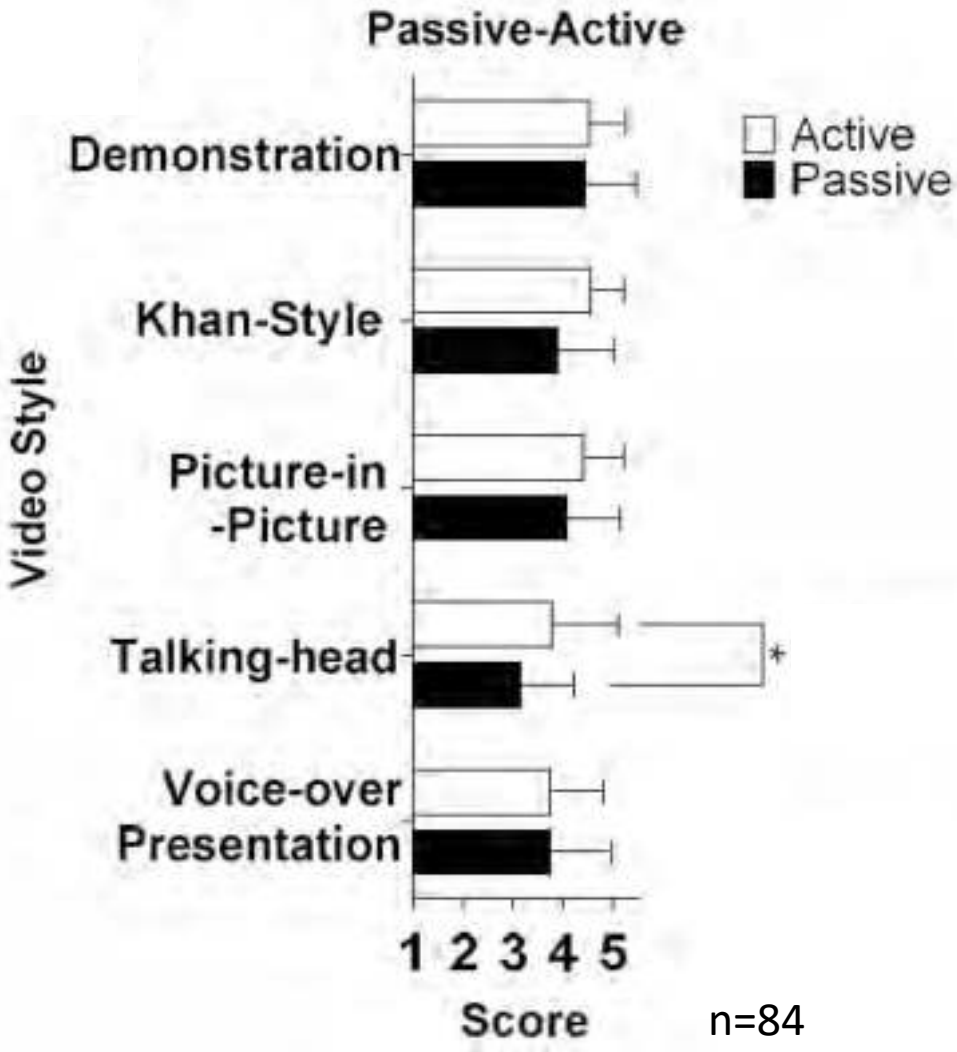
Q3: What was highest number of views a single video received in your course?

Half the battle…

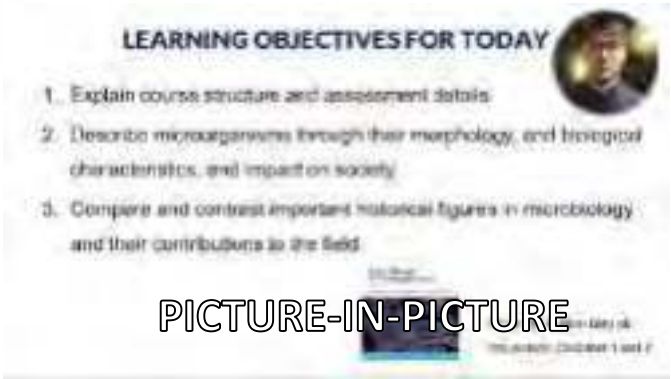


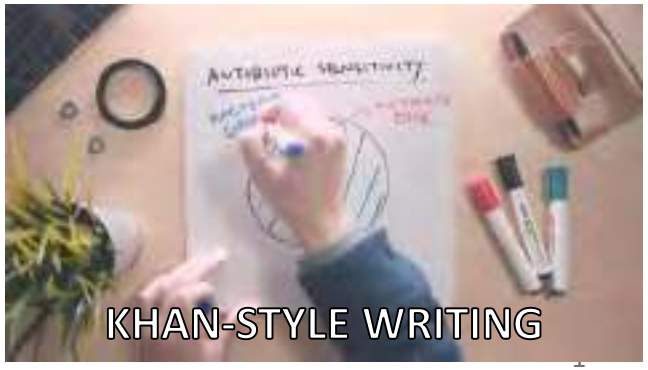
- Significant portion of students engage with learning exclusively in an **asynchronous self-directed fashion**
- Lose instructor presence, peer interactions, sense of belonging/urgency
- Students (and instructors!) are at the mercy of the **LMS** and the **quality of online learning resources**

Video-based learning – student preferences



Razali, A., 2021 – unpublished data





Mayer's multimedia learning theory

Table 1. Mayer's principles of multimedia learning relevant to video (adapted from Mayer[15] via Johanes and Lagerstrom[17])

Principle	Explanation
Multimedia	People learn better from words and pictures than from words alone
Coherence	People learn better when extraneous information is excluded
Signaling	People learn better when cues are added that highlight the key information and its organization
Spatial and temporal contiguity (split attention)	People learn better when words and pictures are physically and temporally integrated
Pre-training	People learn better when provided with pre-training in names and characteristics of key concepts
Segmenting	People learn better when information is presented piecemeal rather than all-at-once
Modality	People learn better from graphics and narration than from graphics and printed text
Personalization	People learn better when words are presented in conversational rather than formal style
Voice	People learn better with a standard-accented voice
Embodiment	People learn better when on-screen agents display humanlike gestures and movements
Animation	People do not necessarily learn better from an animation than from static diagrams
Image principle	People do not necessarily learn better by having the image of an instructor on screen.

