Learning Spaces

Design and Impact

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New Learning Spaces at Monash

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A sense of purpose…

The Learning and Teaching Building

- To inspire, showcase and lead innovation and interaction in learning and teaching (learning on show)
- To inspire our learners and teachers
- To support a student-centered approach that is interactive, creative and explorative, allowing students to take ownership of their learning in a safe and inclusive environment
- To enable transformational change in teaching practice and the student learning experience
- A variety of formal and informal learning environments will be supported

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A sense of scale…

The Learning and Teaching Building

Formal learning spaces for all faculties

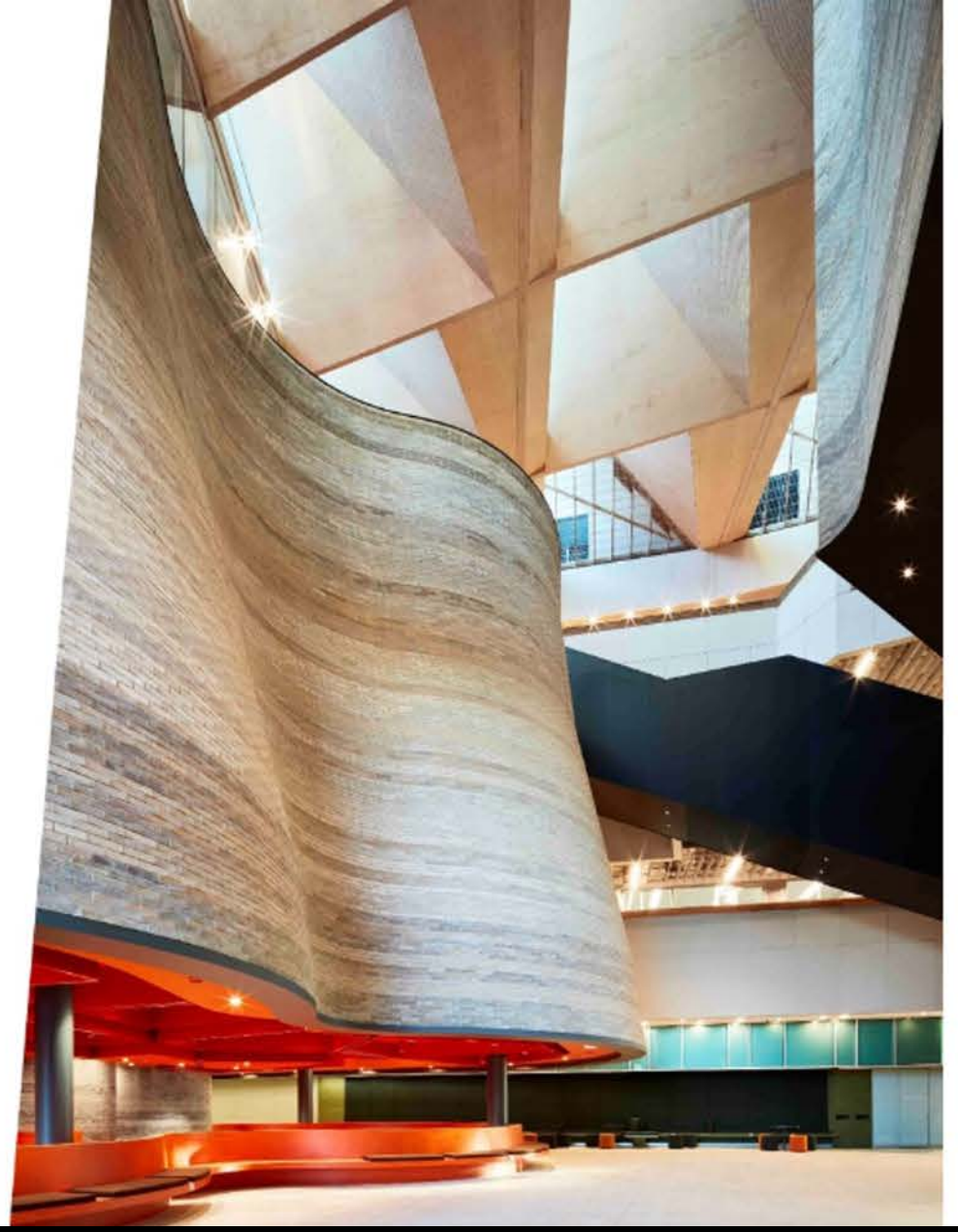
- 64 learning spaces
- 30 - 240 seat spaces

Formal learning space:

- 3230 students simultaneously

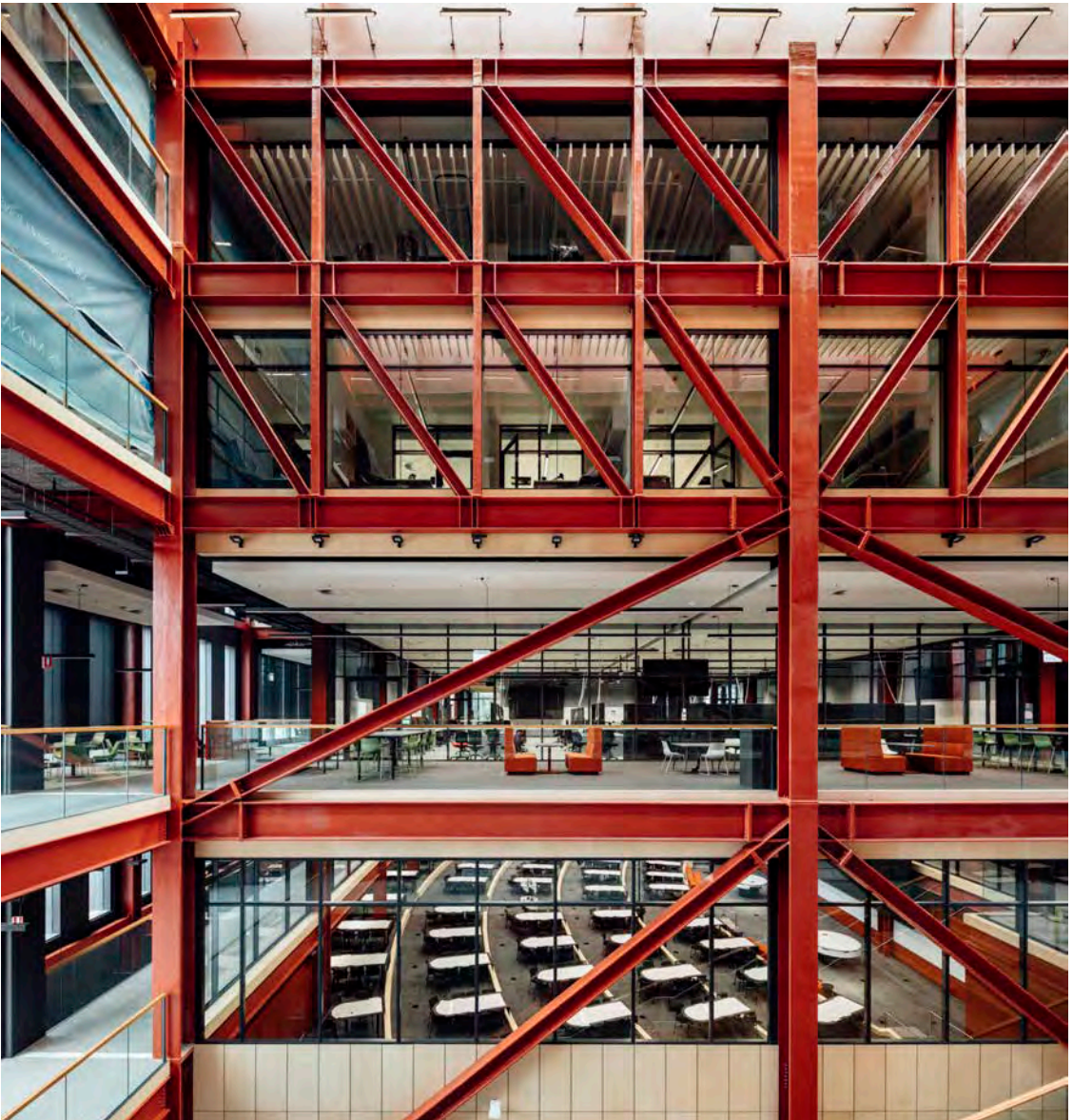
Informal learning space:

- Over 900 students simultaneously
- Additional Retail
- All learning spaces used as informal when not in formal class usage



A sense of purpose…

The Woodside Building



- To connect different disciplines in Engineering and Information Technology
- To connect students across disciplines and across year levels
- Inclusion of 8 discipline-specific design-build studios
- Two x 120 person “pop-up” laboratories
- The building as a living laboratory
- Storage(!)
- Passivhaus design

A sense of purpose…

The Woodside Building

Formal Teaching Spaces

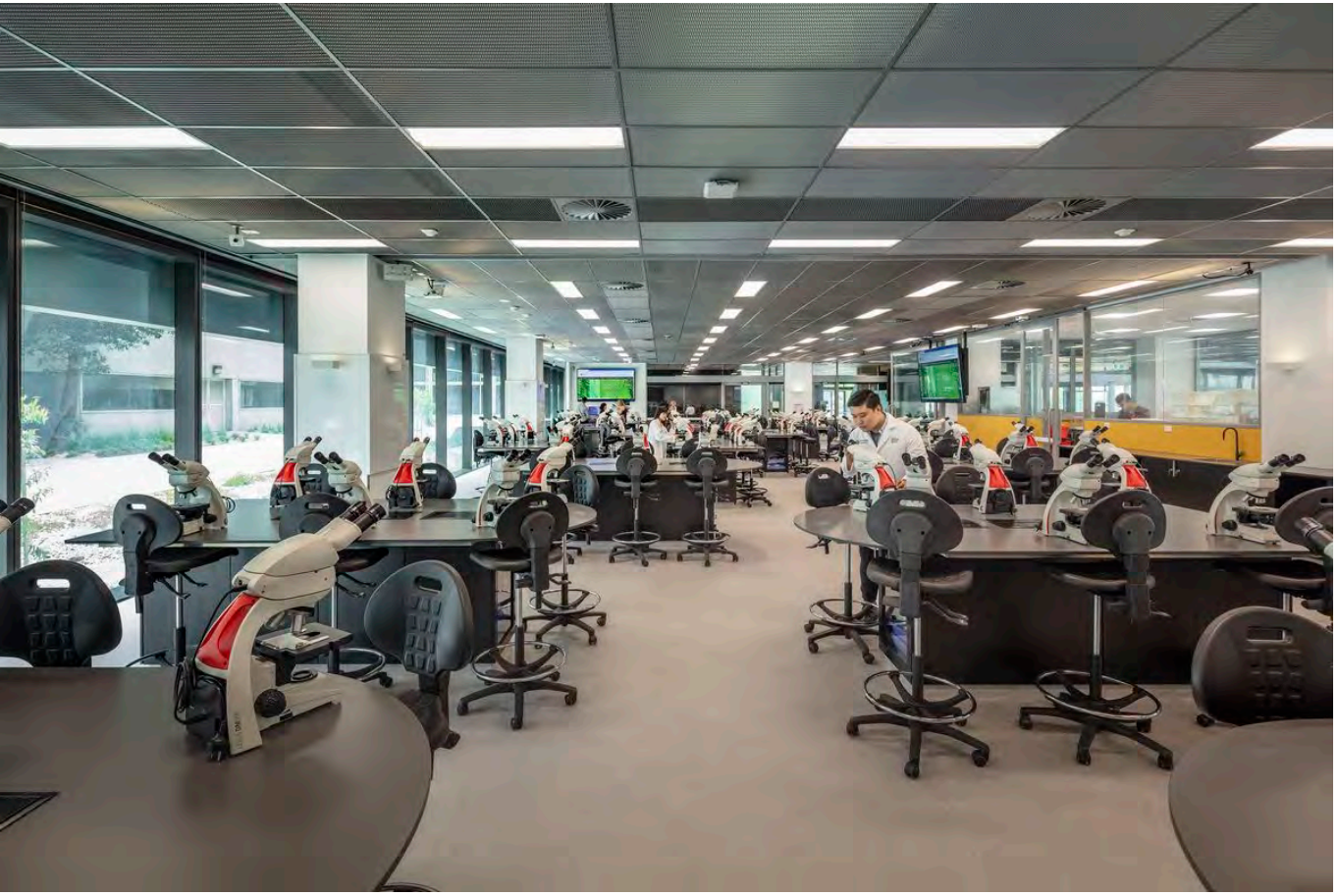
- A 360 seat collaborative learning space
- 12 x 60 person collaborative learning spaces
- 8 x 60 person design-build studios
- 2x 120 person pop-up laboratories

Informal learning space:

- Over 600 students simultaneously
- All learning spaces used as informal when not in formal class usage

A sense of purpose…

The Biomedical Learning and Teaching Building



- A hub for undergraduate students studying the biomedical sciences
- Super-labs (up to 240 students per class simultaneously, divisible down to groups of 60).
- 1,200 seats in specialist laboratories
- 180 seats in non-specialist (generic) teaching spaces with breakout and informal learning spaces
- S1 and S2 labs, dry lab, anatomy lab

Design considerations and Intent

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Key factors to consider in development

- Connection to environment
- Lighting
- Acoustic performance
- Human thermal comfort
- Access to amenities (including vending)
- Access to resources
- A learning neighborhood and learning on show
- Clarity of pathways, wayfinding, connection to campus and alignment with masterplan
- Intent of learning modality
- Staff professional development
- Student Agency (safety, accessibility, flexible utilization of resources)
- Success metrics and Evaluation framework

Most important considerations

Lighting

- Studies* indicate Cool White Light, or Artificial Daylight provide demonstrably better academic performance
- Preference from students is on CWL
- Early studies indicate that a variety of light intensity and warmth in informal spaces is best to provide students personal choice of study location.

