



**VICTORIA  
UNIVERSITY**

**A NEW  
SCHOOL OF  
THOUGHT®**

Aligning pedagogical transformation  
with room booking, timetabling and  
space management systems.



**NEW LEARNING ENVIRONMENTS** Pty Ltd  
RUSION RESEARCH

Why?

# What does the new generation of students look like?

Who are they and how are they going to change the way the University operates?

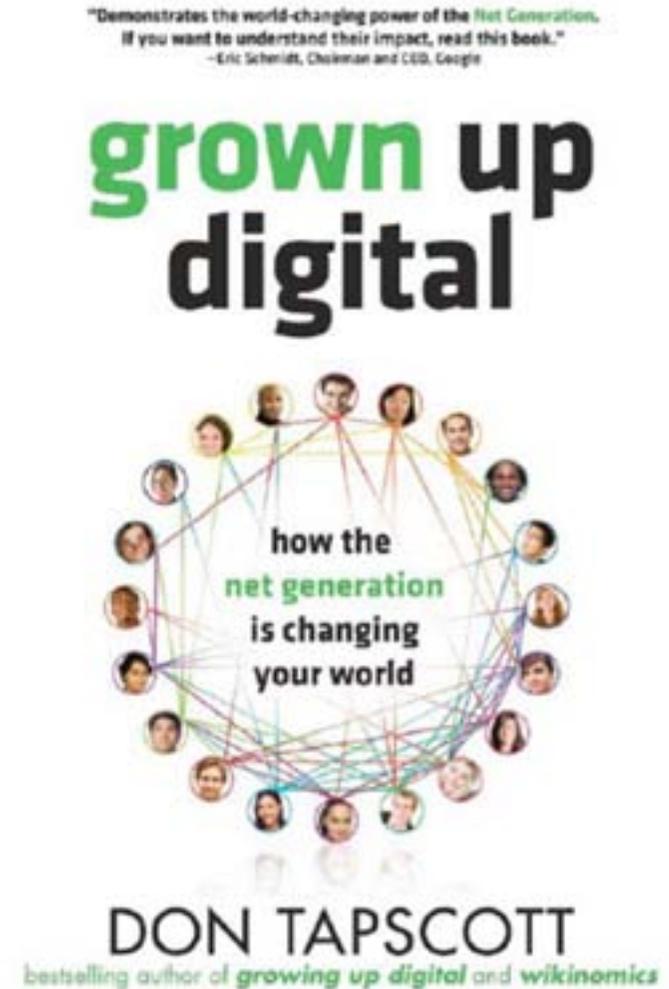
1. What does the next generation of students look like?
2. What are the pedagogies that best suit them?
3. What does this mean spatially?
4. How does technology fit into the equation?
5. How do pedagogy, technology and space work together in an effective learning environment?

# The range of Students

Who are they and what are their expectations?

- School Leavers – Net Gen
- Postgraduate Students - Research
- Adults Returning to study
- Adults First Timers
- International Students
- Indigenous students
- etc

Explores how the Net generation can be the most innovative , collaborative and productive cohort given the proper working and learning environment.