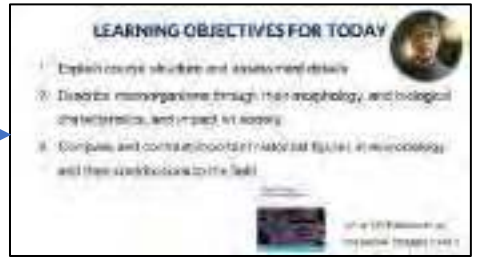
Oakley and Sejnowski (2019). What we learned from creating one of the world's most popular MOOCs - *npj Science Of learning 4:7*

Typical visual sequence

Voiceover slide

Talking-head
Angle 1

Talking-head
Angle 2

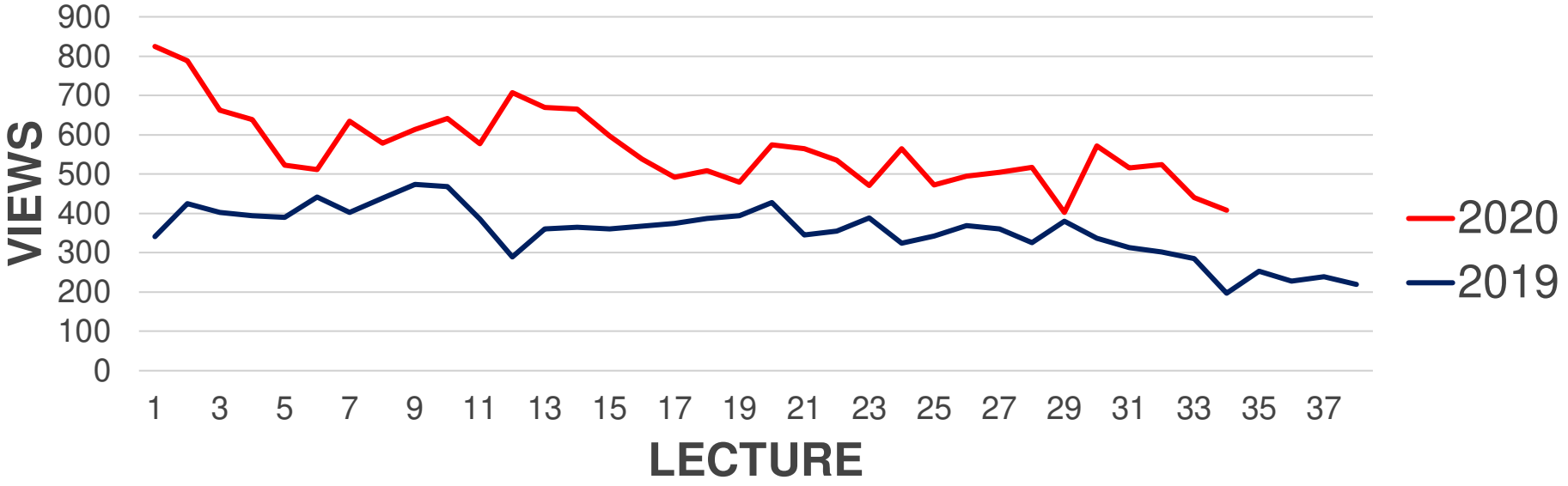


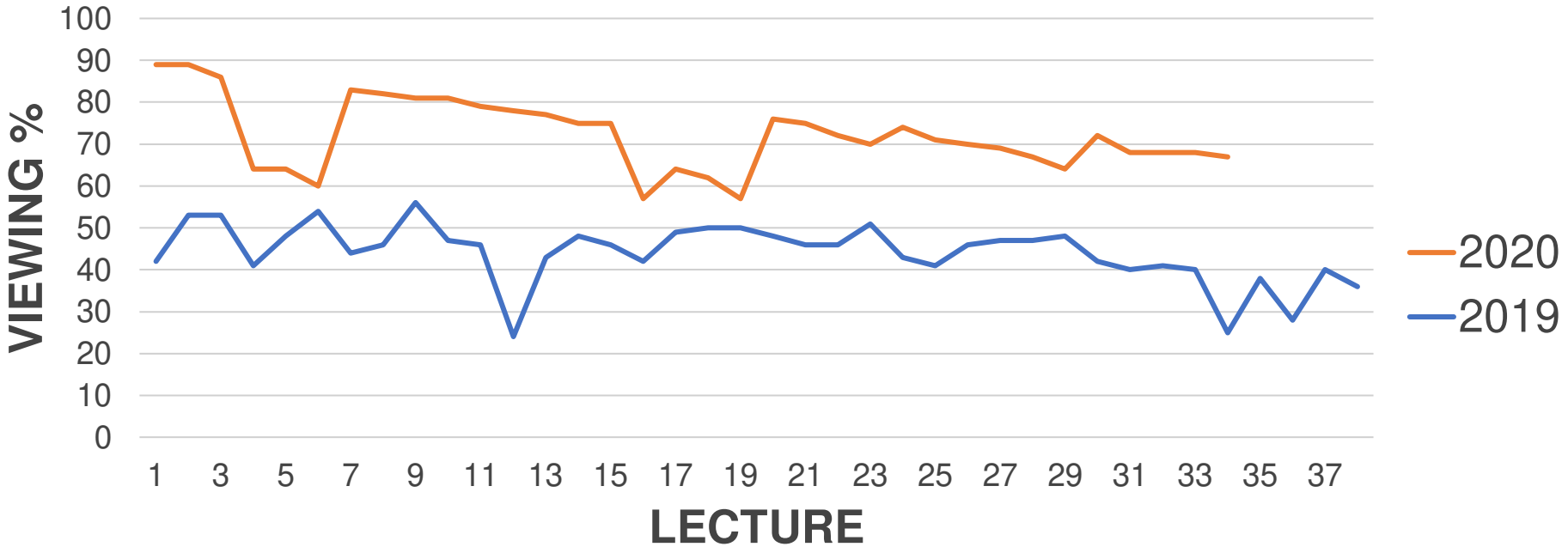
Picture-in-Picture

Talking-head
Angle 1

- 3 different “scenes” provide **flexibility in editing** – many cuts to **reduce overall video length**
- Lecture slides provided to students, **each slide has video timestamp**
- Designed to be an **asynchronous learning resource**

Effect on student engagement?





Students watched **each lecture more frequently**, and **watched more of each lecture** in 2020 than 2019

Face-to-face time with lecturers focused on Q&A, key concepts, sample questions…

Video editing is a useful skill to have in academia!