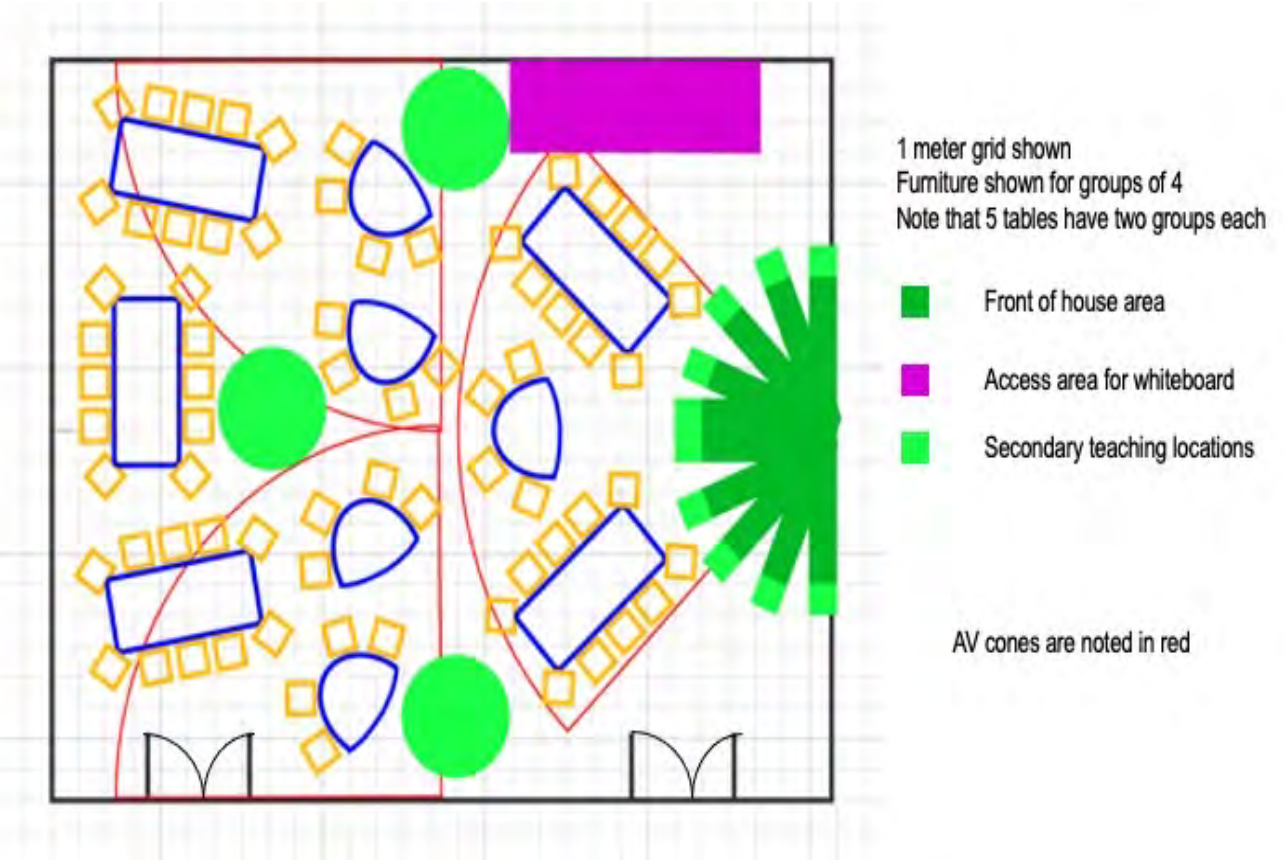
Acoustics

- Significantly important for comprehension – particularly for ESL
- Active and Passive acoustic elements need to be considered
- BB93 and equivalent ISO/Malaysia standards need to be implemented
- “Students specified that acoustics had high impact on their performance, indicating that improving acoustics might have the highest priority to improve student perceptions.”

  ZhengYang, BurcinBecerik-Gerber LauraMino

Interactive learning spaces

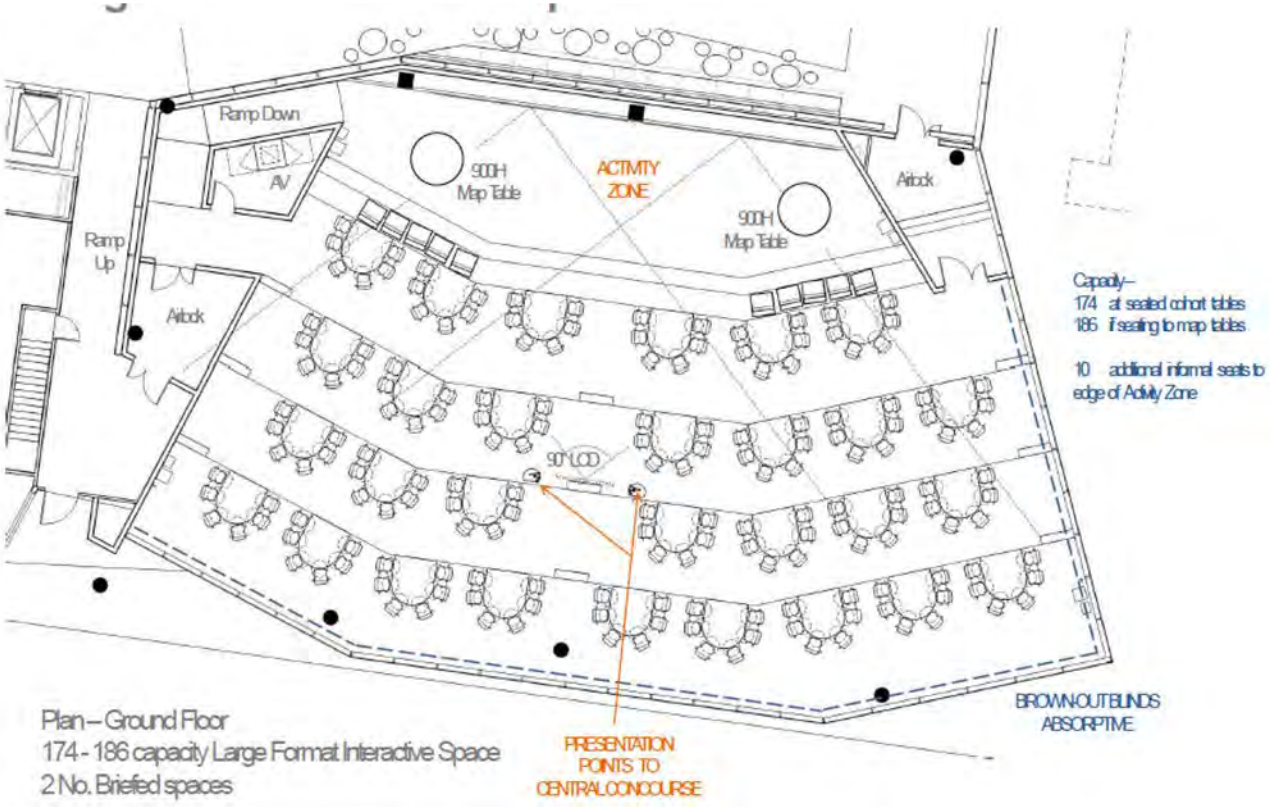
Small Collaborative Space Design



- There is a front-of-house area. This is typically centrally located along the longer wall. Typically has an arc of radius 3 - 4.5 metres (shown green in diagram).
- There is (at least one) secondary presentation point. Each secondary presentation point has a diameter of no less than 2 meters (see green 'dots' in diagram).
- The closest seats to the ‘front of house’ are no less than 2 metres away - (note additional considerations with AV and the horizontal angle of view led to some modification).
- The closest furniture to any 'usable' whiteboard space is no closer than 1.5 metres (see purple area in diagram).
- The distance from an entrance door to the back of the nearest chair is 2 metres.
- The distance between the backs of two chairs (at adjacent tables) is no less than 0.5 metres: This allows the academic to move freely about the room and approach all students.

Collaboration at Scale

LARGE FORMAT TIERED SPACE DESIGN



Key Design Features

Tiered Learning Spaces (180+ seat capacities)

- Double tiering
- Interaction in this space means virtual and immediate (neighbours and those immediately around you)
- Writeable tables – group-work
- Facilitator needs to approach all students individually.
- Fold down chairs for educators
    - Fold down chairs on walls for tutors to touch down when expert leading whole of class discussions.
    - Fold down chairs dispersed from each other along walls.

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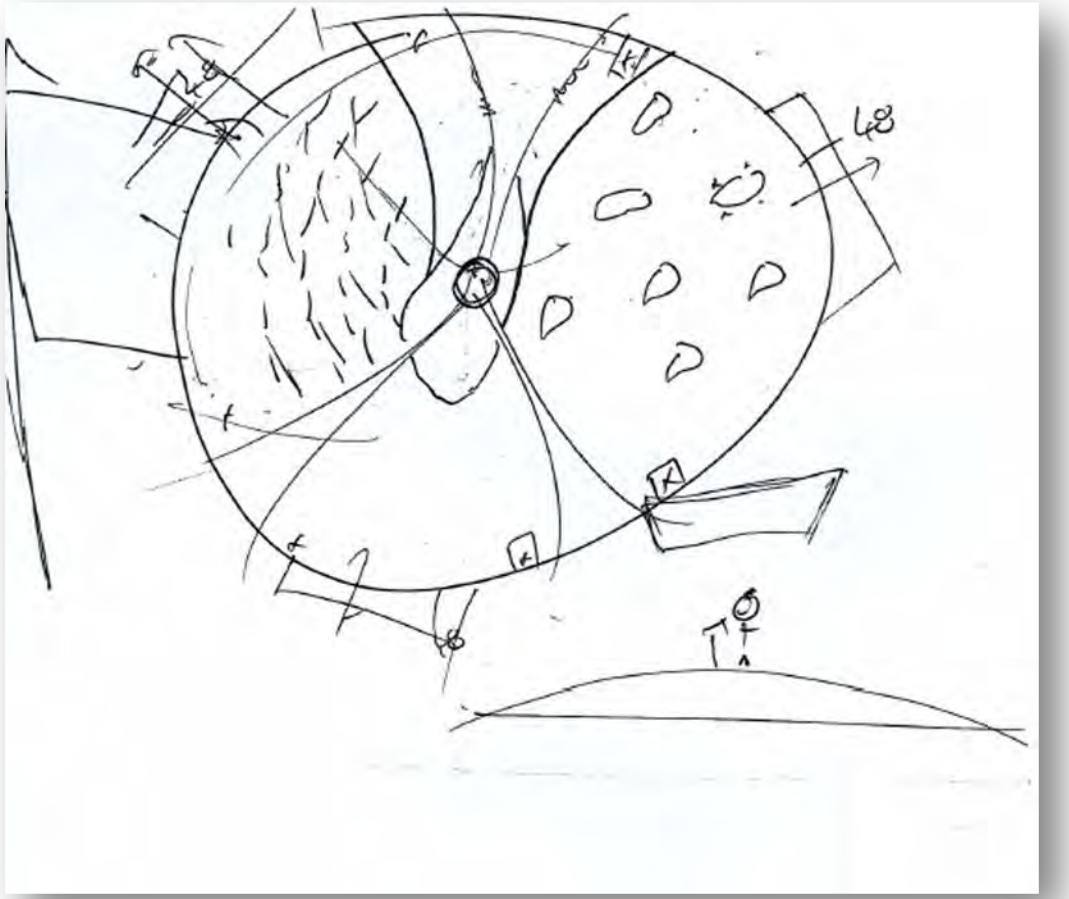
LEARNING IN THE ROUND

