SECTION 35

SPECIAL REQUIREMENTS FOR TEACHING SPACES

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35.0 SPECIAL REQUIREMENTS FOR TEACHING SPACES

35.1 Introduction

All Teaching and Learning space shall be designed to comply with the current version of the BCA/NCC and any applicable Australian Standards and Codes. No requirement in this document shall supersede the above.

This section provides guidance and minimum requirements for the effective design of teaching and learning spaces for JCU. More advanced design responses that demonstrate improved learning outcomes and those that better achieve academic objectives shall be considered by JCU ESTATE OFFICE during the design phases of any teaching and learning space development.

All space centrally controlled. Liaise with Teaching and Learning Spaces Committee and IT&R to confirm requirements. Some faculties may require specialist equipment; appropriate storage, servicing and security controls must be considered.

As modes of teaching delivery change new considerations should be brought to the design and planning of teaching spaces. These factors include:

- use of electronic teaching aids
- increasing use of laptop computers and other portable devices in class
- the need to provide for both old and new methods of delivery
- simplicity in use of equipment + consistency across campus
- the increasing importance of group work
- the introduction of wireless computing
- the need to cater for students and staff with disabilities
- storage of teaching equipment, devices and artefacts

35.2 Design Theory: Planning For Effective Teaching and Learning

James Cook University Value Statements

The student's ability to learn is affected by a multiplicity of experiences that extend beyond the classroom. It is therefore important to examine these impacts and explore strategies to improve student outcomes reflected in reduced attrition and authentic learning practices. In order to create a framework to examine the campus, value statements have been developed to reflect on three key areas. These were developed in conjunction with JCU staff and students.

Place, Learning & Research, & Community. These principles outline the priorities of the project and expected outcomes of the physical campus. At each key stage of the Campus design process, the scope and design should be tested against these objectives to ensure compliance. Elements of the design that do not contribute to the objectives listed need to re-evaluated.

Place

JCU's tropical agenda will be defined through tropical architecture and landscape, where tropical architecture is not only a direct response to climate, but also the way life is culturally executed.

- Ensure a tropical narrative that embraces and responds to the distinctiveness of the region
- Light, shade, humidity, breeze, scent, water/rain, colour etc.
- That the campus is a safe, welcoming and supportive environment

- That the campus is learning/research centric.
- That the campus is easily responsive to change (population, curriculum)
- Ensure high value activities occupy high value space - ie max ground level real estate for higher population activities or student centric activities.
- That the campus and buildings are 'legible' and way finding is logical and intuitive.
- Circulation around the campus recognises the need to move protected from sun and rain.
- Explore the positive characteristics of symbolic, physical and visual engagement of space throughout campus and create a campus that is more transparent and dynamic. Diminish the extent of implied and real threshold barriers around the campus. (ie long windowless corridors with closed doors to rooms do not reflect a positive approach to student engagement)

Learning & Research

Teacher-led learning spaces

- Academics have access to a range of spaces which align to their preferred pedagogies and cohort mix.
- Pedagogies need to better engage with the learner and where outcome expectations are clearly defined.

Peer to peer learning spaces

- Create spaces for discipline specific cohorts to study together with access to curriculum support.

Social Learning Spaces

- That students have access to a diversity and range of learning spaces to accommodate diverse range of learning behaviours and needs. (include outdoor spaces)
- That space encourages interaction between academic & student, student & student.
- All space should be considered to maximise potential for flexible and multifunctional opportunities. i.e. Question corridors that only support circulation and do not support human interaction.
- Space on campus is WiFi enabled with ample access to power throughout.

Research Spaces

- Spaces provide a range of places from quiet to interactive.
- Spaces can be secured

Community

- Ensure the individual learner feels 'visible' and supported. (particularly relevant to new students to the university)
- Reinforce the notion of a learning community with spaces that support inter-relationships between student-researcher-staff.
- Create spaces which support collaboration and connectedness.
- Explore opportunities to enable learning and or research disciplines to cross fertilise.
- Build networks with commerce, industry and public community
- Develop a learning/research centric community of learners

Research communities

- Spaces that encourage collaboration as well as spaces for quiet reflection. Very accessible to academic staff.

Learning communities

- Spaces that bring learners together to enable independent and peer assisted support.

Support communities
Curriculum support

- Easy and intuitive access to academic community
- Create spaces for academics that promote a sense of belonging to JCU

Information, IT, student life support

- Easy and intuitive access to tools, resources and services to assist in learning/research
- Create spaces for JCU staff that promote a sense of belonging to JCU

Mentor support

- Create infrastructure to encourage student mentor network.

Context
JCU seeks to provide a range of teaching and learning spaces to suit a variety of teaching and learning approaches as appropriate for each faculty and user group.

Teaching and Learning spaces shall be critically evaluated in terms of the following:

- Flexibility of spaces to incorporate a range of uses and functions.
- Avoid inflexible space planning and carefully consider associated structural and services spaces planning.
- Have uniform cost-effective technology, and provide ease of access to students and staff.
- Be comfortably furnished, arranged to promote student interaction and engagement.
- Be designed to minimise the University's ecological footprint.
- Comply with disability and legislative requirements.

Spaces are to be designed to accommodate teaching and learning approaches that include, but are not limited to, didactic (lecturing), collaborative, individual, social, virtual, informal, indoor and outdoor learning:

- Wherever possible, small informal spaces suitable for small groups, weatherproofed where outdoors, and fitted with comfortable seating, wi-fi access and power points.
- Space allocation per student varies with discipline and teaching mode.
- As a minimum, all space for formal (timetabled) teaching and learning should have access to natural light and provision for adjustable blinds; light-weight, ergonomic furniture that is, as far as appropriate, stackable, movable and foldable; and productive walls, for display and as writing surfaces.