- **Useful across many contexts:**

- Trim start and end of lecture recordings

- Conference presentations, video abstract for publications, online job interviews…

- “Content is King” – all technology platforms need to host video content

Tools of the Trade

“Free”:
PC: Microsoft Photos app (Built-in “Video Editor”)
Mac: Quicktime (Cmd-T for “Trim”) / iMovie

Licensed:
Adobe Premiere Pro (both PC and Mac - Institution license)
Da Vinci Resolve (free – both PC and Mac)
Final Cut Pro X (Mac only, $299 education license)

Video transcoder/file size compression:
https://handbrake.fr/

Customise Keyboard shortcuts:
“Play forward”, “stop”, “play reverse” (J, K, L)
“Blade”, “Trim start”, “Trim end”

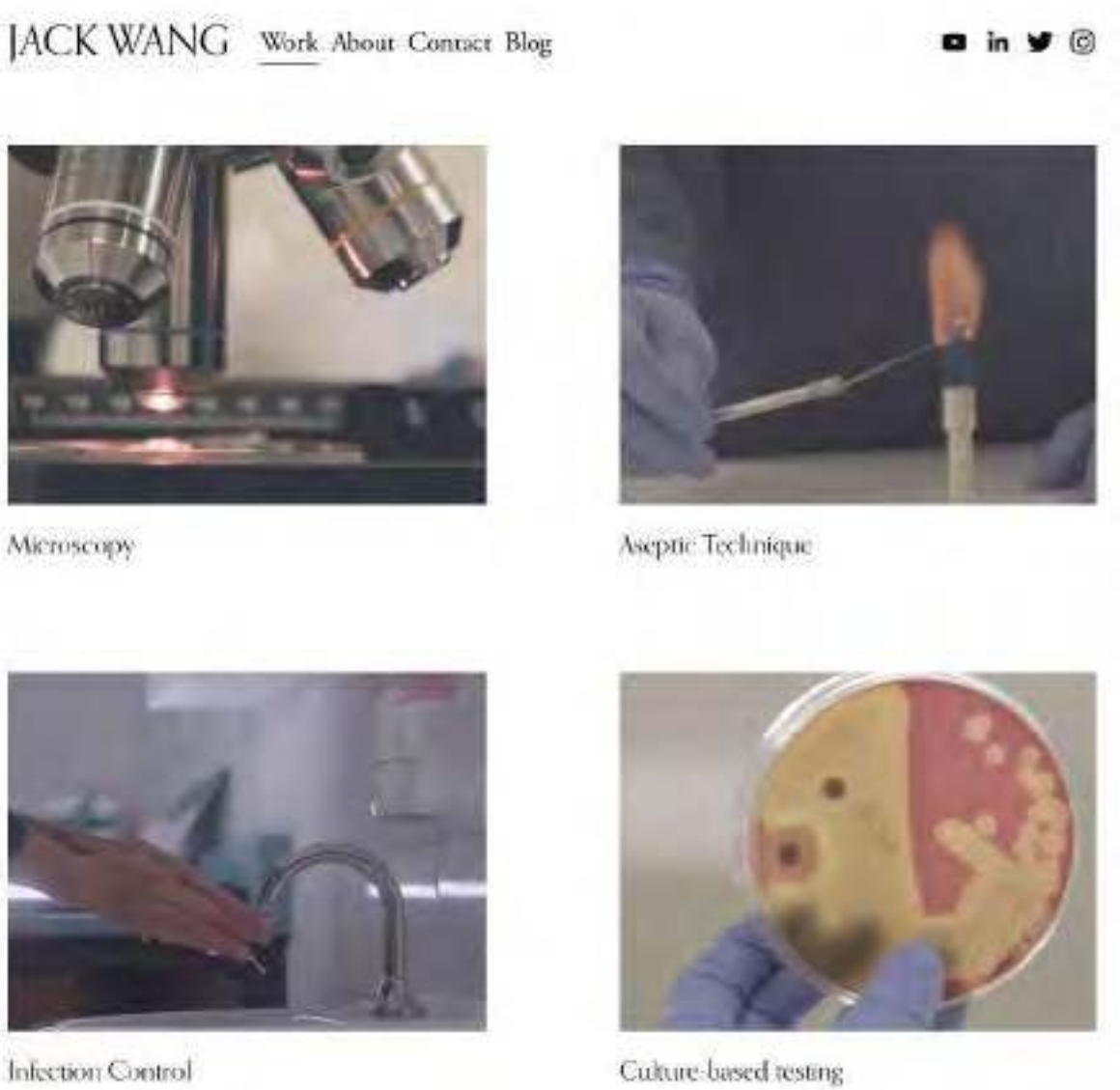
Where to from here?

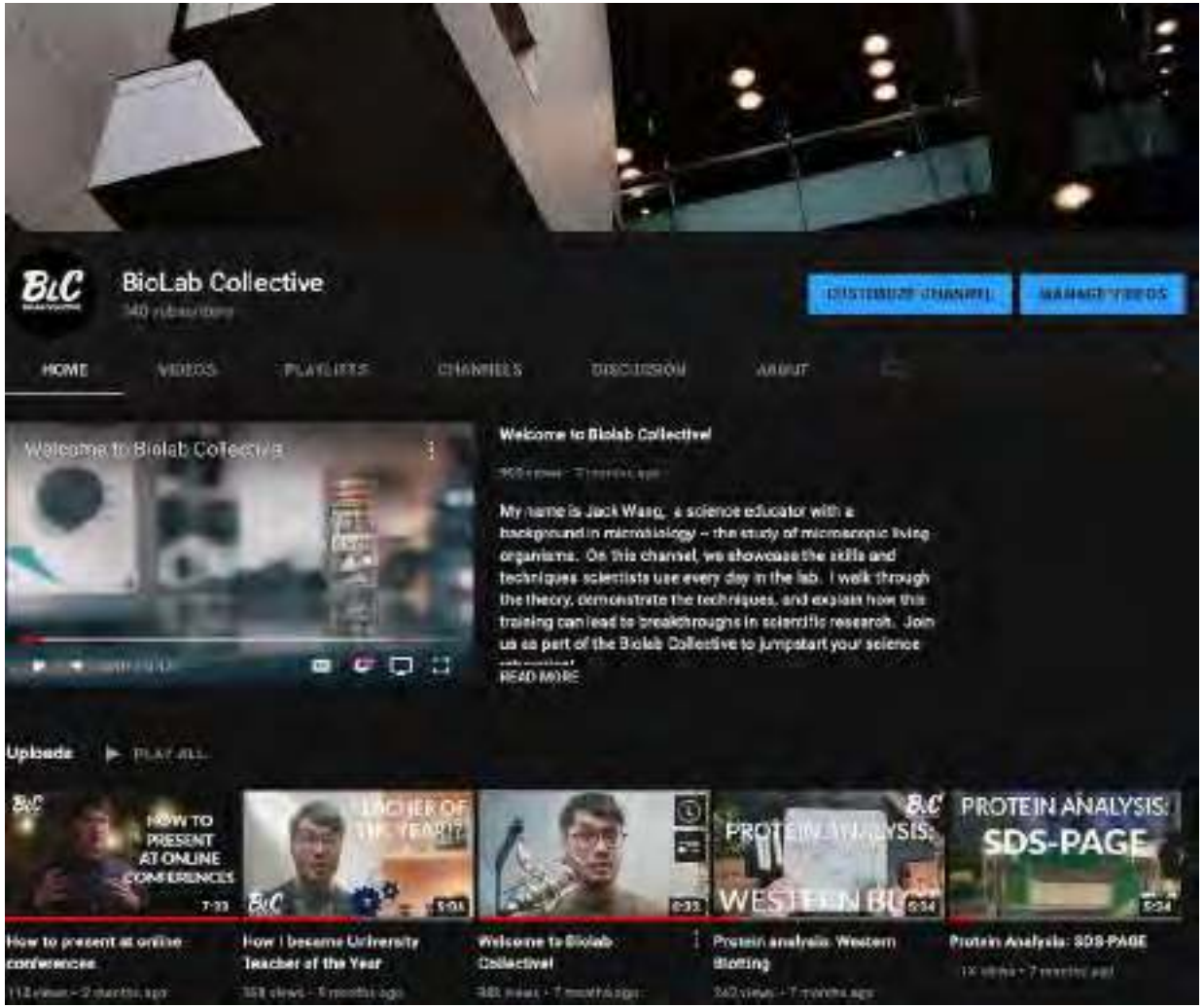
“BioLab Collective – an Australian Laboratory Skills Video Library for the Molecular Biosciences”