# The Net Gen according to Tapscott

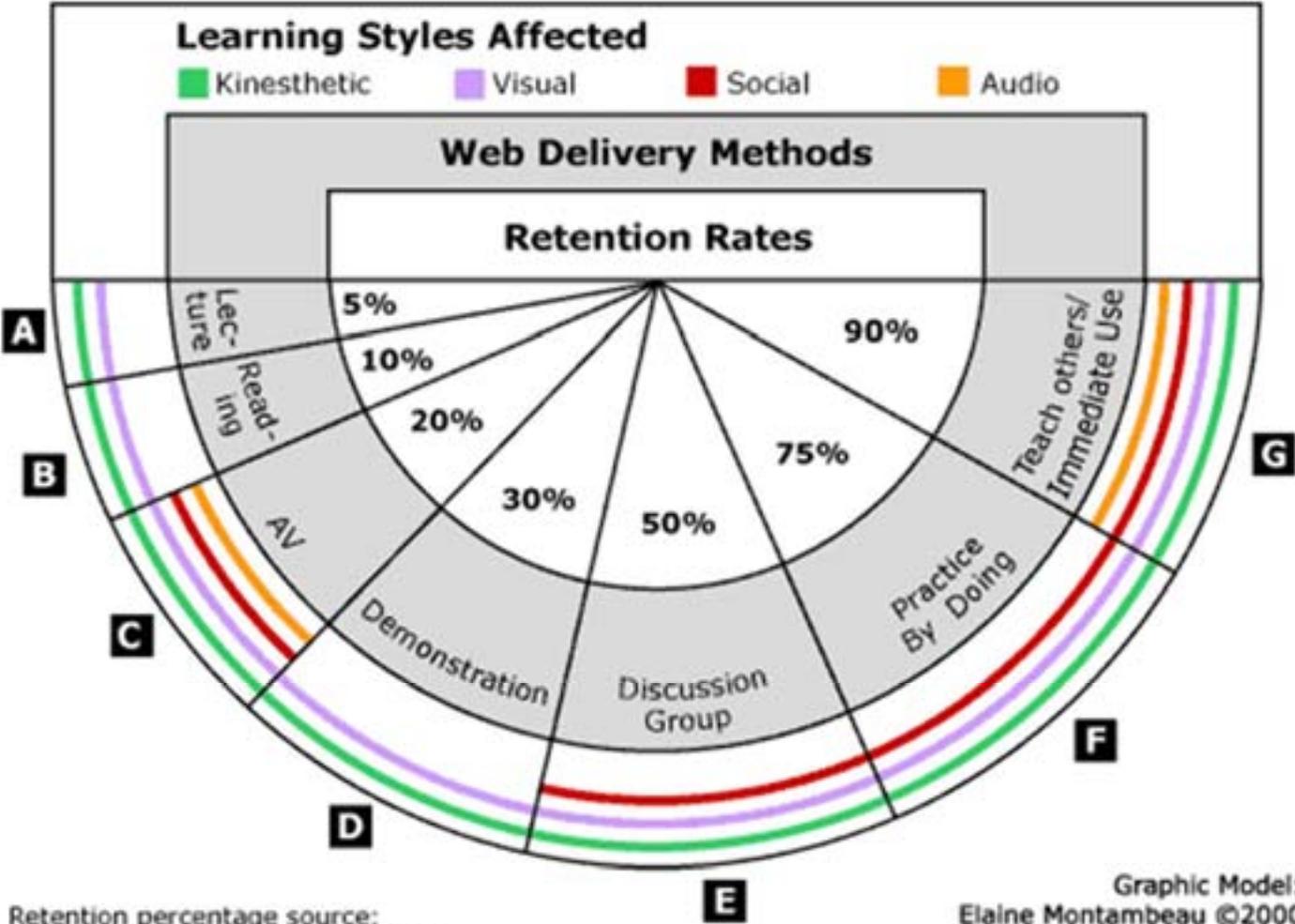
1. **Prize freedom and freedom of choice.**
2. **Want to customise things, make them their own.**
3. **Natural collaborators who enjoy a conversation not a lecture.**
4. They will scrutinise you and your organisation.
5. **The want to have fun even at work or school.**
6. They want Integrity
7. Speed is normal.
8. **Innovation is part of life.**

D. Tapscott (1999). *Growing Up Digital: The Rise of the Net Generation*. McGraw-Hill Companies.



# Learning Retention Rates

Montambeau, 2000



Retention percentage source:  
NTL Institute from Retention Rates  
From Different Ways of Learning.

Graphic Model:  
Elaine Montambeau ©2000  
Support Information:  
Jannette Finch



# Net Gen Learning (constructivist)

1. learning is an **active** process in which the learner uses sensory input and constructs meaning out of it
2. people **learn to learn** as they **learn**
3. the crucial action of constructing meaning is mental  
- it is necessary to provide activities which engage the **mind** in addition to **hands**-on experience
4. learning is a **social** activity
5. learning is **contextual**
6. **motivation** is a necessary component in learning.

# Educating the Net Gen (Educause - Brown, 2005)

Net Gen Trait	Learning Theory Principles	Learning Space Application	IT Application
Group activity oriented	Collaborative, cooperative, supportive	Small-group work spaces	IM chat; virtual whiteboards; screen sharing
Goal and achievement oriented	Metacognition; formative assessment	Access to tutors, consultants, and faculty in the learning space	Online formative quizzes; e-portfolios
Multitaskers	Active	Table space for a variety of tools	Wireless
Experimental; trial-and-error learners	Multiple learning paths	Integrated lab facilities	Applications for analysis and research
Heavily reliant on network access	Multiple learning resources	IT highly integrated into all aspects of learning spaces	IT infrastructure that fully supports learning space functions
Pragmatic and inductive	Encouraging of discovery	Availability of labs, equipment, and access to primary resources	Availability of analysis and presentation applications
Ethnically diverse	Engagement of preconceptions	Accessible facilities	Accessible online resources
Visual	Environmental factors; importance of culture and group aspects of learners	Shared screens (either projector or LCD); availability of printing	Image databases; media editing programs
Interactive	Compelling and challenging material	Workgroup facilitation; access to experts	Variety of resources; no "one size fits all"