Key Design Features

- Students will be close to expert throughout session. Expert can interact with each student group and individual
- Students will be working as groups and encouraged to move within their region and write on walls
- Two key delivery locations enhance multiple modes of learning
- Expert can present from whiteboard at multiple key locations around the room
- 360º whiteboard/glass board for students and expert to employ
- Map table at centre of space encourages expert to present examples and bring student groups to centre of space to work collaboratively as a demonstration

LEARNING IN THE ROUND



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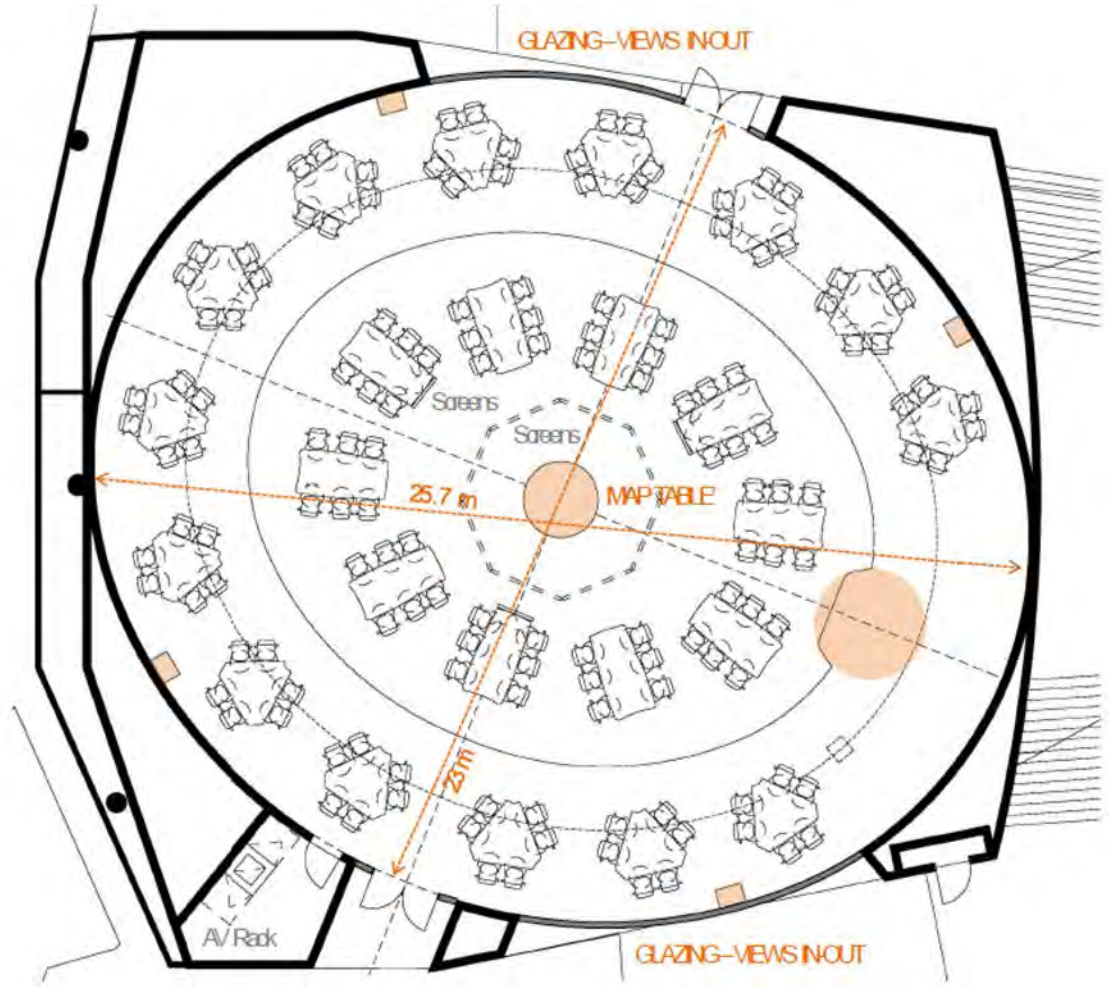

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LEARNING IN THE ROUND

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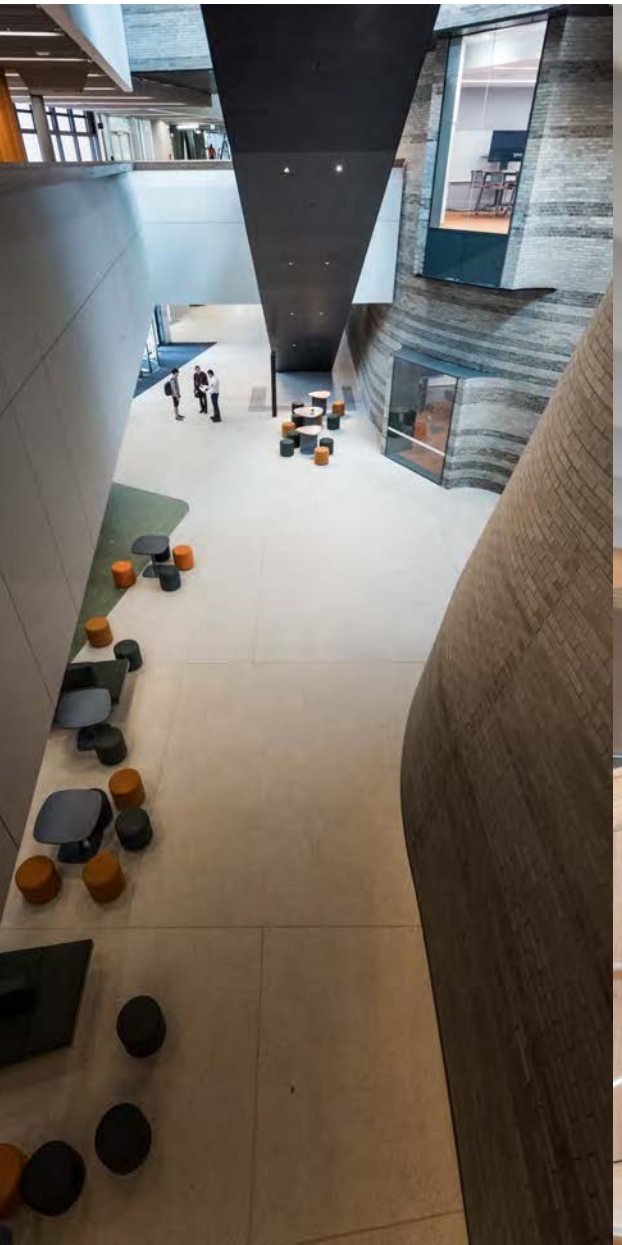
Informal Learning

A Multi-Faculty Learning and Teaching Building

Informal space throughout



INFORMAL SPACES

Social

Group capacity: 1-12
Intent: Social area
Typical Timeframe: 20-40 mins

Lean and Chat

Stop n' prop

Lounge

Eat

Drink

Bookable

Group capacity: 6
Intent: Concentrated group work.
Typical Timeframe: 1-2 hours

Do Projects

Collaborate

Rehearse

Work on walls

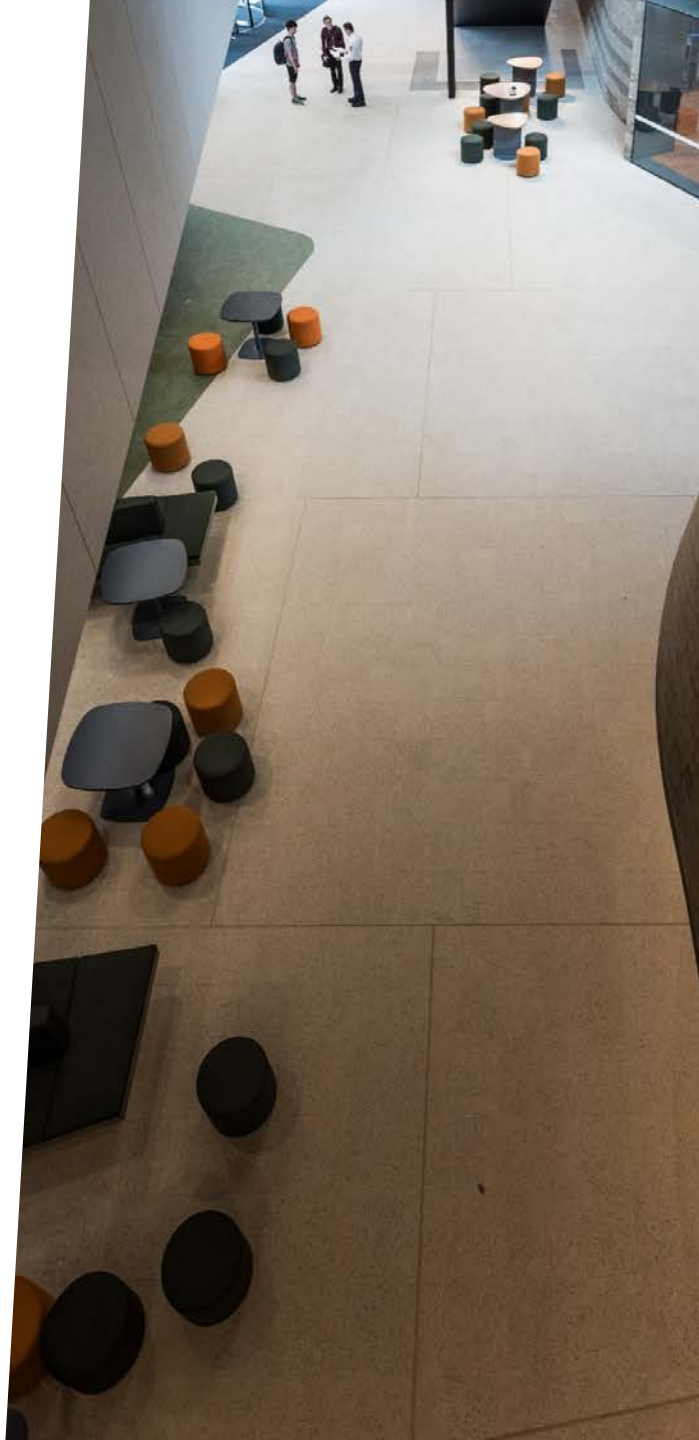
Study

Group capacity: 1-8
Intent: stop and stay study area
Typical Timeframe: 1-4 hours