Australian Council of Deans of Science

- **New season of lab videos in production** informed by interviewing academics
- Designed to be “conversation starter” – **breadth over depth**
- Learning analytics will form basis of a **laboratory video production framework**

Where to from here?





https://jackwang.com.au

"BioLab Collective"

Closing thoughts

Steep professional learning curve to make online resources more engaging, but…

Still need right balance between **synchronous and asynchronous learning activities** and **constructively aligned assessment**

The best way to "close the gap" between face-to-face and online classes is to put **pedagogy before technology.**

Acknowledgements

Students:

Branda Le
Gloria Wood
Asyraf Razali

Research staff:

Dr Amy Chan
Dr Thisun Piyasena

Collaborators:

Prof. Gwen Lawrie

Funding:

Faculty of Science T&L grants (2018-2020)
ACDS (2021-present)

Teaching Excellence Showcase

A/Prof Amy Maguire

Newcastle Law School, University of Newcastle

2019 AAUT Award for Teaching Excellence
Law, Economics, Business and Related Studies

2018 AAUT Citation
For leadership, innovation and scholarship that engages students in real-world human rights practice and empowers students to pursue law reform and social justice.

QUT Learning and Teaching Unit

DEFINING LEARNER ENGAGEMENT

Amy Maguire, Newcastle Law School, College of Human and Social Futures

QUT Learning and Teaching Unit

QUT

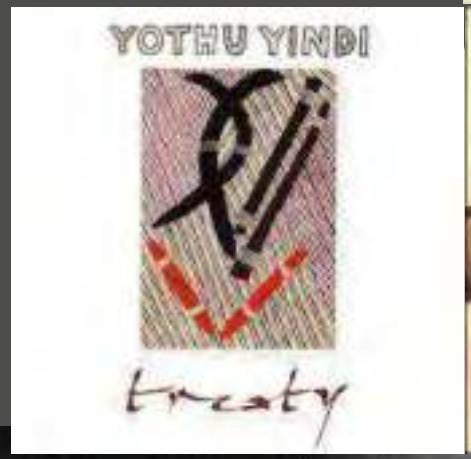
"We want that which students learn to become part of how they think, what they can and want to do…and what they value – and we want it to increase their capability for living life… meaningfully."

DEE FINK

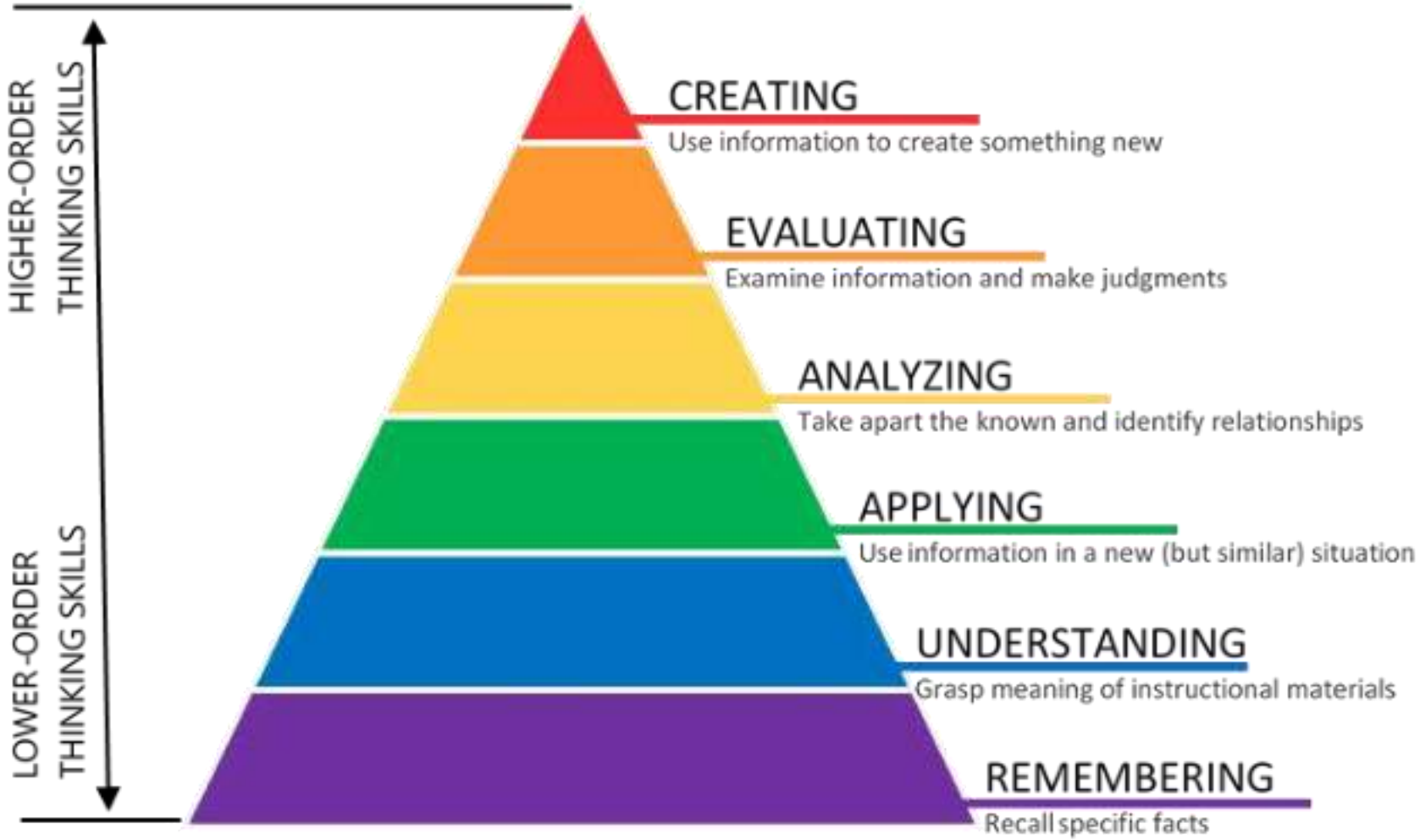
LEARNER ENGAGEMENT AT NEWCASTLE LAW SCHOOL