# Adult Learning

**‘Andragogy’ - continuing education, professional development & workplace-based training** (Knowles, 1983; 1990)

Adult learners:

- Bring widespread & **relevant experience** to the learning situation
- Need to understand the **relevance** of what they are learning
- Learn most effectively when learning meets an **immediate need**
- Expect to be treated as an **autonomous** individual

Adult learning experience should be:

- Based on the learner’s own **self-analysis of learning needs**
- Allow the learner to draw upon **existing knowledge and skills**
- **Self-directed**
- Active (whenever possible)
- Occur a **suitable & comfortable physical environment**
- Empathetic to the **learner’s identity** – trusting relationship
- Focus on the **resolution of problems**

# The New Production of Knowledge

## Mode 1 [Closed]

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Disciplinary

Homogeneous

Organisationally hierarchical

Tends to preserve its form

Quality control related to discipline

Context based on basic research or academic science



## Mode 2 [Open]

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Trans-disciplinary

Heterogeneous

Organisationally heterarchical

Transient

Quality temporary and heterogeneous practitioners

Context around a particular application

(Gibbons, 1994)  
(Kirkpatrick, 2007)

# Pedagogy & Space – 3 Modes

## Three spatial archetypes:

- Teacher centred [mode 1]
- Student centred [mode 2]
- Informal – ‘thirdspace’ [mode 3]

## Issues:

- How do you measure space utilisation in 3 modalities?
- Do you measure inputs or outputs – what are the performance criteria?
- How do you measure the quality of learning environments?

## Questions:

- What is the right balance of the three
- Where should they be located?

Typical

80%

Mode 1



15%

Mode 2



5%

Mode 3



Which spaces will be  
used?

# The Impact of Learning Technologies on Physical Facilities

Five critical design principles:

1. providing high levels of **accessibility**: entry points, furniture heights, power points, multipurpose facilities with moveable furniture and wireless connection
2. ensuring **sustainability** from a financial sense as well as in terms of staffing requirements and larger environmental aspects- sharing and dual use facilities
3. ensuring the **manageability** of facilities
4. optimising **flexibility to allow for different programs and pedagogy**- able to be reconfigured for different uses
5. being **'future proof'** or allowing for future change.

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Which technologies  
will be used?

Pedagogy

Technology



Space

Academic/  
Teacher Input

Facilities  
Department  
Response

Where



Timetable

Academic/  
Teacher Input

Facilities  
Department  
Response

What  
How  
With what



Where

# Victoria University, Melbourne

A dual sector University servicing the educational and training needs of the west of Melbourne



1. 50,000 current enrolments
2. 11 campuses spread out from the CBD, Footscray, Sunshine, St Albans, Werribee and Melton
3. Centennial celebrations planned for 2016
4. Higher Ed sector with relatively lower ENTER and low completion rate
5. One of the largest VET enrolments in Victoria

# What are Victoria University's current challenges?

The University wanted to question its current space provision – are spaces in Campus reflecting today's realities?

1. Growth
2. Change
3. Reactive Approach
4. Teaching and Learning current stock

# Project Purpose

- VU's load is forecast to **increase** by 32% to 75,000 enrolments by 2016.
- Some additional **capacity** in existing teaching spaces, but critical choke points emerging
- The challenge is to develop **planning tools** that link macro (space projection modelling) and micro (room booking and timetabling) tools to ensure existing resources are used efficiently, and plans appropriately for additional teaching space capacity.
- This requires a process that strengthens the **link between course planning, room booking, timetabling and facilities planning.**

# Pedagogical practices

In order to align 21st Century student needs to the learning, a study of the current and future pedagogical practices in the University was conducted.

1. VU Faculties dominant Pedagogies
2. Net Gen and Associated Pedagogies- Research
3. VU Guidelines on Learning that inform Teaching
4. VU Learning & Teaching Policy
5. Consultation with the Teaching and Learning Committee and Faculties
6. ATLC