Solo study

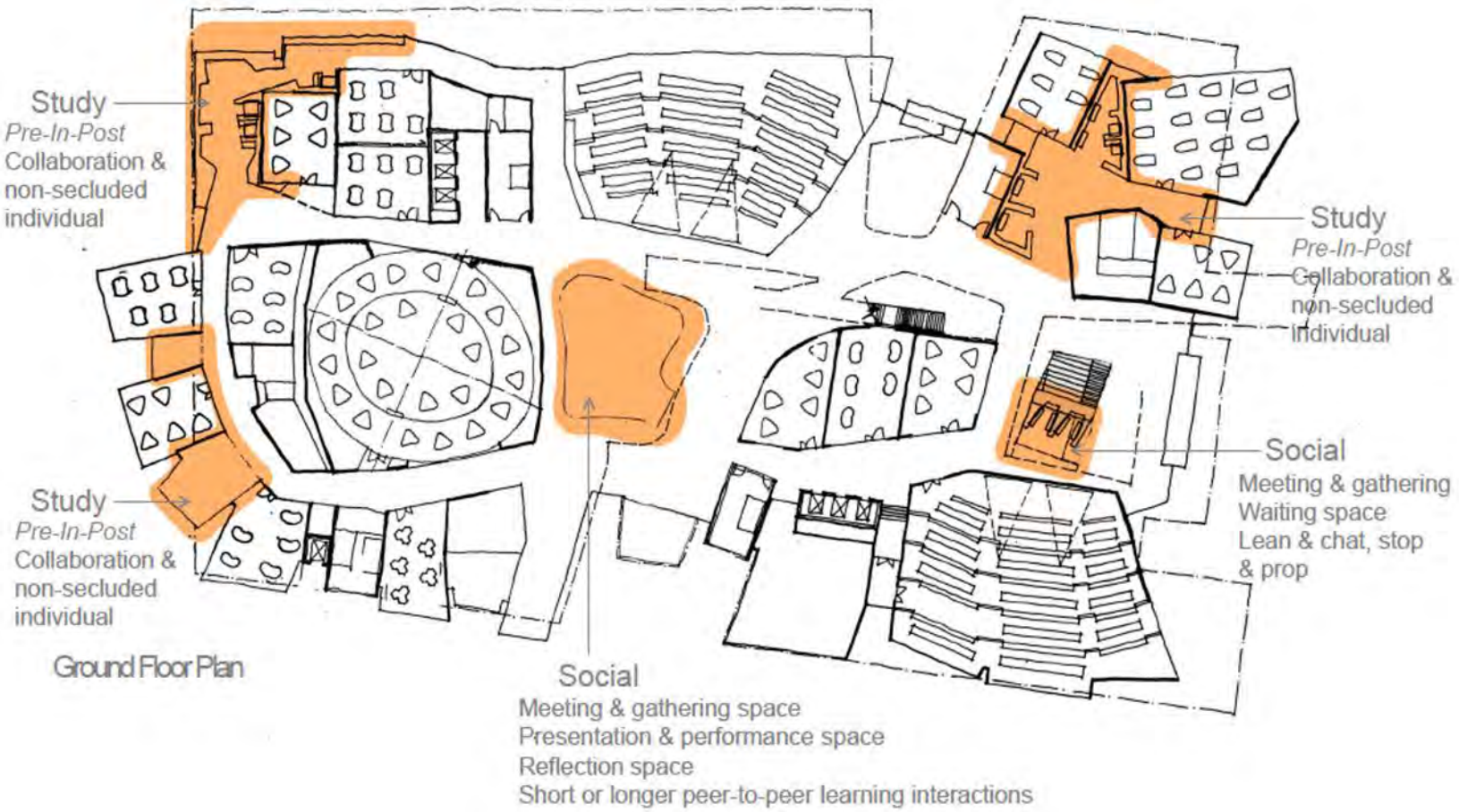
Retreat

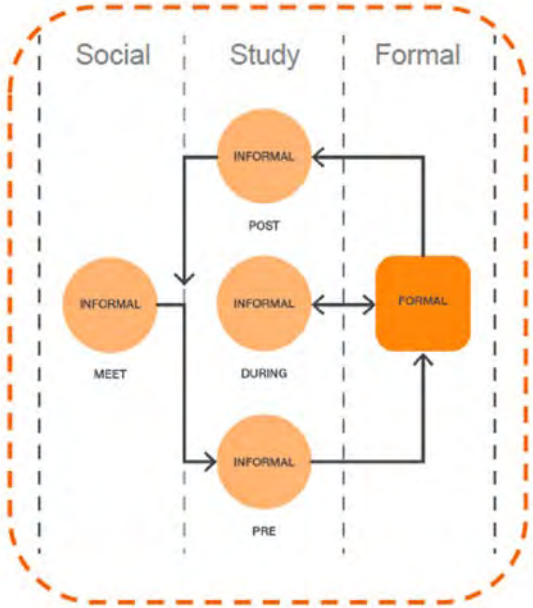
Collaborate



FORMAL AND INFORMAL SPACES

A Crucial Interplay





Community Development and Design Process

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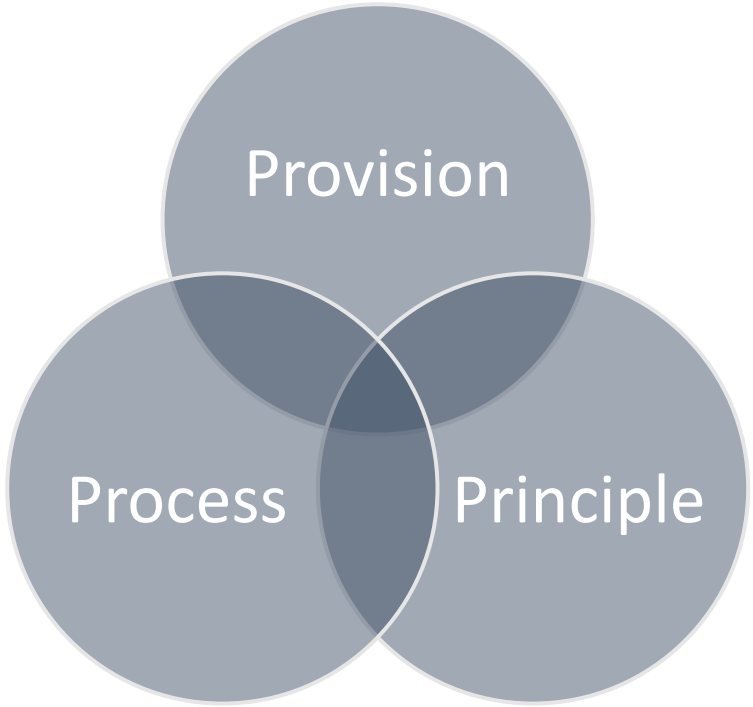
Celebrating Cross-Disciplinary Active Learning

Adoption and Transition



Challenge,
Adopt,

Interpret &
Rely upon

Paradigm shift

Michael Fullan (2016)

Innovation in Education…

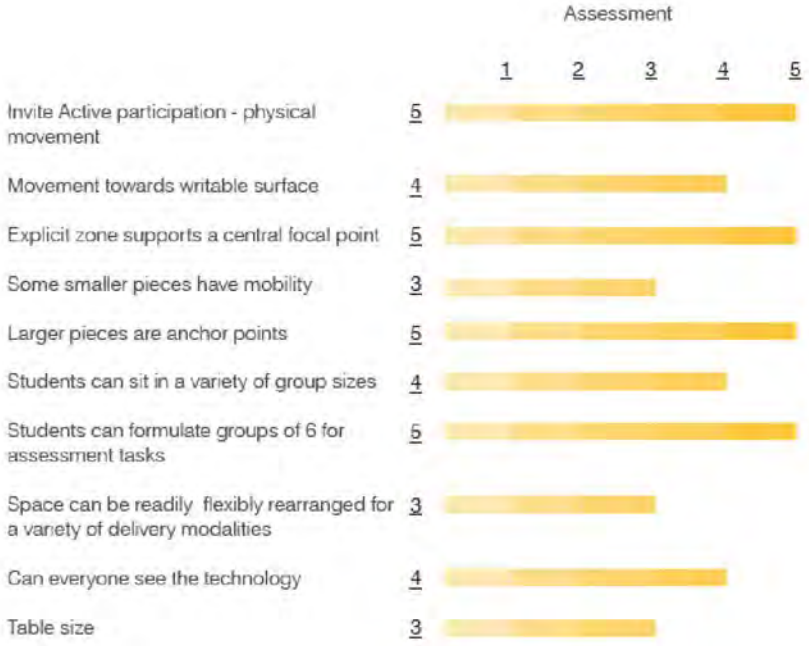
Adoption and Transition

A **multi-year** project impacting all faculties

Over 600 units transitioned to a pathway of active learning

- Educational Designers embedded across the university
- Outcomes-focused education
- Challenging academics on how to maximise their contribution
- Innovative teaching and learning practice

Multifaceted Prototyping



“I feel more connected to others”

“I can see everyone”

“The couches feel less intimidating than sitting at big long tables”

Evaluating Impact

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Measuring Attendance Across our Campuses

Engagement with Learning

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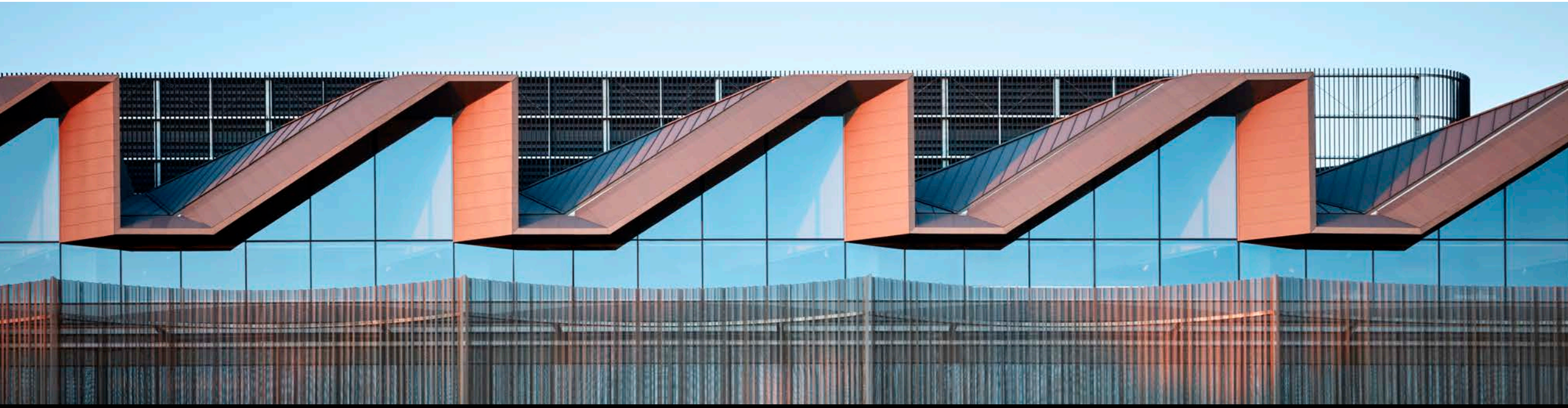
The highest on-campus attendance

57 669 Unique visitors (semester 2)

8 times more likely to have high lecture attendance



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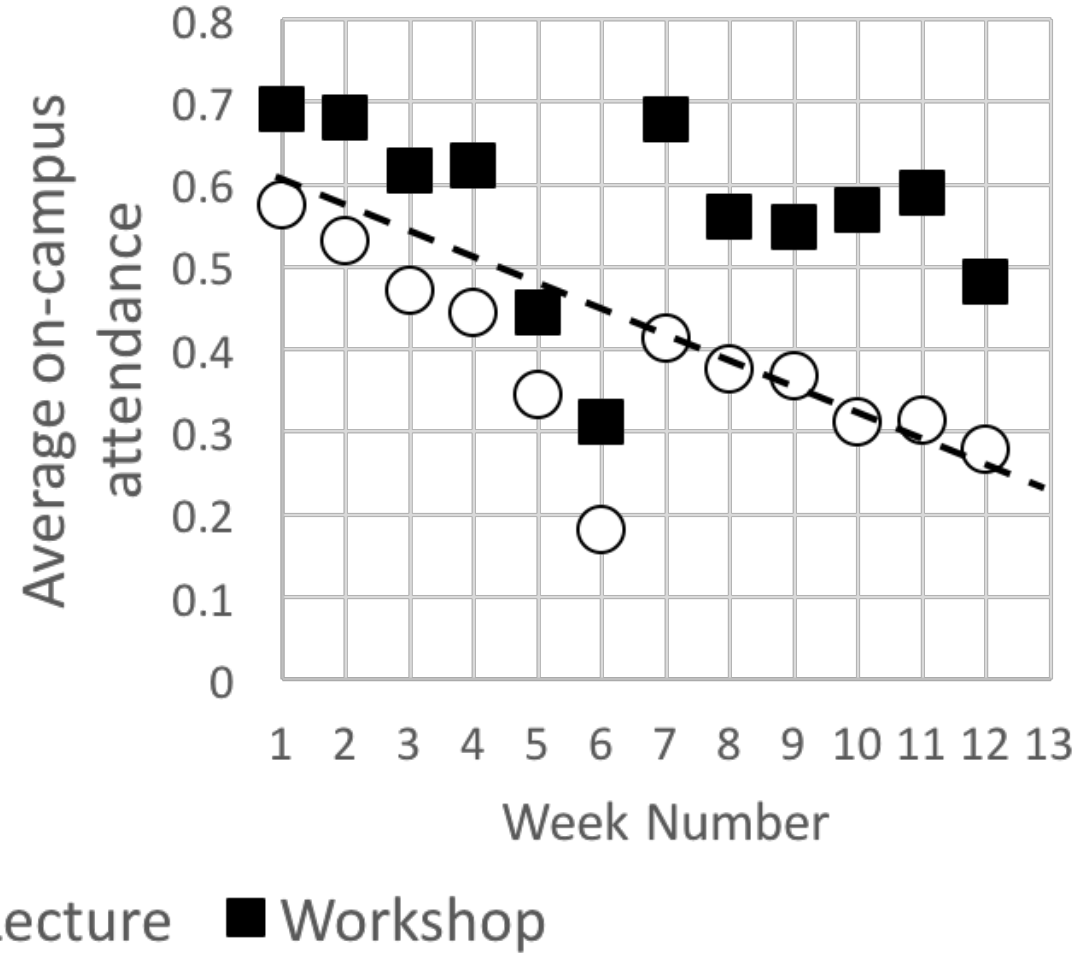
Attendance Rates in Large Teaching Spaces