Student Tim (left) and staff member Sarah Breusch (centre) engaging with a community member at the Law on the Beach legal clinic.

MUSIC AS AN ENGAGEMENT STRATEGY



BLOOM'S TAXOMONY – COGNITIVE DOMAIN (2001)



BLENDED LEARNING DESIGN
A week in the life of a course...

Online Learning Module:	PODCAST: KEY CONCEPTS	SET READING	SELF-PACED ONLINE LEARNING TASK	POLL OR QUIZ
Seminar Class:	DISCUSSION QUESTIONS TO OPEN CLASS	STUDENT CASE PRESENTATIONS	SONG AND STRETCH	GROUP WORK ON LEARNING TASK

Teaching Excellence Showcase

A/Prof Alice Payne

School of Design, Creative Industries, QUT

2019 AAUT Citation

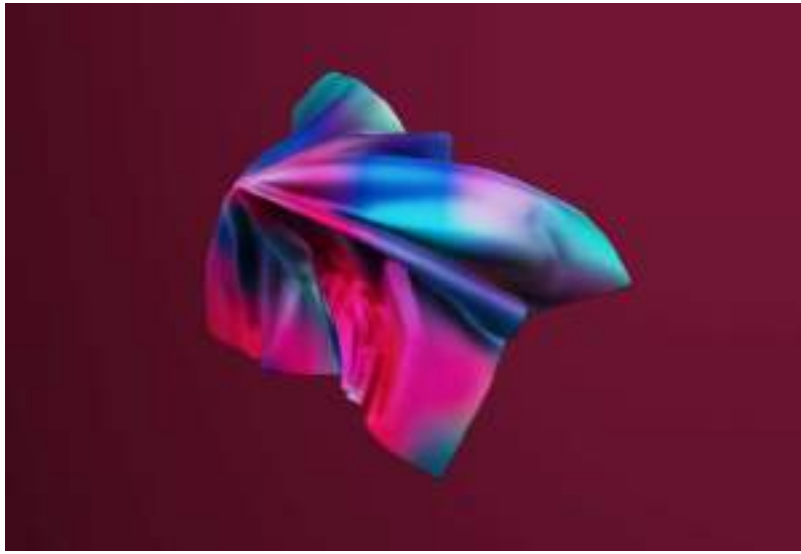
For developing fashion students as informed, imaginative, and ethical decision-makers, capable of business, design and material innovation in shaping a sustainable future for their industry.

QUT Learning and Teaching Unit

Learner Engagement in Fashion

Alice Payne
Fashion, QUT

Image: Carlyndal Slight-Di Tullio



Industry | Culture | Change

Fashion design

- Design
- Construction
- Patternmaking
- Textiles

Image: 2021 Pop Up Shop Capsule Collective, Second Years

Fashion communication

- Industry
- Culture & community
- History
- Visualisation
- Sustainability

Image: QUT Fashion Frocket Zine and Frock Paper Scissors Magazine; produced annually since 2006

Fashion Design Studio –
Honours year

- Self-directed project
- 6-10 look collection
- Exegesis on concepts and context
- Design + portfolio communication

Image: Carlyndal Slight-Di Tullio

Creative risk-taking | Resourcefulness | Ownership

Images: QUT Fashion - backstage 2020 show filming

Fashion Sustainability

- Environmental, social, cultural, economic dimensions of sustainability
- Across garment life cycle from cradle to grave – and to cradle

Systems thinking

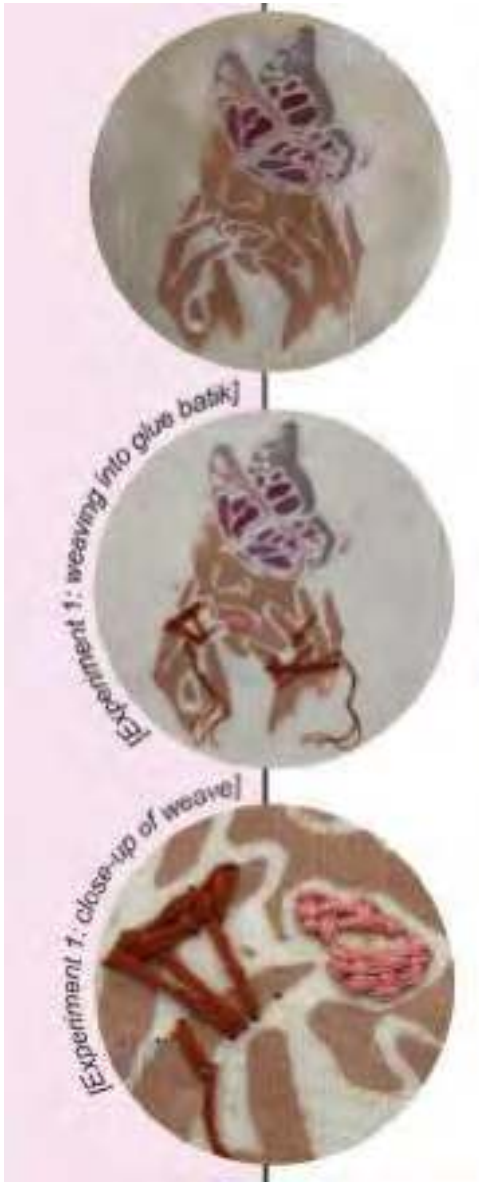
Embracing ambiguity

Framing an ethical action space

Image: Fashion Sustainability work, Kiara Fourie and Jithya Fernando

Fashion Textiles and Technology

- Past, present, future of textile technologies
- Studio unit designing and making
- Printing, dyeing, embellishing, weaving, knitting, felting…



Images: Carla van Lunn, and Fashion Textiles and Technology students

Images: Fashion Textiles and Technology student posts

Curiosity

Acquiring skill

Iteration

I tried weaving, knitting, crocheting and felting for week 2. I did weaving the best and enjoyed trying different types of weaving patterns and yarn textures. This week I plan to embellish the piece of felt using needling with coloured wool.