## Faculty of Arts, Education and Human Development

SCHOOL	KEY SUBJECTS	RELEVANT T&L INFORMATION	OTHER INFO	SPACES
<p><b>School of Education</b> The School of Education offers students flexible career outcomes, with an emphasis on learning in workplaces and community settings. This is enhanced by our educational partnerships with local schools, community organisations and industry.</p>	<ul style="list-style-type: none"> <li>•education including primary and secondary teaching</li> <li>•early childhood education</li> <li>•outdoor education and physical education</li> <li>•youth studies</li> <li>•literacy</li> <li>•multimedia</li> <li>•Teaching English to Speakers of Other Languages (TESOL)</li> <li>•computer-mediated art</li> </ul>	<ul style="list-style-type: none"> <li>•workplace learning environments- schools and industry</li> <li>•Learners and their needs are the central focus of the practices of the School of Education.</li> <li>•Importance of diversity and creativity in culture and life.</li> <li>•Importance of collaborative action.</li> <li>•Learning partnerships in a wide range of community settings drive our learning and teaching programs, and research and development initiatives.</li> </ul>	<p>These values stimulate inquiry, strengthen learning and support inclusive and democratic practices.</p>	<ul style="list-style-type: none"> <li>-Links to the outdoors</li> <li>-Diversity of settings to accommodate diversity learning styles and a variety of cultures</li> <li>-Discussion spaces to debrief community placements</li> </ul>

# Engaging students in learning

## Guideline 1

**Effective learning is supported when students are actively engaged in the learning process at every stage**

### Objectives

- Learning occurs by doing
- ‘Real’ content
- Practical rather than theoretical
- Learner centred

Inspiration	Examples	Key Pedagogies
<p><i>"Learning is not a spectator sport. Students do not learn much just by sitting in classes listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves."</i></p> <p>Chickering, A. &amp; Gamson, Z. 1987, "Seven principles for good practice in undergraduate education", AAHE Bulletin, vol. 39, no. 7, <a href="http://www.csuhayward.edu/wasc/pdfs/End Note.pdf">http://www.csuhayward.edu/wasc/pdfs/End Note.pdf</a></p> <p><i>"In those experiments involving measures of retention of information after the end of a course, measures of problem solving, thinking, attitude change, or motivation for further learning, the results tend to show differences favoring discussion methods over lecture."</i></p> <p>McKeachie, W.J., Pintrich, P.R., Lin, Y.G., &amp; Smith, D.A. (1987). Teaching and learning in the college classroom: A review of the literature. Ann Arbor: National Center for Research to Improve Postsecondary Teaching and Learning, The University of Michigan.</p> <p><i>"One must learn by doing the thing, for though you think you know it-- you have no certainty until you try."</i></p> <p>Sophocles, 5th c. B.C.</p> <p><i>"Tell me, and I forget. Teach me, and I may remember. Involve me, and I learn."</i></p> <p>Benjamin Franklin</p>	<ul style="list-style-type: none"> <li>• Roleplaying (The use of role-play and/or games in higher education is an area that, with the ubiquity of computing technology these days, is an area of experiential Learning)</li> <li>• Case studies</li> <li>• Discussions of aspects of the discipline as they are played out in the workplace</li> <li>• Think Pair Share</li> <li>• Compact electronic wireless audience response systems</li> <li>• Virtual learning environments (VLEs) such as WebCT or Blackboard</li> <li>• JiTT - <b>Just in Time Teaching?</b> - enhancing and extending classroom instruction via the Web using an interactive classroom environment that emphasizes active learning and cooperative problem solving and decreases the use of traditional lecture. JiTT is driven primarily by student feedback &amp; response.</li> </ul>	<p><b>Authentic Learning</b></p> <p><b>Problem-based Learning</b></p> <p><b>Collaborative Learning</b></p> <p><b>E- Learning</b></p>

SOURCE: [http://tls.vu.edu.au/learning\\_and\\_teaching/guidelines/menu.html](http://tls.vu.edu.au/learning_and_teaching/guidelines/menu.html)

# VU Learning & Teaching Policy - example

Underpinning Principles	Pedagogical Implications
<p><b>1. a focus on learning</b></p> <p>The purpose of teaching is to enable learning. A central focus of the University is therefore the provision of environments that promote high quality learning.</p>	<p><b>Student -centred Learning</b></p> <p>Space creation is driven by teaching and learning objectives rather than conventional spatial norms. Trends in teaching and learning, ICTs and skill demand will be supported by space.</p>
<p><b>2. going beyond information and skills</b></p> <p>The University will enhance the ability of its students to think critically, to apply their skills and knowledge, to behave ethically and to make informed decisions both as professionals and citizens.</p>	<p><b>Authentic Learning</b></p> <p>Students are provided with opportunities to <i>apply</i> their learning in simulated and authentic settings - e.g. simulation laboratories, virtual learning support &amp; industry standard environments/equipment.</p>

Etc...