Engagement with Learning



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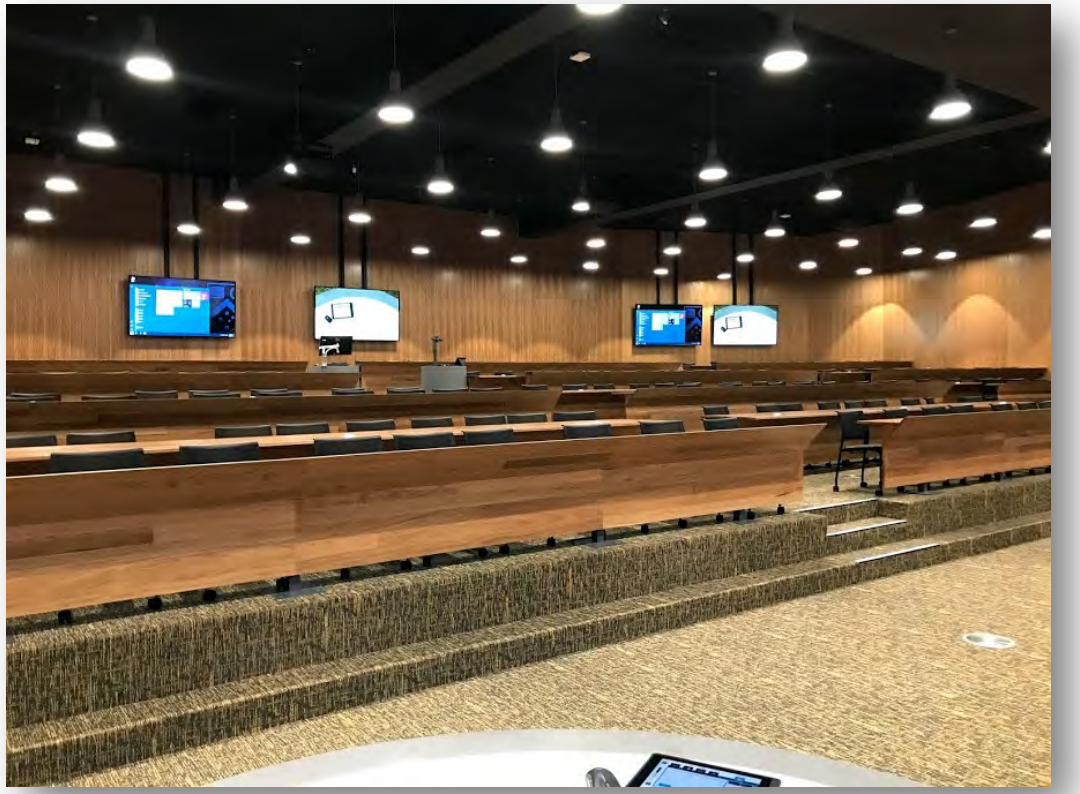

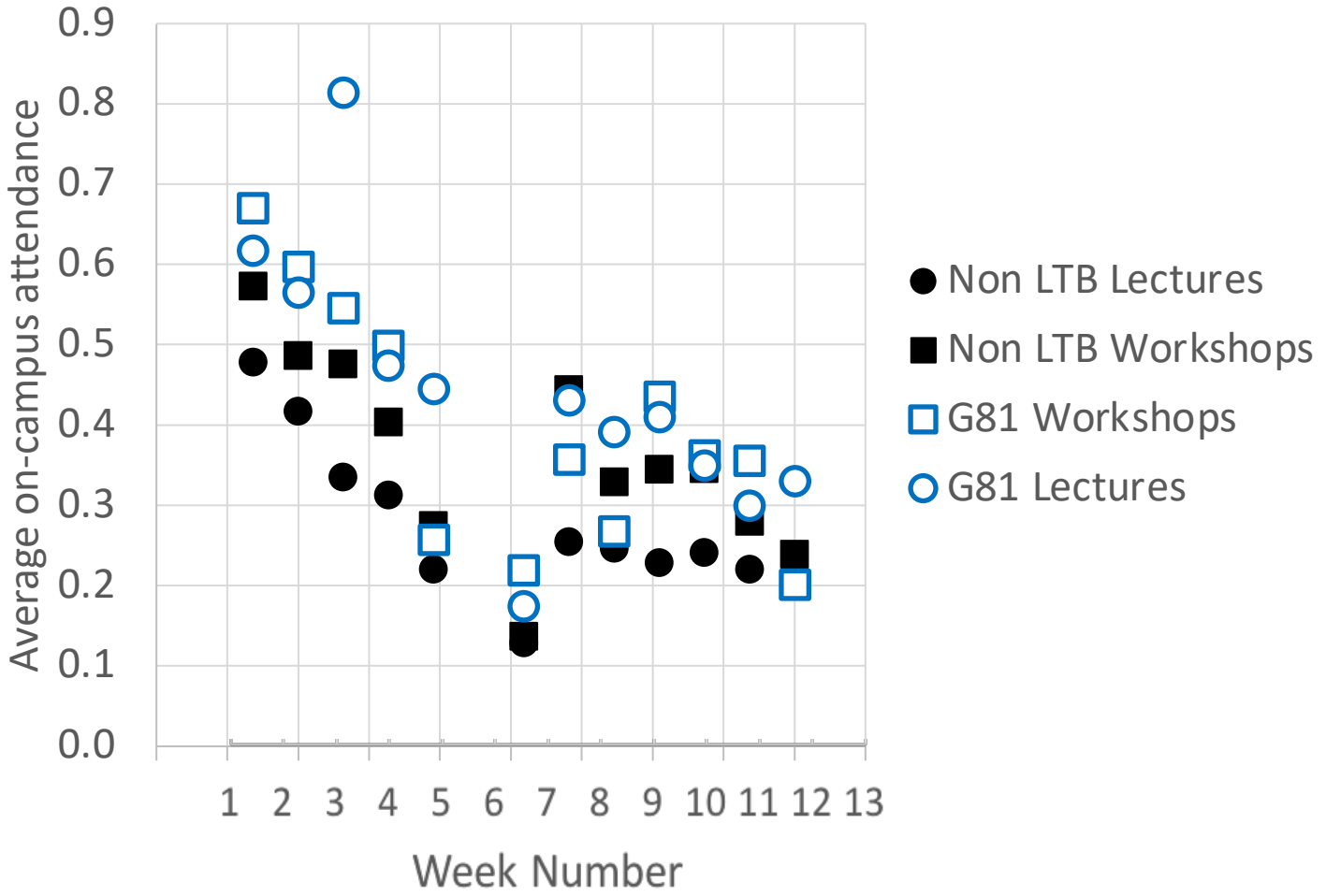

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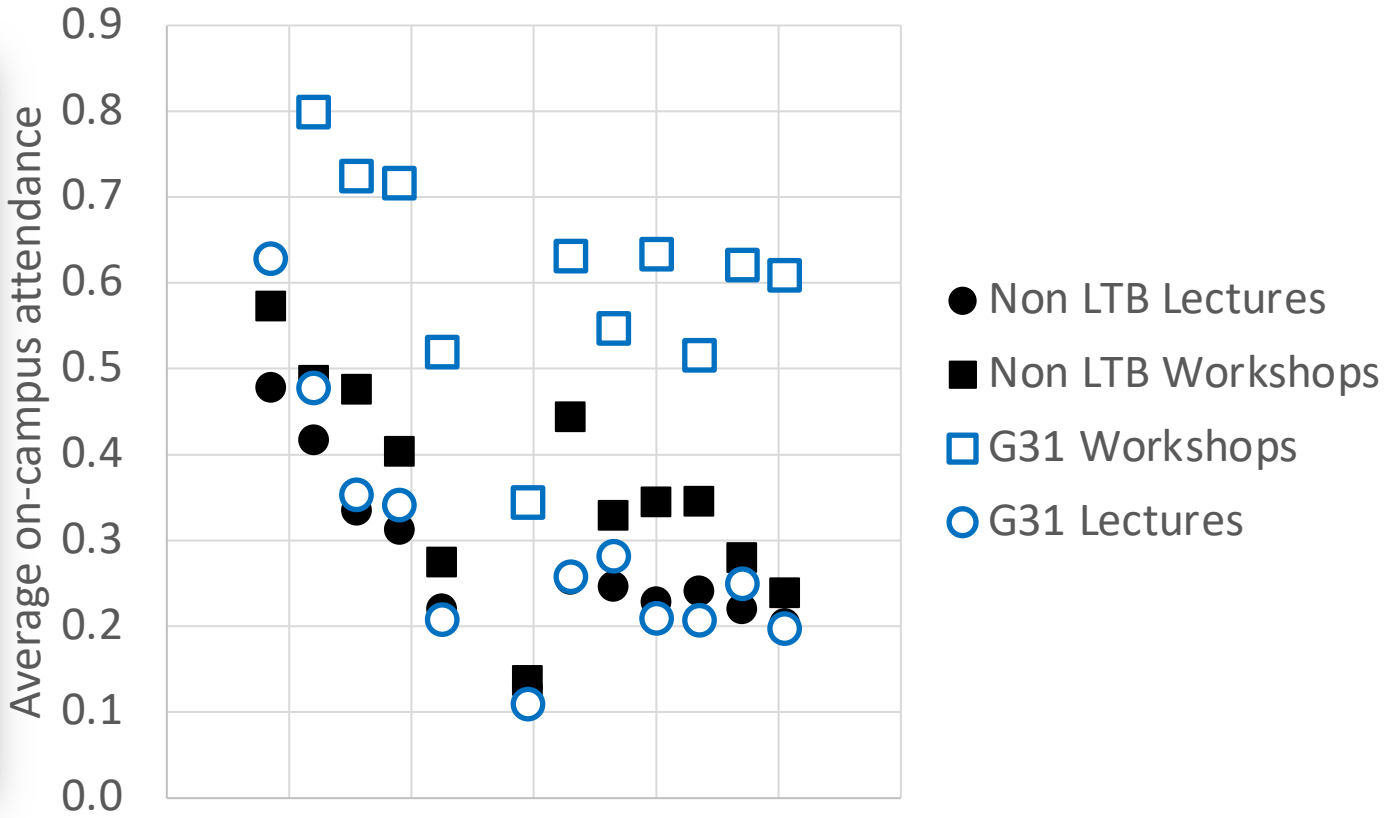

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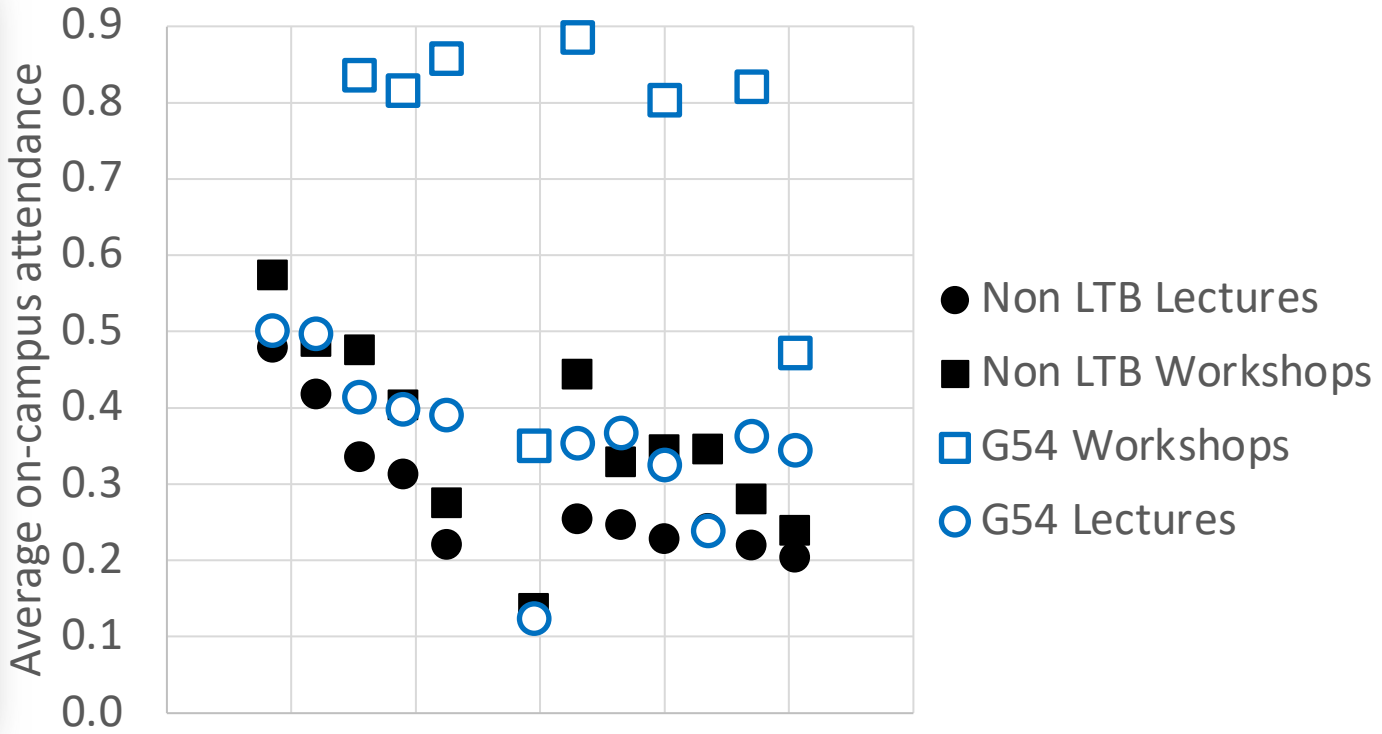

Informal Space Use

Do our students inhabit the space as their own?