I have also started experimenting with loom weaving, I used one yard type for this experiment but different techniques to create the different effects!

knitting with chopsticks

as I didn't have any yarn, and I didn't really want to leave the house, I settled for some strips of fabric which I tied together for the weft, and pieces of cord tied together for the warp. this did not work very well as the tying points of the 'yarn' were too bulky and didn't allow for smooth threading (not to mention, I couldn't really use a needle here either..so basically, nothing really went right here. I don't even think

Colour Block weave. The same is a little messy at the moment as I need to cut off the ends and weave in the ends. I found it difficult to keep the same tension throughout the warp while weaving hence the right side being wonky

Experimented with a few weaving techniques and managed to make a face mask. :)

Image: QUT first year fashion students working (QUT Media)

Fashion learning as community

Thank you to QUT Fashion staff, sessionals, and students

Teaching Excellence Showcase

Prof Richard John

School of Environment and Science - Chemical Sciences

- 2019 AAUT Award for Teaching Excellence (Physical Sciences and Related Studies)
- 2016 OLT Citation for leadership in STEM education and the sustained faculty-wide enhancement of university science students' experience of learning and teaching quality.
- 2012 OLT Citation for Outstanding Contribution to Student Learning (Educational Partnerships).

QUT Learning and Teaching Unit

AAUT Teaching Excellence Showcase

Learner Engagement in Challenging Times

Richard John

Head of Chemistry and Forensic Science

Program Lead, Science on the GO!

Program Lead, Griffith STEM Education Alliance

December 2021

Learner Engagement in Challenging Times

Challenging Times

Funding

Loss of collegiate expertise

Job Security

COVID

Workload

International/ Interstate students

Work-life Balance

Richard John (December 2021)

Learner Engagement in Challenging Times

Challenging Times

Have we created Monsters?

On-campus F2F

Choice / demands

Online

Asynchronous

Synchronous

Mixed mode

Richard John (December 2021)

Learner Engagement in Challenging Times

Challenging Times

Assessment

Online exams

Test items (e.g. googleable vs non googleable)

Academic integrity (proctoring?)

Randomised test banks

Personalised and/or authentic

Closed book vs open book

Learner Engagement in Challenging Times

Challenging Times

Assessment

What is the Molecular Mass of glucose ?

Recall … name/formula relationships
Understand … moles, molar mass, molecular mass
Interpret … chemical formulas
Apply … the Periodic Table

Richard John (December 2021)

Learner Engagement in Challenging Times

Challenging Times

Student experience, engagement and learning

Labs and field trips

Richard John (December 2021)

Learner Engagement in Challenging Times

Challenging Times

Student experience, engagement and learning

Group work/assessment

Richard John (December 2021)

Learner Engagement in Challenging Times

Challenging Times

Student experience, engagement and learning

Synchronous online engagement

Richard John (December 2021)

Learner Engagement in Challenging Times

Challenging Times

What I can control

What I can't control

Richard John (December 2021)

Learner Engagement in Challenging Times

What I *can't* control	Relevance to student L&E
COVID Disruption	✓
Off-campus international/interstate students	
Labs/fields trips	
Choice of F2F vs online vs mixed mode	
Job Security	✗
Funding for L&T	✗
My Workload	✗
My Work-life balance	✗
Loss of collegiate expertise	✓
Choice to engage with Tech Enhanced Learning (TEL)	✗
Choice of LMS/VLE	

Richard John (December 2021)

Learner Engagement in Challenging Times

What I *can* control	Relevance to student L&E
Unit Design	✓
Assessment Regime	✓
Learning Activities *	✓
lectures, tutorials, workshops (*not labs/field)	✓
Pedagogical Approaches	✓
Use of Tech Enhanced Learning (TEL) approaches	✓
How I use my LMS/VLE	✓
How I use F2F vs OL vs MM	✓
If and how I use Digital Learning Objects (DLOs)	✓

Richard John (December 2021)

Learner Engagement in Challenging Times

Things I can control w.r.t. Learner Engagement

Unit design

Pedagogical approaches adopted

Use of Tech Enhanced Learning approaches

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Learner Engagement in Challenging Times

Learner Engagement

Fundamentally …. at any time …. but especially in challenging times ….

Unit design, teaching practices and pedagogical approaches need to align to:

- **How people learn …. in a general sense**
- **How students learn science in the "classroom"**
- **(How students learn chemistry in the "classroom")**

Richard John (December 2021)