The Teaching and Learning space standards are intended to inform and direct design decision-making for both new and adaptive reuse learning space projects, and also to ensure that there is a

higher degree of equity between faculties and campuses in terms of student access to quality learning environments.

Design Principles

The following key principles underpin these design guidelines:

- Spatially, the learning experience is a continuum from library managed learning spaces to internal and external informal learning spaces and finally to the formal academic learning environments.
- Grouped formal learning spaces should incorporate adjoining informal social learning spaces to facilitate student interaction and the impromptu formation of small learning groups.
- A critical factor in achieving adaptable and flexible flat floor spaces is provision of adequate and appropriate floor space per seat/student.
- A range of room sizes and types is to be adopted for formal learning spaces to accommodate different learning modes between faculties and disciplines, and shall be tailored to the diverse range of student cohorts and ideal class sizes.
- Within each category of formal teaching spaces, consistency in spatial standards, furniture selection, communication aids (including AV/IT) is a desired outcome to ensure learning space predictability for academics and students and to ensure cost effective procurement.
- These guidelines do not preclude the adoption of more enhanced design responses where it can be demonstrated that these improve learning outcomes, better achieve disciplinary objectives and are cost effective.

Pedagogy as Driver

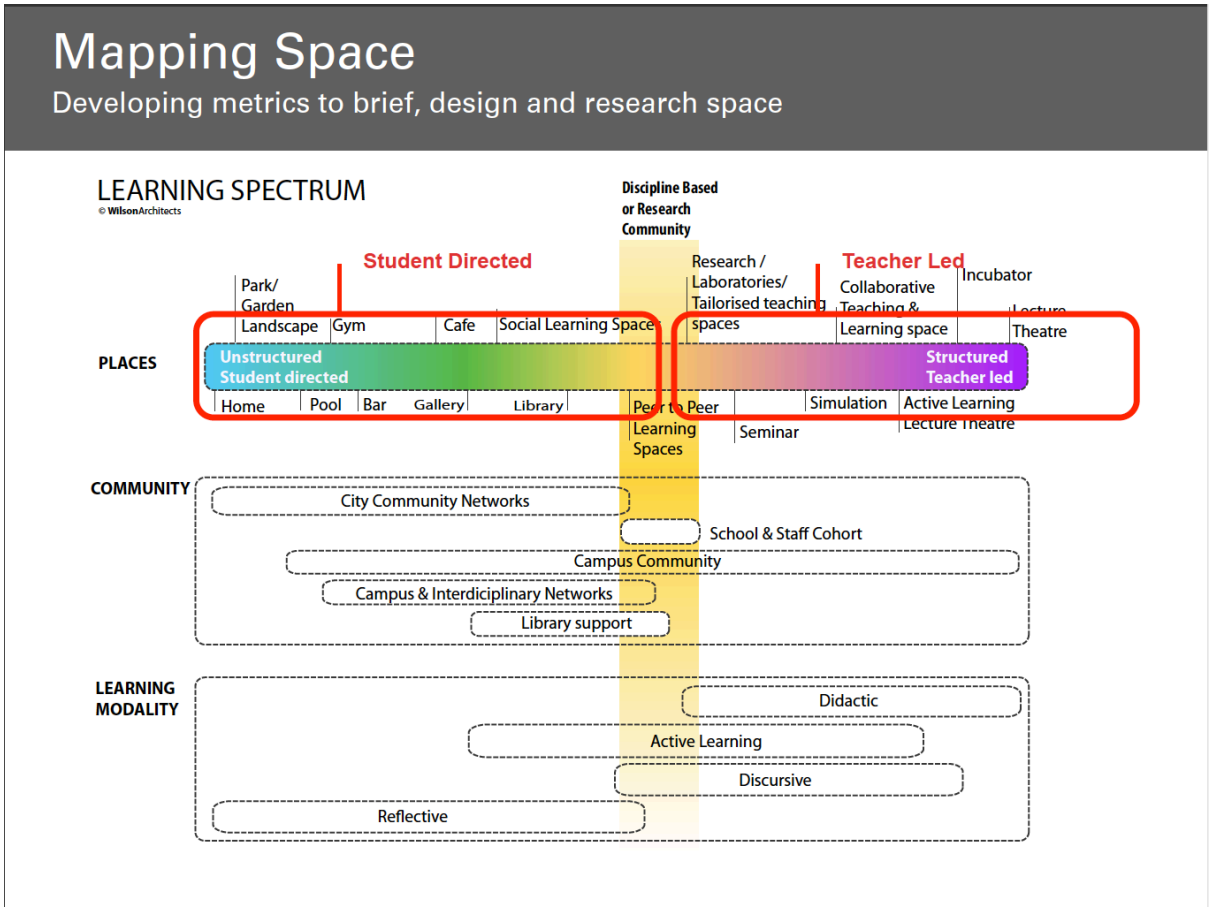
Initial Design Review and confirmation of teaching and learning spaces must ensure the briefed areas and functions align with the pedagogical spatial determinants;

Review and Confirm Design Brief

Initial Design Review must include representatives from AV/IT Technologies, Academic and Facilities Management.