Learning & Teaching Building

Campus Centre

Matheson Library

Informal Space Use

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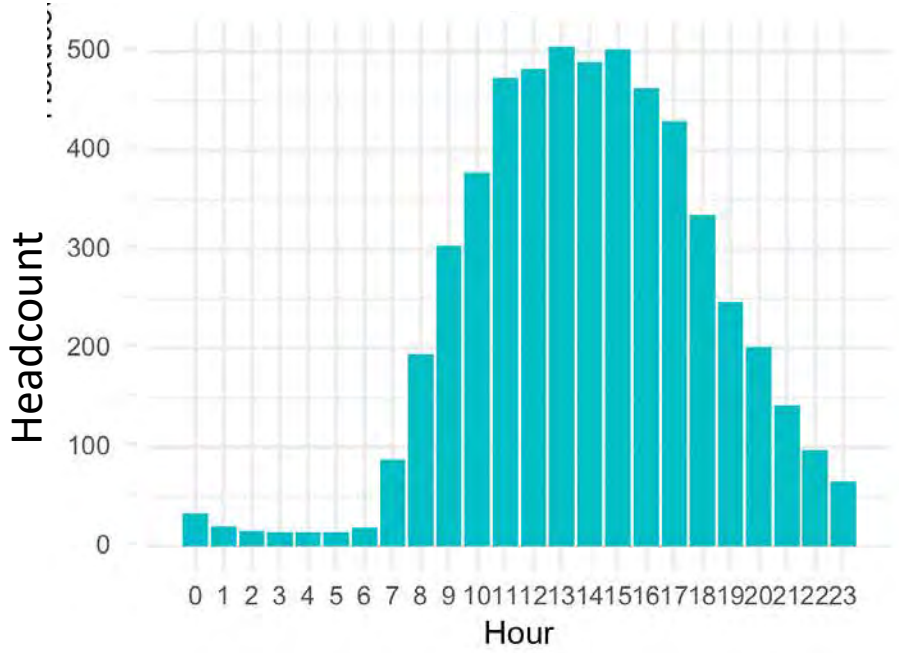
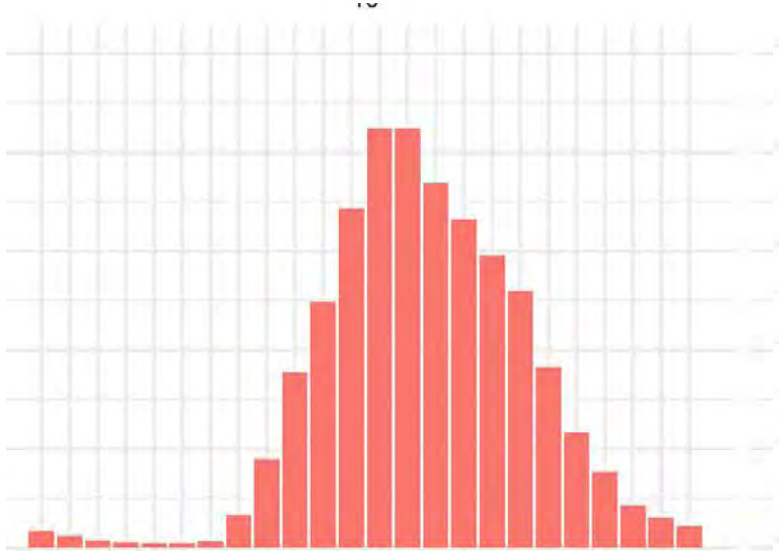
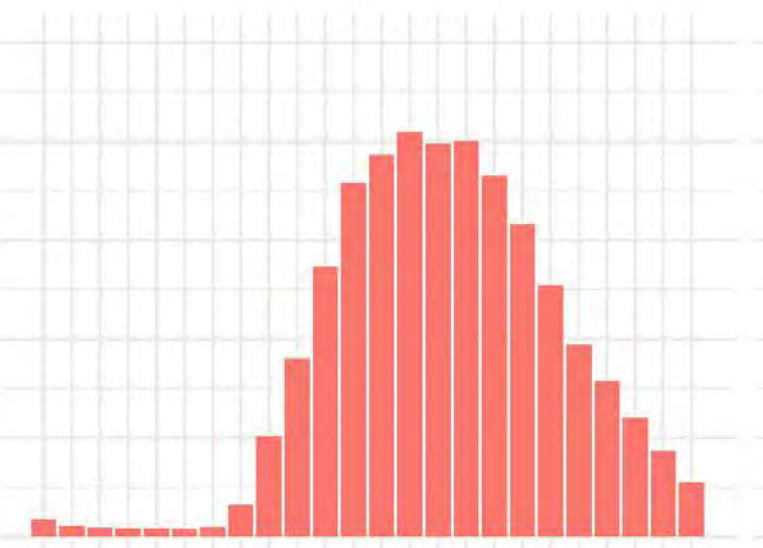


Learning & Teaching Building



Campus Centre



Matheson Library

ACADEMIC SUCCESS

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The impact on student academic success

Purpose of analysis

- Is there an statistically significant “LTB effect”?
- Interrogate individual student marks across the Clayton campus
- Comparing units between 2017 and 2018, those **in the LTB**, against a control group of the units not in the LTB

Controlling for:

- ATAR or WAM (commencing vs returning student)
- Citizenship
- Spoken English in the home environment
- Gender
- Full time/Part time attendance
- SES
- Specific unit selection

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An LTB effect?

Commencing Students

	Overall		HASS		STEM	
	Coeff.	**P**	**Coeff.**	**P**	**Coeff.**	**P**
LTB EFFECT	0.654	0.0025	-0.323	3.2e-7	3.84	7.9e-5
DELTA	0.016		0.325	4.88e-5	-0.246	0.001
Adj R-squared	0.59		0.522		0.63	
Number of obs	140386		69231		69089	
EFTSL	17548.25		8653.875		8636.125	

Major Learning Transformation of large STEM units was part of the transition to LTB

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An LTB effect?

Returning Students

	Overall		HASS		STEM	
	Coeff.	**P**	**Coeff.**	**P**	**Coeff.**	**P**
LTB EFFECT	0.652	0.0003	0.3663	7.1e-8	1.38	0.21
DELTA	-0.098	0.025	0.044	0.52	-0.196	0.0006
Adj R-squared	0.6		0.546		0.64	
Number of obs	237602		107358		126129	
29						
EFTSL	29700.25		13419.75		15766.125	

The LTB effect was the single biggest influence on grades in 2018.

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Staff and Student Feedback

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STUDENT & ACADEMIC VOICE

- How and why is the community use our spaces?
- What interactions are promoted in our spaces?

Research team led by Stephen Maloney

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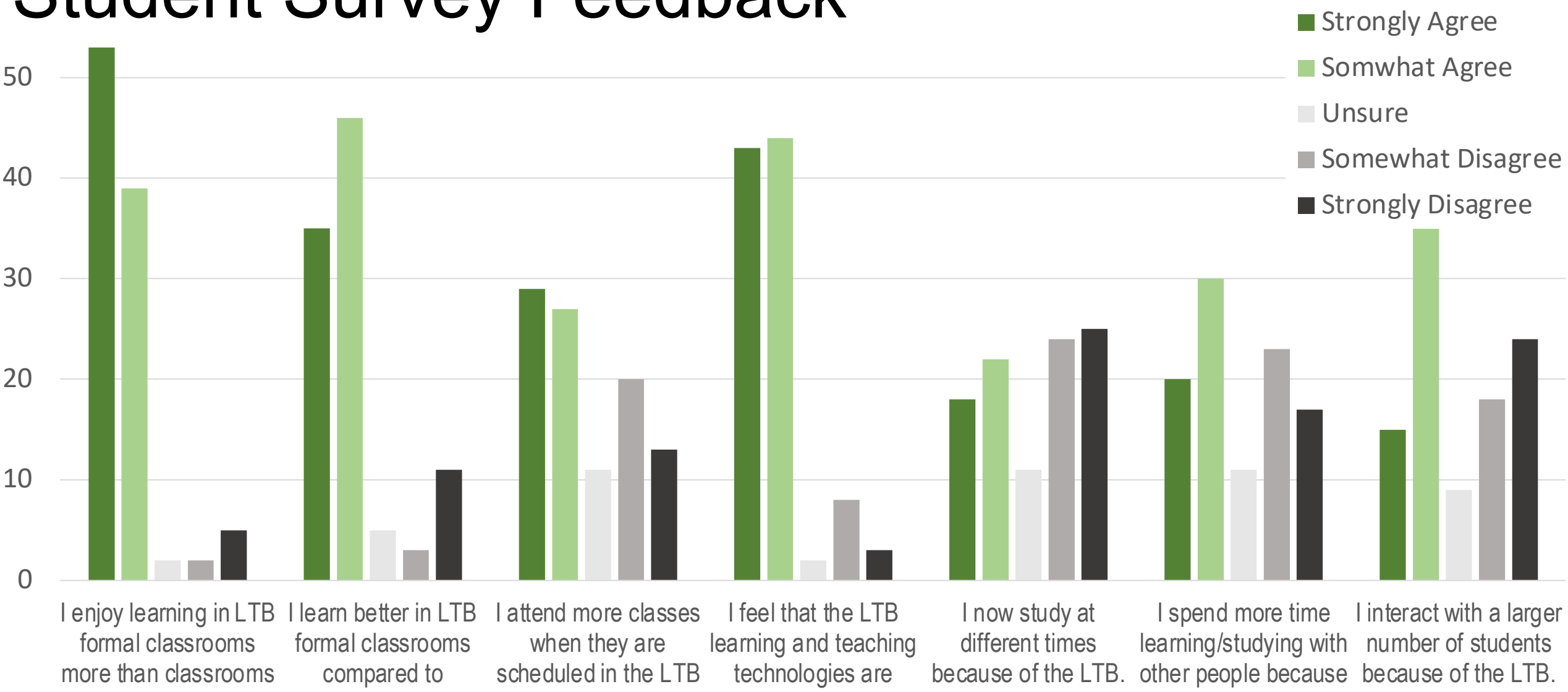
Student Survey Feedback