# AUSTRALIAN LEARNING & TEACHING COUNCIL



Promoting excellence in higher education

# Summary of Pedagogies & Underpinning Principles

Pedagogy 'Main Idea'	Pedagogy(ies)*	Spatial Implications
<b>VU General Learning and Teaching Focus</b>	<b>Student-Centred Learning</b>  <b>Inclusive Learning</b>	<ul style="list-style-type: none"> <li>• Provision of a wide range of learning settings to accommodate different learning needs</li> <li>• Informal learning opportunities</li> <li>• Easy connectivity to the Internet and access to computers.</li> <li>• Embracing opportunities to acknowledge and celebrate Indigenous and world cultures.</li> </ul>

Pedagogy 'Main Idea'	Pedagogy(ies)*	Spatial Implications
<p><b>Teacher Led or Didactic</b></p>	<p><b>Lectures – (including interactive)</b></p> <p><b>Explicit Teaching</b></p> <p><b>E-learning</b></p> <p><b>Blended learning</b></p>	<ul style="list-style-type: none"> <li>• Additional active modes may be introduced to lecture-style delivery if flat floor space is provided in addition to, or as a replacement for, tiered seating, for example.</li> <li>• IT-enabled, provision for hand-held devices</li> <li>• Flexible spaces to provide multiple delivery modes</li> <li>• IT-rich learning environments</li> <li>• Static and audiovisual displays</li> <li>• Recording equipment and space</li> </ul>

Pedagogy 'Main Idea'	Pedagogy(ies)*	Spatial Implications
<p><b>Experiential / Creative / Authentic Learning</b></p>	<p><b>Experiential learning</b></p> <p><b>Community-based Learning</b></p> <p><b>Work Placements</b></p> <p><b>Flexible learning: including Blended Learning and E-learning</b></p>	<ul style="list-style-type: none"> <li>• May be external, community-based learning environments</li> <li>• Increased community presence on and interaction with the campus</li> <li>• Simulated settings including flexible settings equipped for high-spec simulation technologies.</li> <li>• Corporate standard professional environments for increased interaction with industry and the creation of 'learning workplaces'.</li> <li>• Flexible, self-directed environments that support the use of personal ICT devices and provide casual ICT access</li> <li>• Highly accessible studios/laboratories/workshops and other specialist facilities.</li> </ul>

Pedagogy Theory or 'Main Idea'	Pedagogy*	Spatial Implications
<p><b>Collaborative</b></p>	<p><b>Collaborative Group work</b>  <b>Cooperative Learning</b>  <b>Problem-based learning</b>  <b>Inquiry-Based Learning</b>  <b>Studio-Based Learning</b>  <b>Independent Learning</b>  <b>Interteaching</b>  <b>E-learning</b>  <b>Blended learning</b>  <b>Flexible learning</b>  <b>Peer to Peer Learning</b></p>	<ul style="list-style-type: none"> <li>• Static and audiovisual displays</li> <li>• IT-enabled and IT-rich</li> <li>• Moveable /modular furniture to support pair- or small group-work up to 8 students.</li> <li>• Screening</li> <li>• Storage</li> <li>• Acoustic control for multiple discussion groups occurring simultaneously</li> <li>• Flexible space to enable various group dynamics</li> <li>• Flexible spaces to provide multiple delivery modes</li> <li>• Changeable walls</li> <li>• Static and audiovisual displays</li> <li>• Recording equipment and space</li> <li>• Significant links to resources/authentic learning spaces</li> </ul>

# Aligning Pedagogy and Space

The University wants to establish a greater alignment between pedagogy and space as well as provide accurate information to the capital plan to guide refurbishment and development of new learning spaces.

1. **Rename the rooms to match pedagogical practice to ensure they are fit-for-purpose**
2. **Link to Aperture**
3. **Offer a greater diversity of teaching spaces across the Campuses**
4. **Room booking tool**
5. **Link to Capital Plan**

# Extract from the **trial** commented Aperture

DESCRIPTION: EXISTING SPACE TYPE NAME	NEW SPACE TYPE NAME (PRIMARY PEDAGOGIC MODES*) *Based on current status of the space	NEW SPACE TYPE NAME (PRIMARY PEDAGOGIC MODES*) *Many of the spaces require refurbishment to function effectively as 21st C learning spaces
<b>Tutorial</b>	<b>Didactic</b>	<b>Collaborative+Didactic</b>

COMMENTS ON VIABILITY OF CURRENT SPACE	RECOMMENDATIONS
Long, narrow room suitable for smaller group sizes only. Glazed walls to hallway effective for connections in and out.	Multiple screens, IT / AV equipment required to support combination of instruction and collaboration. Rearrangement/renewal of furniture to support collaboration necessary.