Measure and Test Spaces

Develop metrics for understanding and critically evaluating the design of teaching and learning spaces; measure brief against design at regular intervals during the design and documentation stages of a project

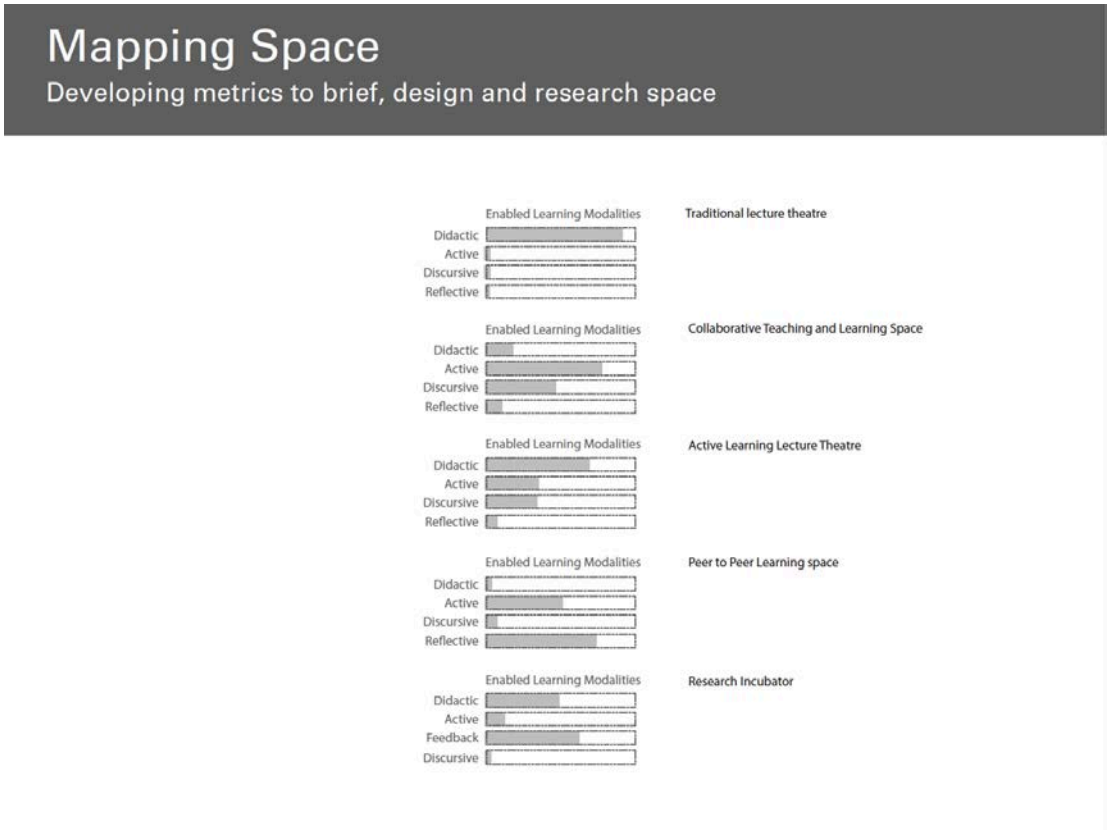


Determine Group and Cohort make-up
Group Work Cohort make-up must be understood and integral to planning solutions;

Learning modalities
Determine learning modes to be accommodated within each teaching space.
Critically assess the effectiveness and degree to which each learning modality can be utilised within each teaching space

Defining Learning Modalities
Within any teacher led learning experience there are generally a number of modes that can be identified.

> ***Didactic:*** *traditional lecture style lesson, content delivery by one to many.*
>
> ***Active****: student driven and centred learning, supports predominantly group or project work models.*
>
> ***Discursive****: individuals and groups of students discussing and presenting their work to others*
>
> ***Reflective****: quiet contemplation, enabling individual synthesis of ideas, thinking and reflecting upon the various activities and potential learning outcomes*



Flexibility & Ease Of Use:
Determine requirements for flexibility, and provide arrangements and infrastructure that best promotes ease of use.

Area Considerations:
Teaching spaces, such as lecture theatres, collaborative and social learning spaces, computer rooms and specialist spaces, must be sized so that they are fit for purpose. The size of any teaching or learning space required will depend on the layout required for teaching and learning and the need to provide access for people with disabilities. *The ESOS Act requires teaching spaces for English Language used by overseas students provided at a minimum of 2m^2/student. This shall be applied to flexible flat floor teaching spaces.*

Circulation And Interconnection
Connected learning experiences, corridors, break-out space and circulation routes extend the learning experience for students as they move between spaces on campus.

Social Learning Spaces
Formal Teaching spaces, where grouped, should incorporate adjoining informal, or social learning spaces to enable student interaction and engagement and to facilitate impromptu small group gathering, discussion and study spaces.

Daylight & Visual Connectivity
Access to natural light is desirable, and shall be managed so as to not interfere with screen or projection based activities. Explore opportunities for internal visual transparency between formal and informal/circulation spaces, noting that devices or screening may be required to minimise participant disturbance due to external activities.

Examinations
Consideration shall be made as to how space can be effectively utilised for examinations.
In general:

1. where single desks are provided, provide minimum 1000mm clear space around each desk,
2. where benches are provided provide 1500mm minimum clear between candidates along each bench and 1000mm minimum clear to the front and rear of each bench. Diagonal positioning of candidates across benches may yield reduced row spacing,
3. In Lecture Theatres candidates shall be spaced evenly in consecutive rows.

Provide possible examination layouts for all teaching spaces as part of Schematic Design Report.