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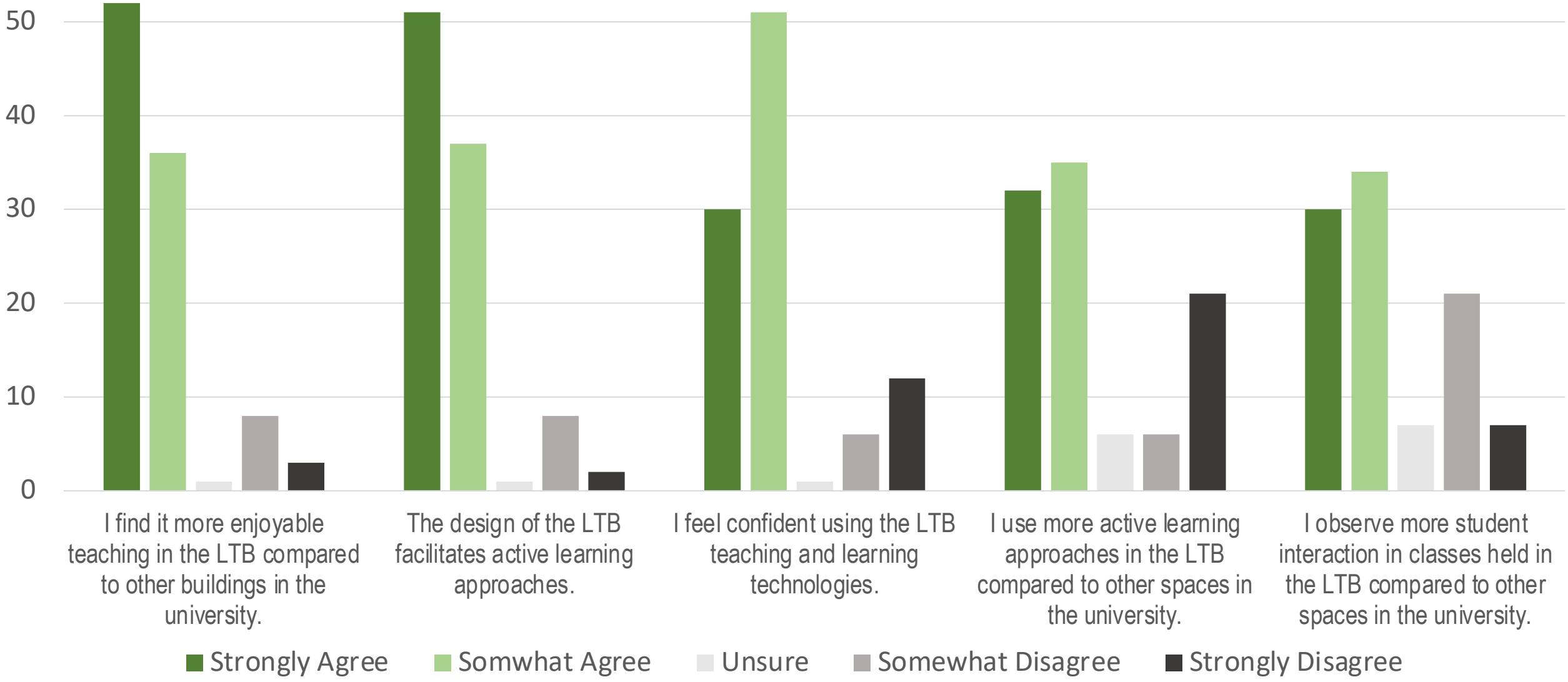
n = 906

Staff Survey Feedback



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n = 173

Contributions to Student Satisfaction

Rank	Attribute	Relative weighting
1	Very engaging teachers	1.00
2	Choice in class scheduling	0.92
3	Extensive teacher industry experience	0.90
4	Active learning style	0.88
5	Teachers with high academic qualifications	0.88
6	Access to informal study/social areas	0.87
7	LTB style classrooms	0.87
8	Full suite of LTB technologies	0.86
9	Strongly engaged student peers	0.79

Student perceived ranking of attributes contributing to overall satisfaction

Students were asked to rate each attribute on a 0-100 scale, based on how valuable said attribute was in contributing to their overall satisfaction, relative to the other attributes.

Collated, this then provides a contribution to overall satisfaction

Note: Very high score for each attribute.

Contributions to Learning Outcomes

Rank	Attribute	Relative weighting
1	Very engaging teachers	1.00
2	Teachers with high academic qualifications	0.76
3	Active learning style	0.72
4	Strongly engaged student peers	0.65
5	Extensive teacher industry experience	0.64
6	Choice in class scheduling	0.64
7	Access to informal study/social areas	0.61
8	Full suite of LTB technologies	0.54
9	LTB style classrooms	0.48

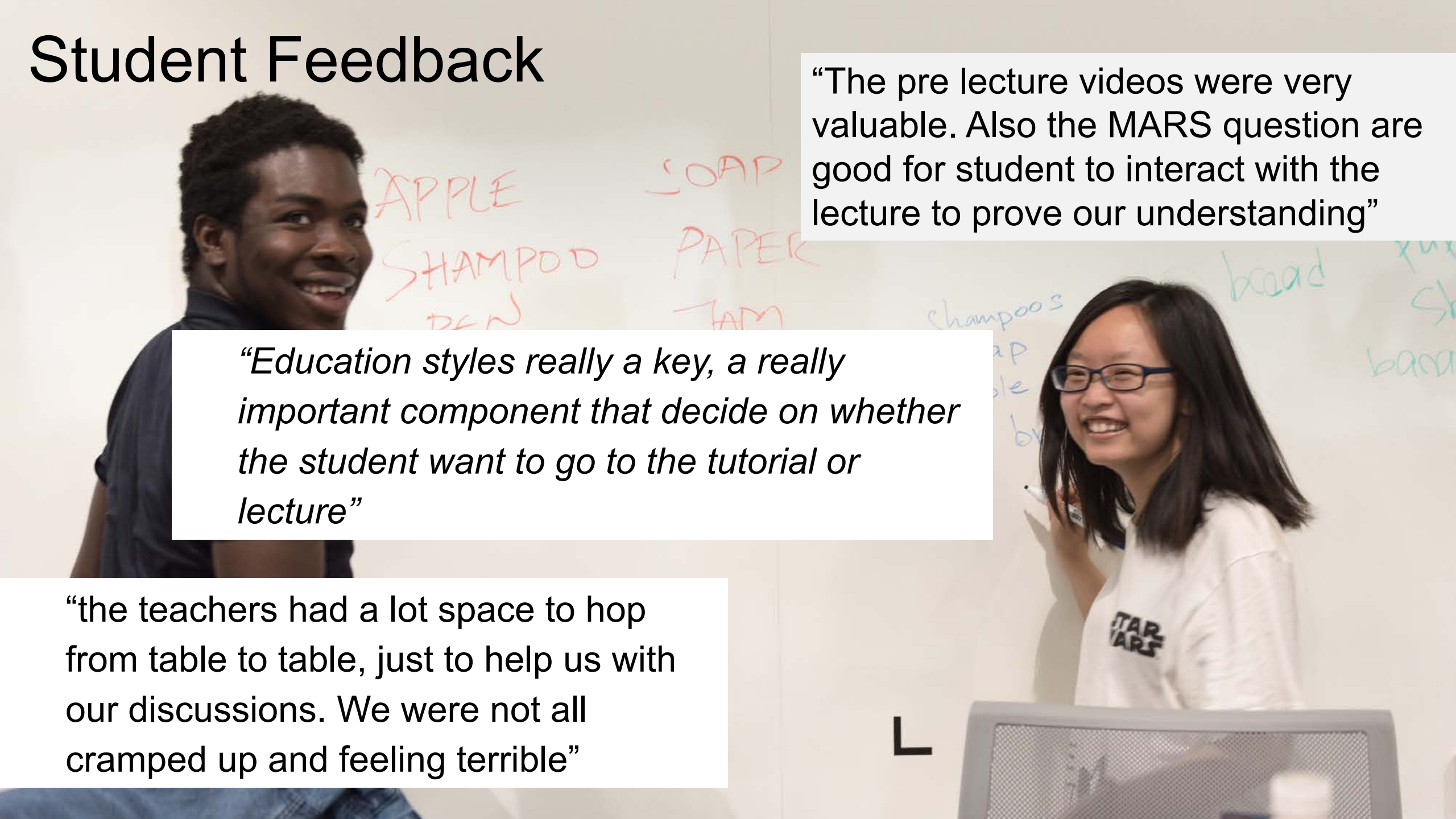
Student perceived ranking of attributes contributing to learning outcomes

Students were presented with two scenarios of a learning attribute

(e.g. for the attribute ‘teaching style’, the options were ‘predominantly active’ versus ‘predominantly passive’, with a short description provided to characterise both options).

Students were asked to indicate the difference in study time they feel would be required to ensure learning outcomes remained the same

Student Feedback

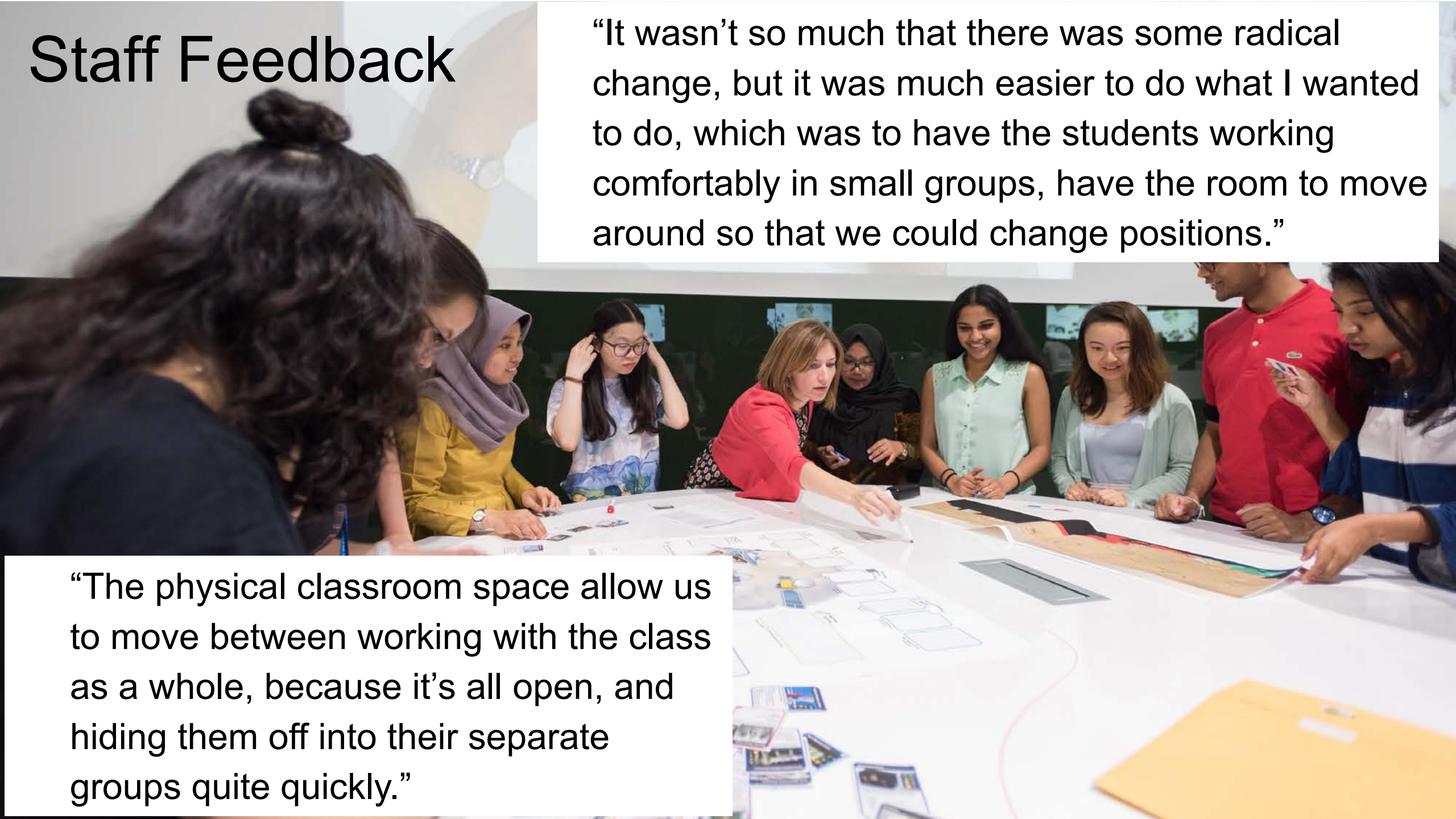


"The pre lecture videos were very valuable. Also the MARS question are good for student to interact with the lecture to prove our understanding"

"Education styles really a key, a really important component that decide on whether the student want to go to the tutorial or lecture"

"the teachers had a lot space to hop from table to table, just to help us with our discussions. We were not all cramped up and feeling terrible"

Staff Feedback



"It wasn't so much that there was some radical change, but it was much easier to do what I wanted to do, which was to have the students working comfortably in small groups, have the room to move around so that we could change positions."

"The physical classroom space allow us to move between working with the class as a whole, because it's all open, and hiding them off into their separate groups quite quickly."

Aligning Policy to Opportunity

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University Activities: Former state

262 activities

Many focused on specialist needs

No agreed definition

No agreed connection to appropriate venues

No agreed connection to appropriate technology

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An Activity Typology

Lecture / Seminar

Lectures provide students with opportunities for structured engagement with an expert in the field.

Often, lectures blend didactic educator tuition with explicit opportunities for student-led critical thinking and responding.