# Room booking and timetabling - tool

- Room allocation and timetabling will be lead by an **educational driver**, followed by other constraints
- The following mock up tool shows some of the **possible variables** in the booking system.
- Currently the thinking is that such a tool will exist **independently from the booking system, as a part of the course planning process.**
- The request will be sent to the **central timetabling team**, who will then be able to **allocate the room as well as identify gaps** on availability.

# Room booking and timetabling – extract from the tool

<b>PEDAGOGY</b>	<b>ADDITIONAL PEDAGOGIES</b>	<b>SPACE TYPE</b>	<b>CAMPUS</b>	<b>CLASS SIZE</b>	<b>INTENDED GROUP SIZE FOR WORK</b>
Authentic+Collaborative	Collaborative group work	Authentic	St. Albans	Med (5-15)	Small groups (2-5)
<b>ACOUSTICS</b>	<b>VISUAL SEPARATION</b>	<b>ICT</b>	<b>A/V</b>		
Will have a moderate level of noise	Can be open	Laptops with internet connection	Data projector & screen		
<b>EQUIPMENT</b>	<b>FURNITURE</b>	<b>SUPPLEMENTARY SPACES</b>			
Required - permanent equipment	No need for furniture as such	Connection to outdoors			

tool

# Link to the Room Booking system

A final aim of the project is the development of a booking mechanism that is simple for academics to understand and is one which will support **a transformational approach** to teaching and learning at VU.

- Using **pedagogical delivery as driver** will enable the room booking and timetabling systems to better match intended delivery with a specific room
- By offering **alternative, better suited spaces** that might not have been known before to the Academic
- The **gap** between requested pedagogic delivery mode and room type will **inform future capital planning**.

# EXAMPLE Space Type Case Study: Collaborative + Didactic

Collaborative - didactic learning spaces provide settings that support working and problem-solving in cooperation with others while also facilitating the presentation of information about a subject to an audience. Collaborative-didactic spaces support student participation, interaction and collaboration into learning that would otherwise be a passive didactic experience

**Pedagogies Supported:** Explicit teaching and lectures in addition to student-centred learning, including collaborative / cooperative pedagogies, blended learning, studio-based learning, e-learning, independent learning

**Sample learning experience:** Interactive presentations

VU: Room G24



Wide aisles support collaborative learning opportunities: space for tables or chairs to be arranged

Interactive student response systems may be utilised in lectures to increase student interaction

VU: Room B31



Screening can define spaces

Flat floor space provides for flexibility of use compared to tiered seating

Portable furniture facilitates easy rearrangement of settings

Subtle shifts in seating layouts can alter traditional spaces to create a sense of collaboration