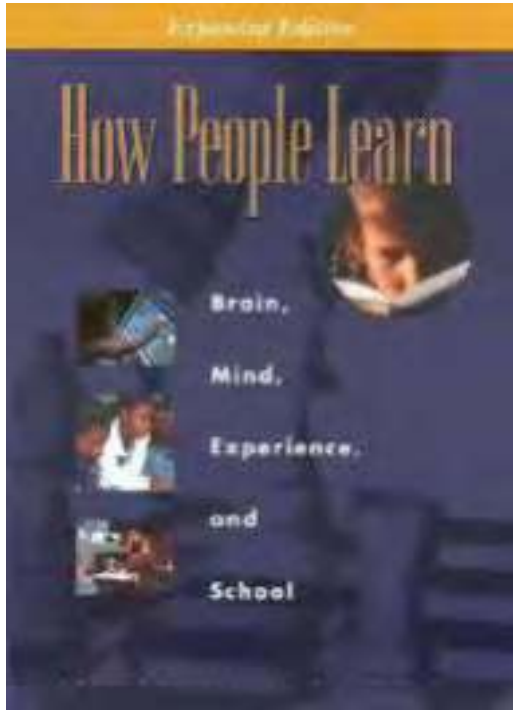
Learner Engagement in Challenging Times

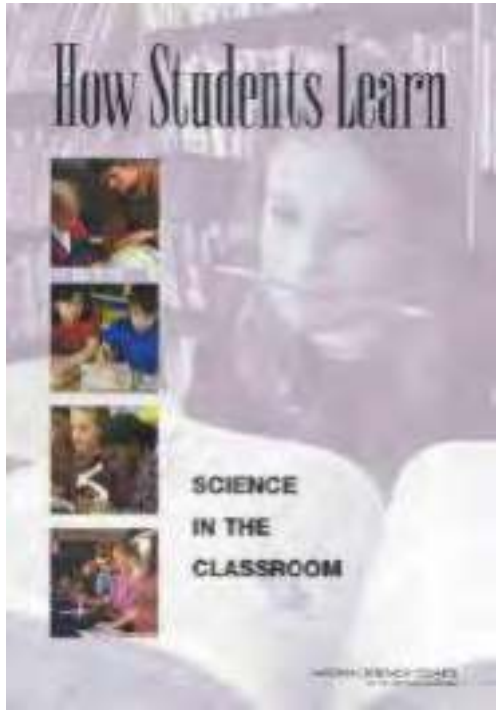
NRC Publications

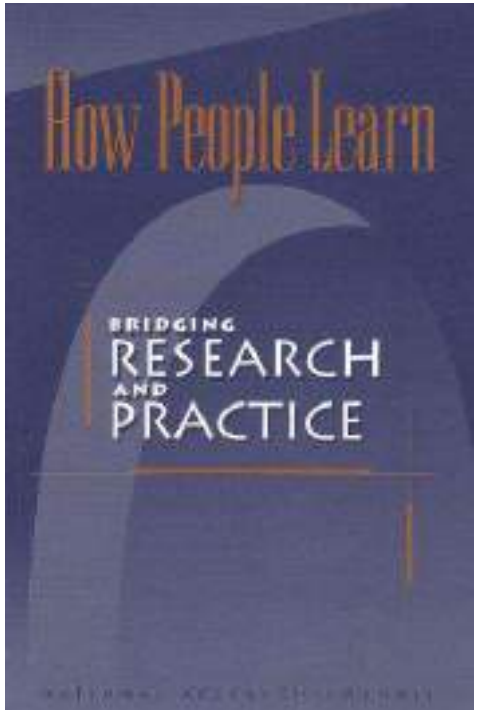
How People Learn

How Students Learn: Science in the Classroom

How People Learn: Bridging Research and Practice





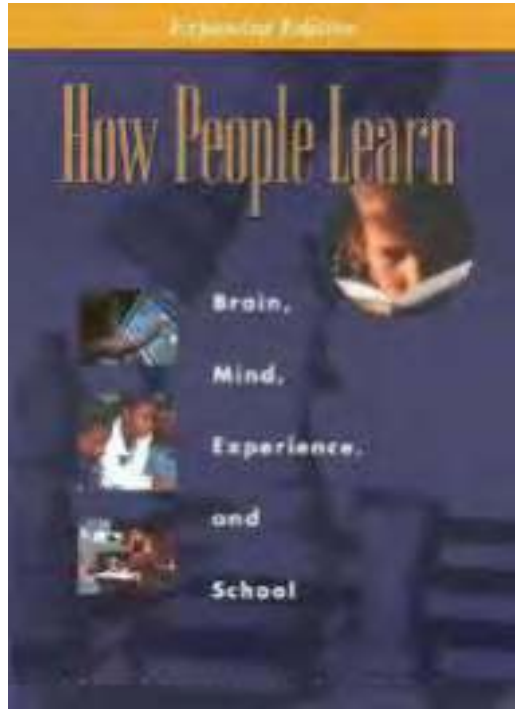


Richard John (December 2021)

Learner Engagement in Challenging Times

Key Research Findings – How People Learn

1. Student preconceptions and current understandings need to be engaged
2. Students require a deep foundation of facts and ideas (in context) organised to facilitate retrieval and application
3. A metacognitive approach to instruction is important



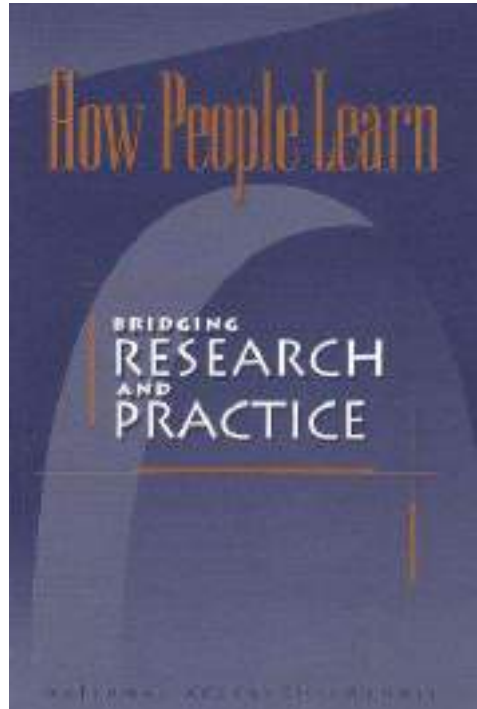
Learner Engagement in Challenging Times

Three Implications for Learner Engagement

1) Teachers must draw out and work with the *pre-existing understandings and contexts* that students bring with them

"Students come to the classroom with preconceptions about how the world works.

If their initial understanding is not engaged, they may fail to grasp the new concepts and information that are taught, or they may learn them for purposes of a test but revert to their preconceptions outside the classroom."



Learner Engagement in Challenging Times

Three Implications for Learner Engagement

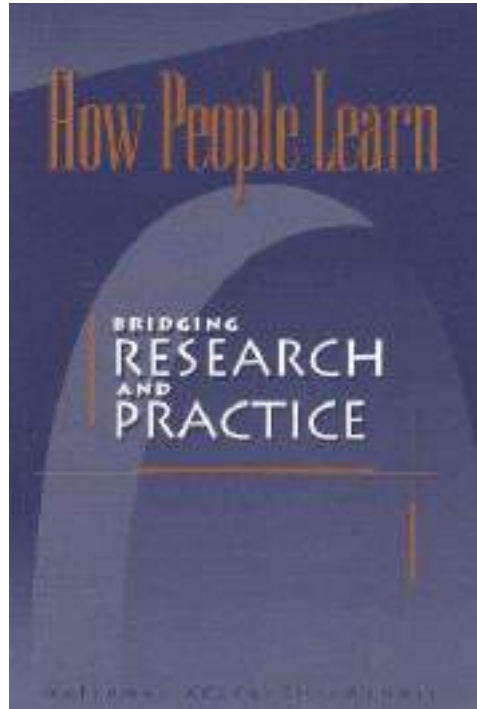
2) Teachers must teach some subject matter in depth, *providing many examples in which the same concept is at work* and providing a firm foundation of *factual knowledge*

"To develop competence in an area of inquiry, students must:

(a) have a deep foundation of factual knowledge

(b) understand facts and ideas in the context of a conceptual framework

(c) Organize knowledge in ways that facilitate retrieval and application."