An Activity Typology

Workshop

Workshops focus on active learning approaches typically undertaken with a large cohort subdivided into smaller groups.

Students within each group work towards one or more common academic goal(s).

The engagement is structured, allowing the instructor opportunities to identify, share, and comment upon the work of individual student groups with the cohort.

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Tutorial

Tutorials provide an opportunity for extensive student engagement. Tutorials encompass a broad definition of activities that encompass both interactive and collaborative learning modalities.

Students are expected to contribute to and may lead activities that resolve detailed questions related to the subject material, moderated by the tutor.

An Activity Typology

Applied

Applied sessions provide an opportunity for students to apply their skills in the discipline with the support of a subject matter expert.

Student output from an applied session may be used to formally assess student progress or be employed as a formative assessment opportunity.

An Activity Typology

Laboratories & Studios

Laboratories provide an opportunity for students to relate theoretical knowledge to practice in a research setting[2]. Students attempt problems employing equipment, techniques, analysis and reporting expected within a research setting typical of their discipline.

Studio activities emphasize creative solutions. Studio sessions typically rely on intuition and reflection to encourage deeper learning.

An Activity Typology

Practical

Practical activities are conducted within a simulated discipline environment, typically requiring students to demonstrate their response to a realistic situation they could expect to encounter in practice.

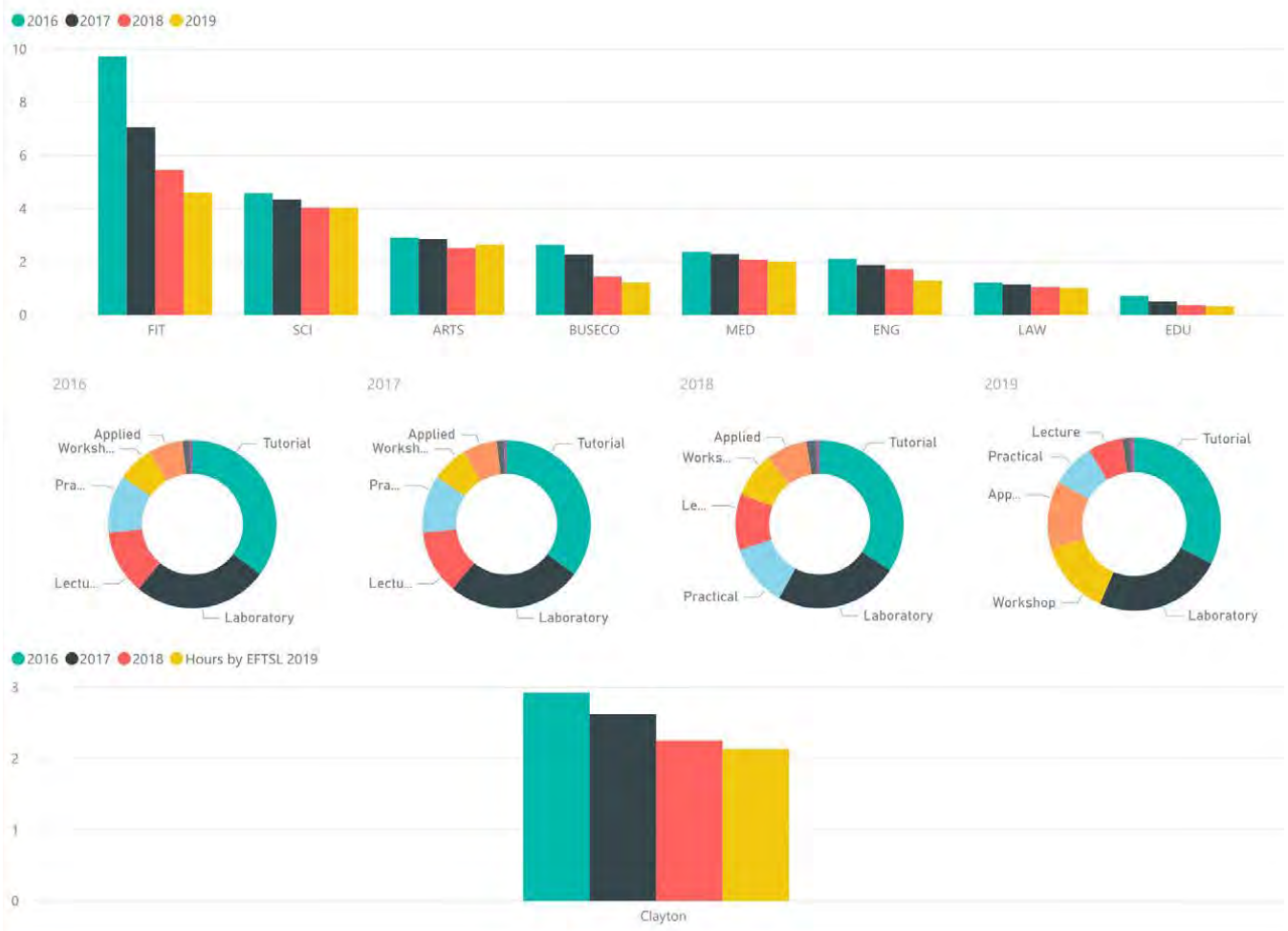
An Activity Typology

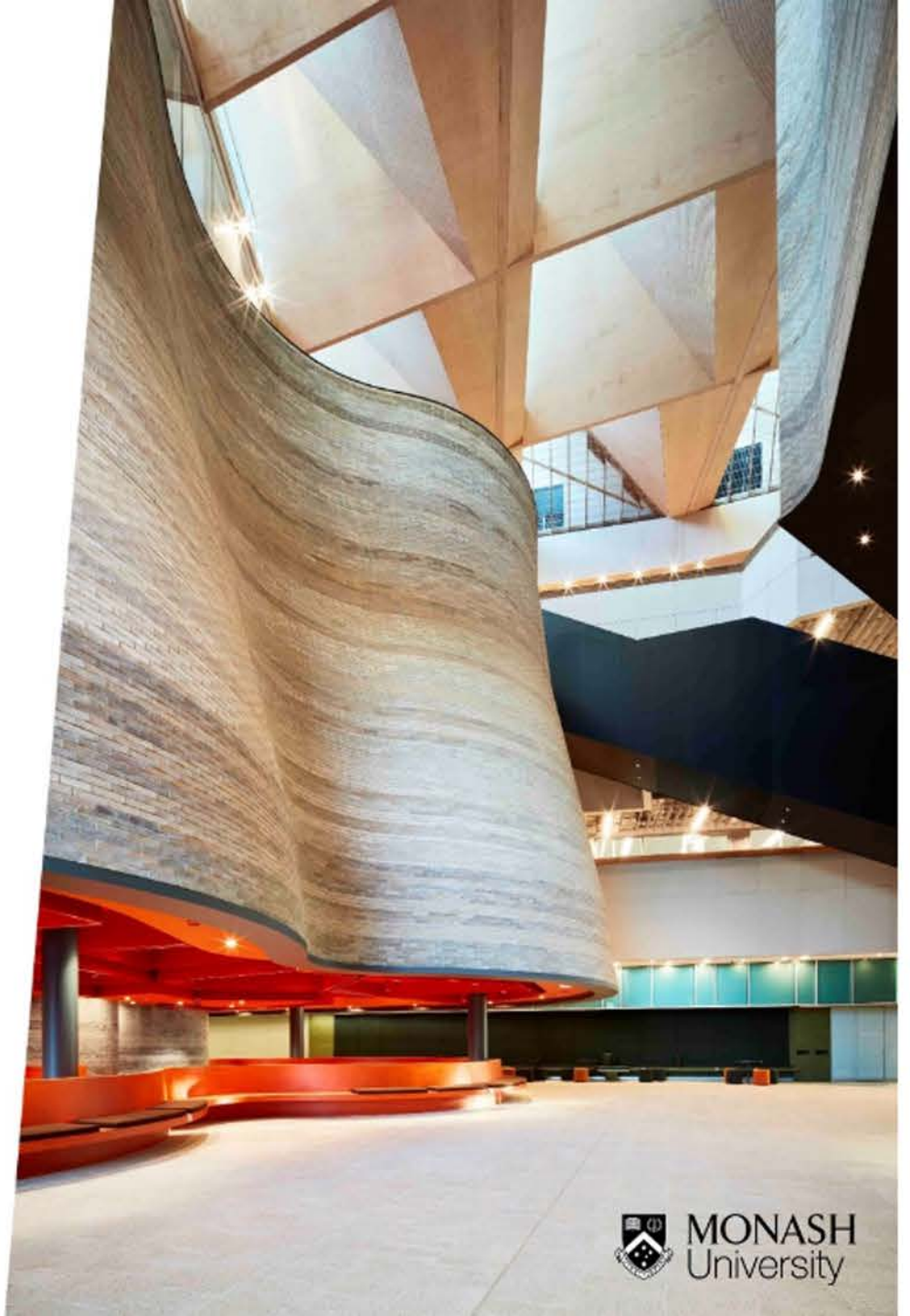
Assessment

Assessments are timed, paper based or e-Assessment activities that are timetabled during semester by the unit education team

Bringing it all together…

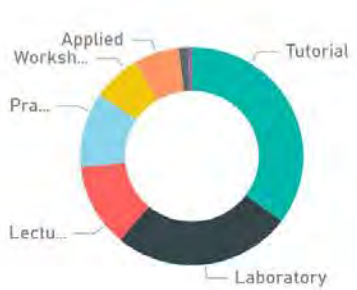
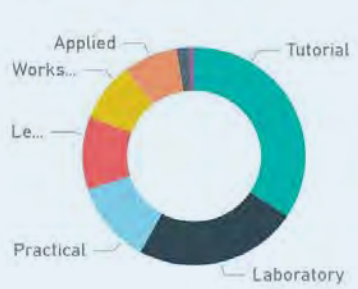
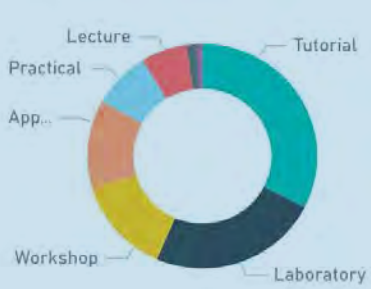
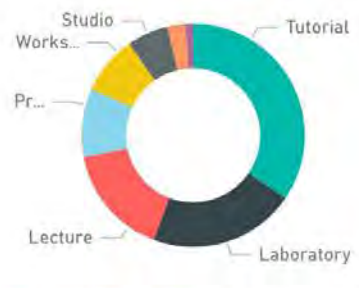
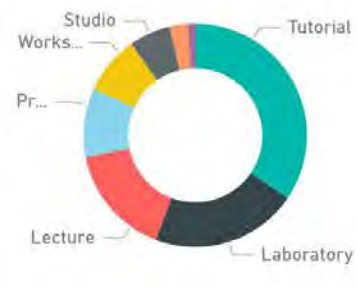
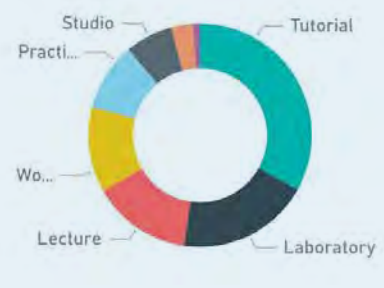
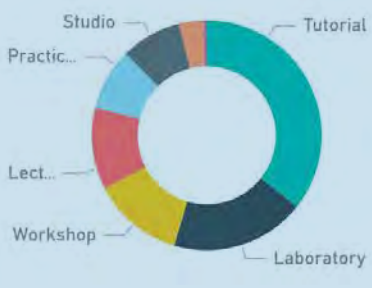
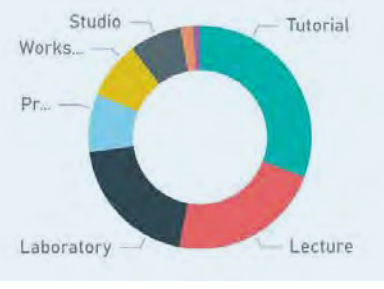
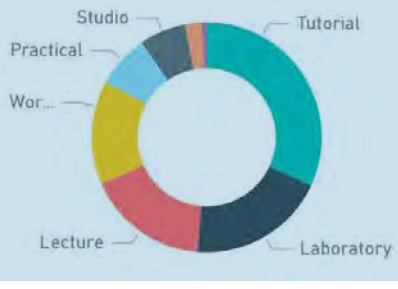
Activity Typology and Learning Spaces





Bringing it all together…

Activity Typology and Learning Spaces

	2016	2017	2018	2019
Level 1 units				
Level 2 units				
Level 3 units				

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