MIT: TEAL Lab



Round tables encourage collaborative learning

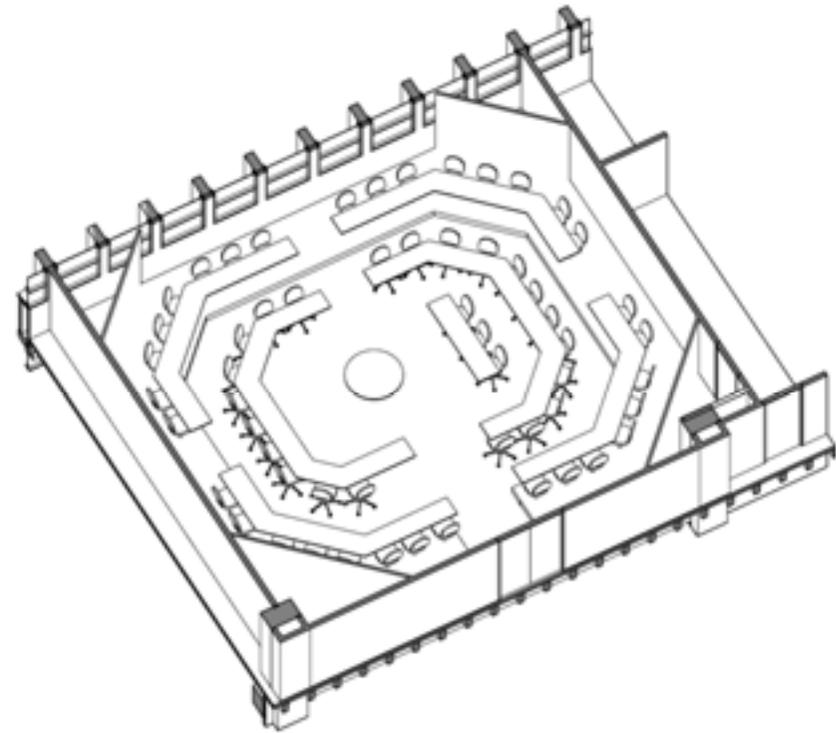
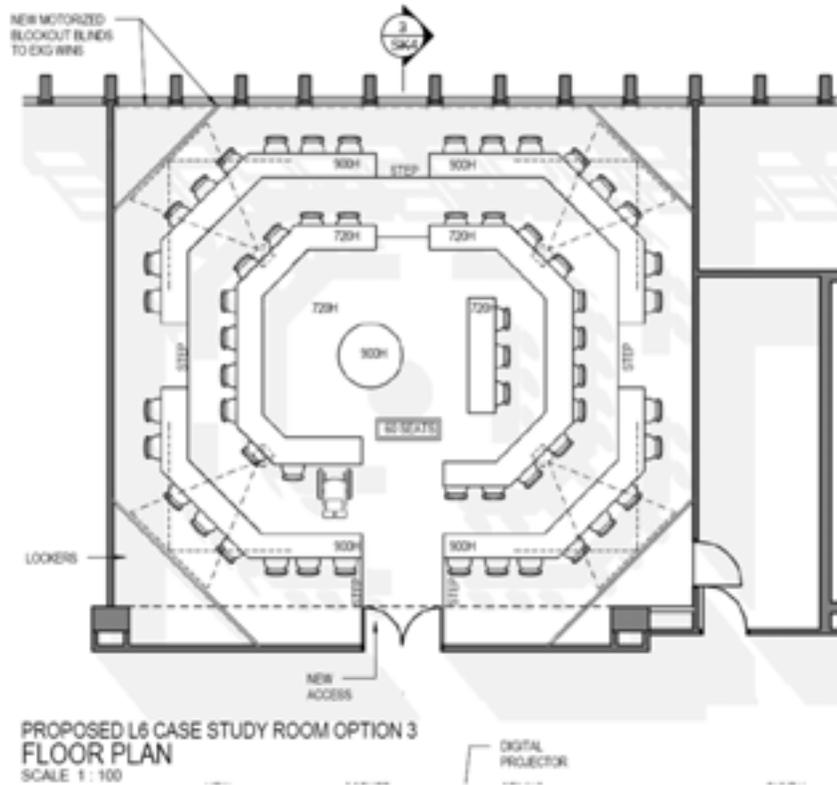
Mobile IT/audiovisual units allow for didactic presentation to be accessible in collaborative settings