35.3 Teaching Space Classifications

35.3.1 Lecture Theatre – Traditional

300-450+ seats – 360-550m^2/1.2m^2 per seat.
Traditional large lecture theatres subject to incorporating the design features nominated elsewhere in these guidelines
Design considerations:

- allows for effective content delivery to large group
- focused attention of a large group on a single point, either lecturer or audio visual presentation
- large areas of tiered floors and fixed furniture offer limited versatility in use, and shall be carefully considered.
- appropriately plan lecture theatres to avoid central aisles.
- provide loose furniture for distribution of print material and/or artefacts.
- participant interaction and feedback very limited
- confirm if lecture content and delivery is to be recorded, audio, video or both.
- Whiteboards and writing surfaces are not recommended within 300+ seat lecture theatres. Document cameras or visualisers are preferred.
- consider the design of entry/exit points, internal arrangements and furniture selections that enable students to arrive late without disruption to the presenter or group.
- special consideration is required for circulation strategies for large capacity lecture theatres to provide efficient changeover.
- size of tablets to accommodate 15in. laptop
- left handed seating/tablets at left hand end of rows,

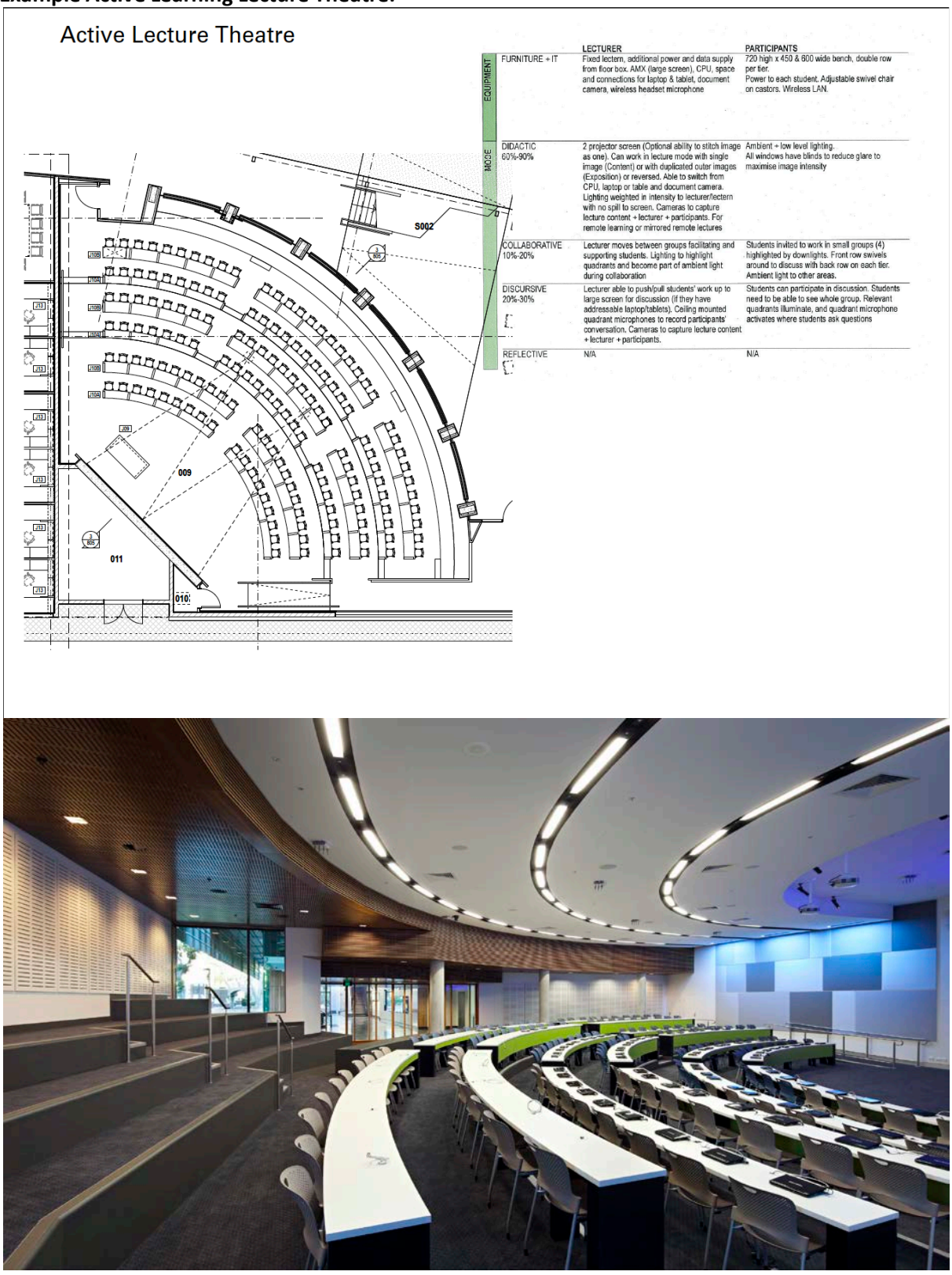
Example Traditional Lecture Theatre:

35.3.2 Lecture Theatre – Active learning

150-250 seats – 200-375m^2/1.3-1.8m^2 per seat.
Design considerations:

- to facilitate engagement between the presenter and the assembled participants through strategically positioned seating, desks and aisle ways.
- consider flexible furniture and appropriate lighting enabling group work active mode arrangements that can be easily identified and accessed by students.
- allow for effective content delivery to large group
- provides focused attention of a large group on a single point, either presenter or audio visual presentation
- design to promote participant interaction and feedback within a large group
- provide power outlets to all desks, with wireless LAN throughout.