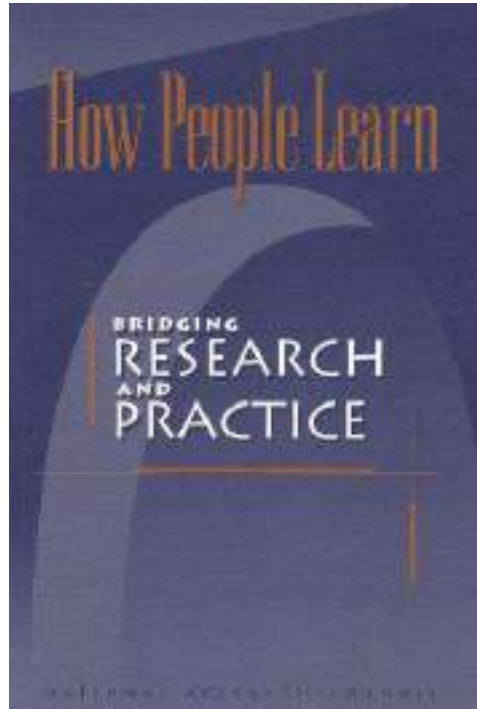


Learner Engagement in Challenging Times

Three Implications for Learner Engagement

3) The *teaching of metacognitive skills* should be *explicitly integrated* into the curriculum in a variety of subject areas

"A "metacognitive" approach to instruction can help students learn to take control of their own learning by defining learning goals and monitoring their progress in achieving them."



Learner Engagement in Challenging Times

Unit Design As an educator I:
1. Elicit students pre-existing understandings and experiences
2. Teach concepts in depth providing multiple examples of same concept at work
3. Explicitly integrate metacognitive skills into course design and teaching practices

Learner Engagement in Challenging Times

Unit Design As an educator I:
4. Facilitate cooperative and collaborative learning
5. Embed ongoing assessment throughout a unit that ***assists*** in the learning process

Learner Engagement in Challenging Times

Unit Design As an educator I:
1. Elicit students pre-existing understandings and experiences
2. Teach concepts in depth providing multiple examples of same concept at work
3. Explicitly integrate metacognitive skills into course design and teaching practices

Consider how *Technology* can enhance these practices and pedagogical approaches

Learner Engagement in Challenging Times

Unit Design As an educator I:	Exemplar Practices and Pedagogies: I deepen students learning and retention by …
4. Facilitate cooperative and collaborative learning	
5. Embed ongoing assessment through-out a unit that ***assists*** in the learning process	

Learner Engagement in Challenging Times

Things I can control w.r.t. Learner Engagement

Unit design

aligned with how students learn (in a general sense)

Pedagogical approaches adopted

aligned with how students learn in discipline contexts

Use of Tech Enhanced Learning approaches

- to facilitate presentation and retrieval of information,
- ongoing data collection (e.g. diagnostic/formative; MC wrappers etc.)
- connecting and communicating with students

Richard John (December 2021)

Learner Engagement in Challenging Times

Are we there yet?

Richard John (December 2021)

Learner Engagement in Challenging Times

Questions, comments, thoughts?

Conceptual Wrapper: *Electronic Structure of Atoms*

Name: _____ Student No. _____

How do you rate your understanding of the Electronic Structure of Atoms? *(circle one)*

1. Very poor 2. Poor 3. Average 4. Good 5. Very good

What two things did you learn about Electronic Structure of Atoms?

a)

b)

How confident are you that the two things you just wrote down are correct? *(circle one)*

1. Not confident at all 2. A bit confident 3. Somewhat confident 4. Confident 5. Very confident

What concepts from this topic did you find difficult?

Specifically, what will you do to improve understanding of these concepts?

Part B. Allowed time: 10 min.

Provide your answers on this page and hand in at the end. Include your name and student number.

Name: _____ **Student No.** _____

1) Out of 10, what mark do you think you will get for this quiz? (please circle)

1-2 3-4 5-6 7-8 9-10

2) How many hours did spend studying for this quiz? (please circle)

0-2 3-4 5-7 8-10 >10

3) I feel that the hours I spent studying for this quiz were (please circle)

About right too little too much

4) How did you study for this quiz? (tick all appropriate boxes)

☐ Group study ☐ Textbook questions ☐ Practice questions from L@G site
☐ Individual study ☐ Lecture capture viewing ☐ Reviewing lecture notes
☐ Textbook reading ☐ viewing videos from L@G site ☐ Other, please specify _____

5) How would you approach your study differently for your next quiz?

6) With regard to lectures I have attended (please circle)

all nearly all most about half some none

7) With regard to tutorials I have attended (please circle)

all nearly all most about half some none

8) On average, the hours I spend on chemistry outside of class contact hours are about (please circle)

0-2 3-4 5-6 7-9 10 or above

9) Overall, out of 100, what mark do you think you will end up with for the Chemistry 1 course?

_____

AAUT Teaching Excellence Showcase

Griffith UNIVERSITY

Chemistry 1 2019		Chemistry 1 2020	
Learning Activities	Mode	Learning Activities	Mode
Lectures	F2F	Lectures	Online
Tutorials	F2F	Tutorials	Online
Labs	F2F	Labs	Virtual/video
Textbook readings	Physical text	Textbook readings	Physical text
Optional Video support (concepts)	Online	Optional Video support (concepts)	Online
Optional Video support (examples)	Online	Optional Video support (examples)	Online
Video support (labs)	N/A	Mandated Video support (labs)	Online

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Chemistry 1 2019		Chemistry 1 2020	
Learning Activities	Mode	Learning Activities	Mode
Diagnostic	F2F	Diagnostic	F2F
Mastery Quizzes (zero stakes)	Online	Mastery Quizzes (zero stakes)	Online
Formative Quizzes (low stakes + academic recovery)	Online	Formative Quizzes (low stakes + academic recovery)	Online
MC Wrapper (concepts)	F2F in class	MC Wrapper (concepts)	Online
MC Wrapper (quiz & exams)	Online & F2F	MC Wrapper (quiz & exams)	Online
M.T. Exam	F2F	M.T. Exam	Online
E.o.T. Exam	F2F	E.o.T. Exam	Online
Lab Report (take home)	Individual + peer	Lab Report (stay at home)	Individual

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Closing Remarks

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