# What is already happening in Victoria University?

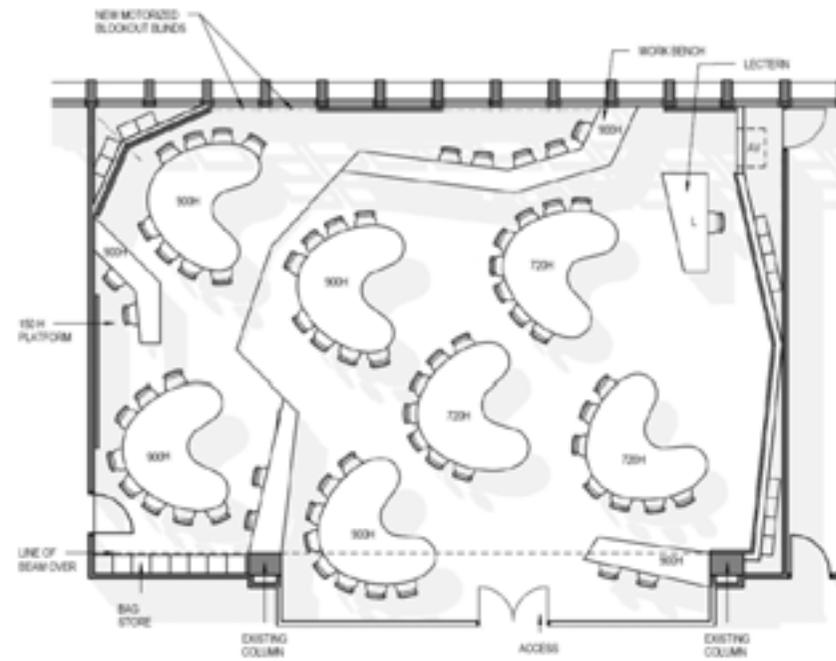
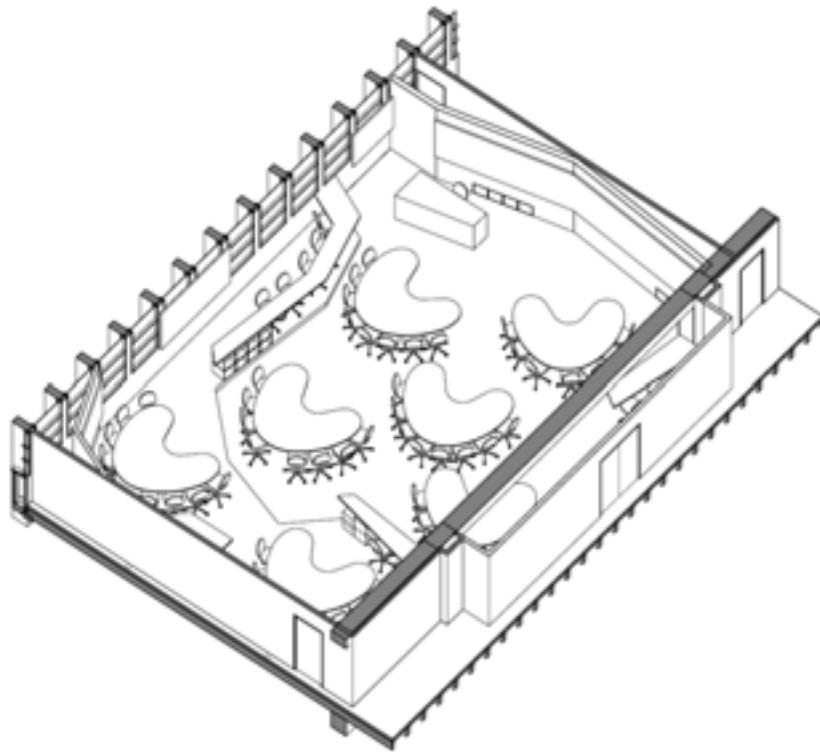
A series of spaces have been developed to support some of the key pedagogies for which there was an already identified demand.

1. **Innovative Case Study Room**
2. **Collaborative & Didactic Space**

# New Spaces in VU



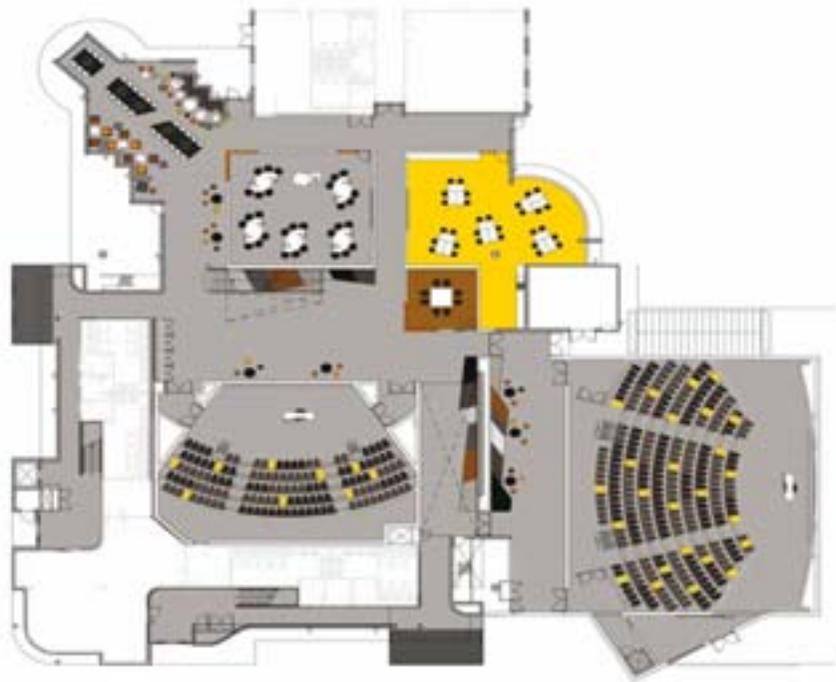
# New Spaces in VU



PROPOSED L5 COLLABORATIVE LEARNING SPACE  
FLOOR PLAN  
SCALE 1 : 100

# Lessons Learnt and issues to consider

The project is a work in progress and obstacles arise....



1. **Need for Professional Development**
2. **Need for Strong alignment between Teaching and Learning Committees and the Facilities Department**
3. **Partnership between Educators and Facilities Department**
4. **Need for a feedback loop of information**

# Thank you

**Terry Roche (Victoria University)**  
**Ana Sala-Oviedo (New Learning Environments :  
Rubida Research)**