Example Active Learning Lecture Theatre:



35.3.3 Associated Access and Break-out spaces for Lecture Theatres

Provide 1m2 per 5m2 of dedicated lecture theatre space and shall be designed for access and egress as well as a waiting/break-out and social learning space for students and/or general function space.

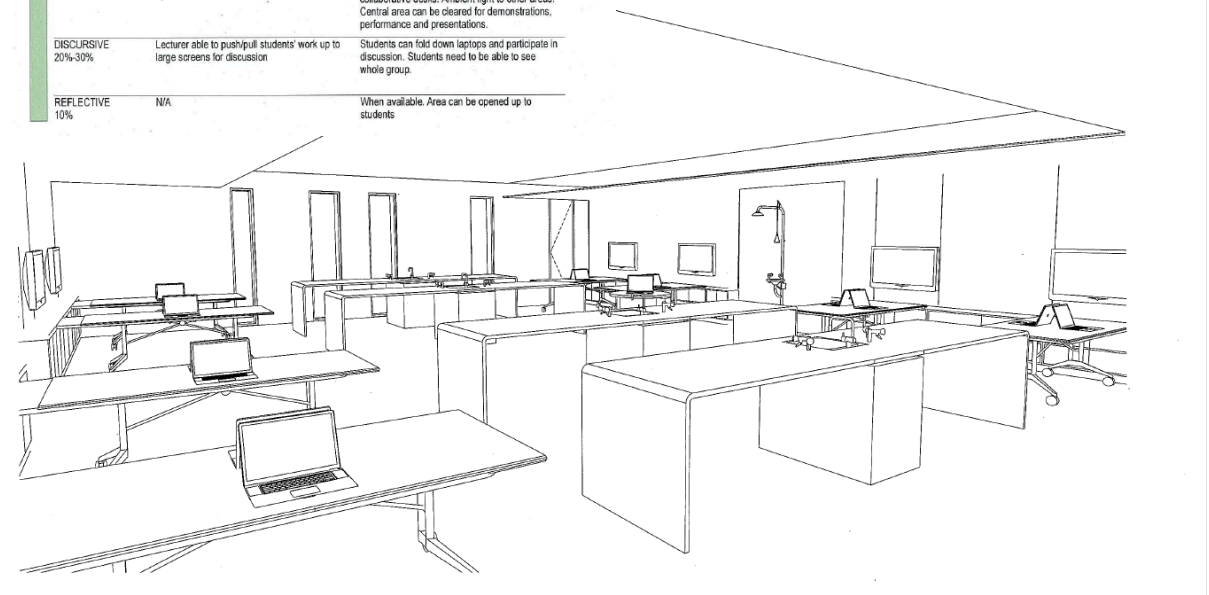
35.3.4 Flexible Learning Spaces

Small Flat Floor Seminar, Flexible Learning Spaces and Project Based Learning Spaces
25 - 35 seats – 60-90m2/2.2-2.5m2 per seat.
Large Flat Floor Active Learning spaces
40 - 120 seats – 80-220m2/1.8-2.0m2 per seat.

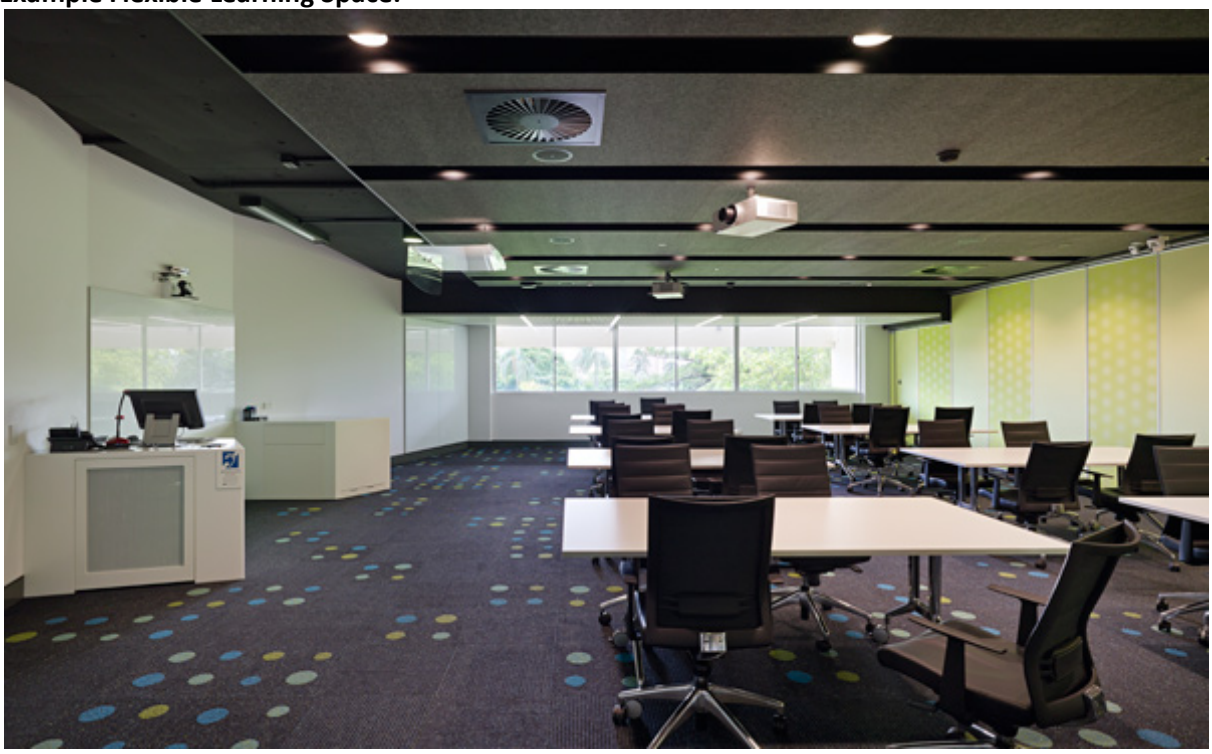
Design considerations:
Classroom setting based on groups of 5-9 person / table to enable the learning mode to shift between small group work/interaction and lecturing (didactic) mode. Other table configurations or design responses possible including the incorporation of flat screens for small group learning.

Flexible Learning Spaces shall be capable of easy reconfiguration, with furniture capable of being changed from Classroom setting to a boardroom style to facilitate whole group interaction. Other configurations that enable focused Group Work arrangements shall be considered where possible. Can include computers. Consider cabled services solutions to perimeter walls, with Wi-Fi to central space

		LECTURER	PARTICIPANTS
EQUIPMENT	FURNITURE + IT	Fixed lectern, power and data supply from floor box. AMX (large screen). CPU, space and connections for laptop & document camera. Fume cupboard with document camera. Safety shower/eyewash	720 high desk, 6 adjustable swivel chairs document camera & two tethered laptops/tablet PCs per table. Wall mounted displays. connection to laptops, controlled by CPU. Power for additional laptops. Fume cupboard with document camera & safety shower/eyewash
MODE	DIDACTIC 20%-30%	Able to switch from CPU, laptop and document camera. Lighting weighted in intensity to lecturer/lectern	Laptops and screens are turned off. Screen per table controlled by lecturer. Ambient lighting.
	COLLABORATIVE 40%-50%	Lecturer moves between groups facilitating, supporting Light levels lower and become part of ambient light	Large format screens become active and are responsive to student laptops. Able to sketch notes on whiteboard which adjoins each table. Able to upload images of notes/sketches via document camera. Lighting focuses on collaborative desks. Ambient light to other areas. Central area can be cleared for demonstrations, performance and presentations.
	DISCURSIVE 20%-30%	Lecturer able to push/pull students' work up to large screens for discussion	Students can fold down laptops and participate in discussion. Students need to be able to see whole group.
	REFLECTIVE 10%	N/A	When available. Area can be opened up to students



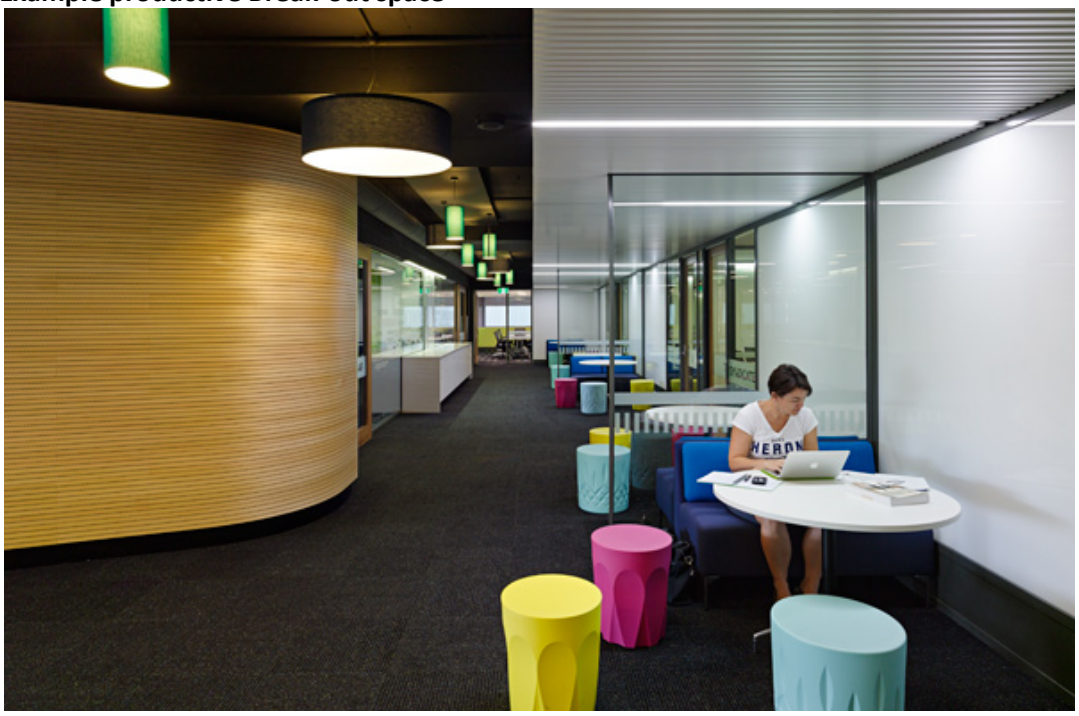
Example Flexible Learning Space:



35.3.5 Associated access and break-out spaces for Flat Floor Teaching and Learning spaces

The design of adjoining access spaces shall be designed for access and egress as well as a waiting/break-out and social learning space for students and/or general function space. Provide adjacent access spaces adjoining flat floor formal learning environments at a rate of 1m2 per 3m2 of formal learning spaces.

Example productive Break-out space



35.3.6 Specialist Teaching Spaces

Design guidance for specialist, laboratory and simulation learning spaces will be the subject of a separate suite of guidelines or shall be specifically briefed and developed for particular projects when required.

35.3.7 Peer to Peer Learning and Social Learning Spaces

Social learning spaces cater for a less specific cohort of students but with similar aims to peer to peer learning spaces:
- To enhance student learning and social experiences
- To foster student interactions between and across faculties.
- To develop a stronger campus community
- To enable students to extend teacher led learning in informal learning environments
- To enable staff and students to be part of a Learning Community resulting in a sense of belonging and identity.

Unstructured learning spaces shall be designed to cater to the technological and spatial needs of students with a range of study options and experiences. It is in these spaces that students choose to gather and work collaboratively or individually to explore, extend and reflect upon their study. The provision of this range of informal learning spaces on campus has increases the amount of time that students spend on campus as well as their informal interaction with academic staff.

Café life on university campuses has increased greatly over the last decade, with staff and students taking meetings and informal discussions outside to more relaxed settings. By creating these types of areas adjacent to libraries and learning centres, there is greater opportunity to capture informal learning activities on site and to build a learning community.

Informal spaces provide students with the opportunity to extend structured learning experiences in locations other than the library. All space within a campus should be considered as part of the overall experience and be supportive of learning places that enable a dynamic environment for study.

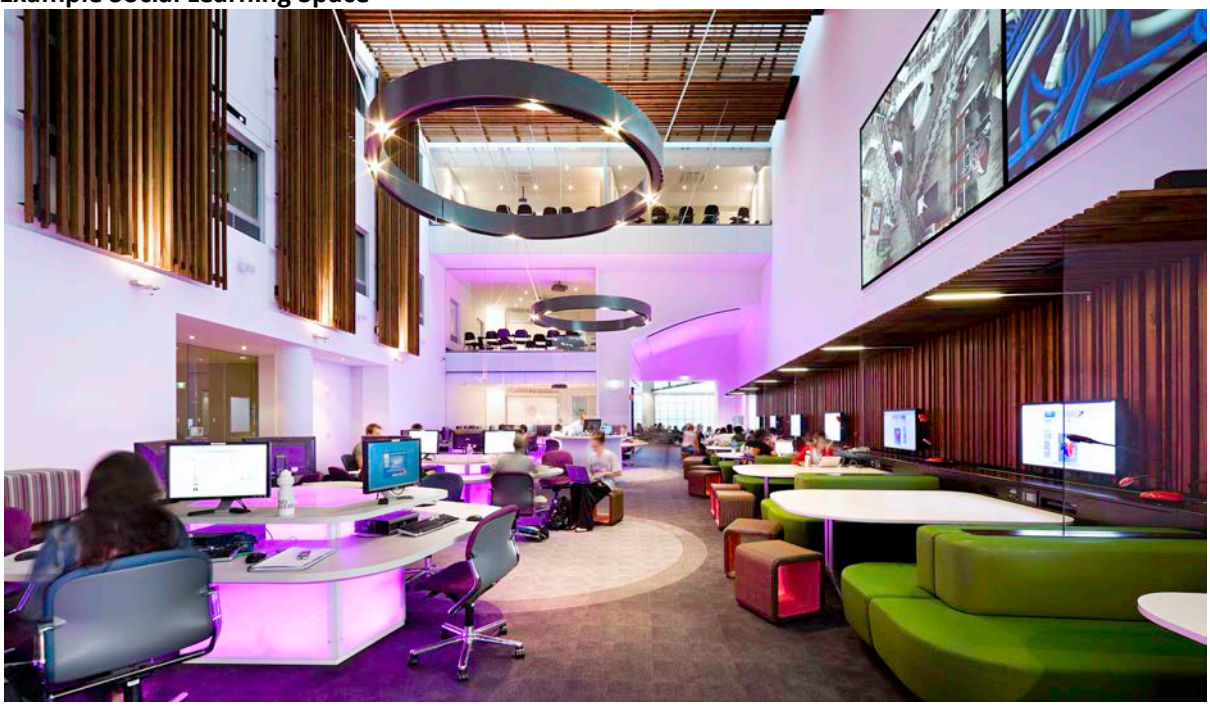
35.3.8 High Performance Computer Labs

Flat Floor space with perimeter desks/benching for cabled IT infrastructure, dual screens (large size)

35.3.9 Small Group Teaching Spaces

Small spaces to accommodate up to 12, consider space that can be used for small group study, meetings, peer to peer interaction, remote teaching and the like.
Consideration for teaching and presentation technology and appropriate acoustic treatments to suit application.

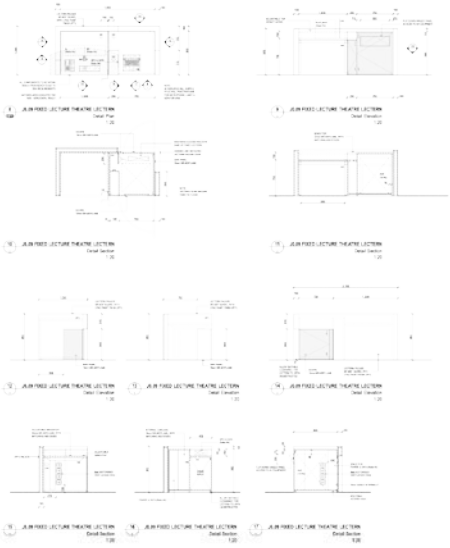
Example Social Learning Space



35.4 Teaching Space Furniture & Fittings

35.4.1 Lecterns

Provision for mobile, height adjustable lectern. All equipment and components shall be secured or tethered to lectern. 2 floor connection points should be provided to each lectern location.
Refer to sample JCU Lectern drawing, attached.



35.4.2 Desks, Chairs, Fixed seating, Loose Furniture

All task chairs shall be AFARDI 6. Confirm with PM for the current JCU approved range of loose furniture selections and suppliers.

35.4.3 Writing Surfaces

Most teaching spaces contain AV equipment which can be damaged by chalk dust. The preferred writing surface is a whiteboard. Opacified glass writing surface may also be considered. Provide temporary storage for writing materials and erasers. Consider special lighting requirements for whiteboards.

35.4.4 Occupancy Sensors

Provide Occupancy Sensors above all entrances to all Teaching Spaces. Occupancy Sensors to be TTM Group TTM V03 Visitor Counter System.

35.4.5 Clocks

JCU shall supply battery operated clocks for wall mounting to locations that are visible to lecturers and students.

35.5 Audio-Visual Provision

JCU to confirm project specific requirements in addition to Section 27 JCU Design Guidelines, such as telephones, MATV, etc. Specialist AV consultant must be appointed for projects with AV Installation

35.6 Projection Facilities

Data Projection shall be based on 16:10 screen format.

Projection shall be on a suitably finished wall (eg. Level 5 Plasterboard finish). Paint finishes suitable for projection shall be submitted to JCU Estate Office for approval. . The projection wall should kept clear of distracting objects and fixtures.

Projected image brightness is important; as screen size increases, image brightness must increase accordingly while maintaining sufficient lighting levels for note taking.

Seating to suit Projection

Design of seating arrangements to suit data projection within Teaching spaces must incorporate the following:

- No viewer shall be closer to the projected image than twice the height of the image.
- No viewer shall be further from the projected image than six (6) times the height of the image.
- The horizontal viewing angle shall not exceed 45^{o} to the opposite edge of the furthest projected image.
- The vertical viewing angle shall not exceed 45^{o} to the upper edge of the projected image.
- All viewers must have a clear sightline to both the projected image and the presenter.

35.7 AV Infrastructure Services

Specialist AV installations by JCU ie supply and installation of all Active AV/IT equipment, and project works to include for all necessary power, data and specific AV cabling where nominated or conduiting or ducting otherwise. Cabling to be installed by Electrical Contractor, completion witness checks and sign-off by JCU/AV Equipment installer

35.8 Security

All Doors to Teaching Spaces shall be provided with swipe card access and key override.
All equipment must be secured, either within secure, lockable cupboards or by stainless steel security cabling devices

35.9 Signage

Allow for the following signage to or within Teaching and Learning Spaces:

- Equipment Instructions
- Telephone Directory
- Message Board, for Examination or other notices

35.10 Teaching Space Design Considerations

Acoustic Guidelines
Further to Section 18 of Design Guidelines, additional acoustic consideration for Teaching and Learning Spaces as follows:

- Lecturers must be audible to all participants within teaching spaces.
- Carpet is preferred to floor to reduce noise.
- Additional acoustic panelling may be required around room, particularly to rear half of any theatre or large teaching space to minimise cross group distractions.

The specification of audio systems shall be developed as follows:
An Acoustic Consultant acceptable to JCU ESTATE OFFICE shall be appointed by the Lead Consultant or Contractor to acoustically map any lecture theatre or other large teaching and learning space before finalising the design of the space.

The design of audio systems in theatres and other large spaces shall be biased towards maximising coverage and intelligibility whilst providing high quality audio for the majority of users. Develop specifications for suitable public address systems for each theatre space with appropriate performance and within budget limitations.

In specialist spaces (eg: Conference Rooms, Multi-Purpose Boardrooms) a custom sound system will be developed to best reflect the primary purpose of the facility.

Reduce sound transfer between rooms.

Lecture Theatres	R_W 55
Teaching Rooms	R_W 50

Reverberation times for Teaching and Learning spaces

Lecture Theatres	R_T 0.6 – 1.0 sec
Teaching Rooms	R_T 0.6 – 0.8 sec

Classrooms for less than 50 should allow good speech intelligibility without the need for amplification.

35.11 PWD Provision

All teaching rooms and student facilities must allow for access by students and staff with disabilities.
Provision for wheelchair access and seating shall be to the requirements of NCC and AS1428.
Preference is given for adjustable height rather than fixed height desks for wheelchairs.

Lecture rooms, Seminar/Tutorial Rooms and Computer Laboratories:
Adjustable height, non-fixed seat workstations to be provided at a ratio no less than required by NCC/BCA and AS1428. Minimum workstation size - nominally 1200mm by 800mm. Accessible workstation are to be easily identifiable within the room.

Hearing Augmentation
In lecture theatres and general teaching spaces, hearing assistance systems shall be via an approved infra-red (IR) hearing augmentation system installed in the room. Provide International Standard Hearing Augmentation signage to all each space where provided.

The extent of the provision, as set out in BCA Section D3.7, shall be applied to any general teaching space in which voice reinforcement (sound amplification) is provided. Hearing augmentation may be required in specialist teaching spaces; the requirement must be established during the design briefing stage.

35.12 Environmentally Sustainable Development

The following key ESD principles shall be considered within the scope of these design guidelines for teaching and learning spaces:

- Motion activated lighting and air conditioning systems, with timing devices for AV equipment.
- Furniture and Joinery shall be constructed from low VOC “E Zero” moisture resistant medium density fibreboard. Avoid PVC in joinery construction.
- Low VOC adhesives, sealants and paint systems, carpet and flooring.
- Timber Joinery shall be FSC, AFCS and PEFC certified, or shall be 100% post-consumer recycled content or reused timber.