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THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
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Informal Learning Space Design Guide

Report particulars

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Prepared for: Office of the Deputy Vice Chancellor Academic

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Disclaimer

The requirements herein do not absolve the parties providing subsequent design services, from the responsibility to provide fit for purpose, functional and complete facilities that satisfy all applicable building codes.

This document will be reviewed annually through the appropriate governance processes.

Version history

Version Number	Description of Change	Change Made by	Date Changes Made
V0.01	Initial Document		19.04.2023
V0.02	Client Comments	J Drummond	29.05.2023
V0.03	Final publication, contact details	O-DVCA	30.01.2024

Contents

Introduction

1.1 Purpose

The University of Queensland's (UQ) Informal Learning Space Design Guidelines (ILSDG) are a planning and design guide for informal learning spaces, or areas created to support students' independent learning. Users of the paper include those involved in the UQ project, such as:

- building users,
- architects, and consultants,
- the Learning Space Sub-Committee (LSSC),
- Property and Facilities (P&F),
- the Institute for Teaching and Learning Innovation (ITaLI),
- faculties and schools, and
- Information Technology Services (ITS).

The ILSDG describes planning, support and the guiding design principles with the following goals:

- connect the growth and effectiveness of informal learning environments to the strategic objectives of the university.
- encouraging continued innovation in design solutions,
- establish a minimum baseline for learning environments.
- Reduce design and construction flaws that have a detrimental influence on learning
- Highlight features and amenities that students say they want in study spaces.
- Minimise design and construction issues that have a negative impact on learning space performance.

The ILSDG does not impose certain models for space design since it acknowledges the wide range of learning preferences, tasks, and equipment needs. To serve the diverse UQ student community, it is essential to keep offering spaces with unique personalities, features, and settings. In order to produce spaces with lasting value, the ILSDG aims to provide direction for the design and development of spaces that support this wide range of practises.

The ILSDG and CLSDR are under the custody of the Office of the Deputy Vice Chancellor Academic. Periodically, the manual will be reviewed and updated.

1.2 Scope

The ILSDG includes areas that help students learn and is designed to be a location for independent, unstructured study, that includes:

- Areas in a foyer or a corridor that are typically adjacent to formal teaching or learning spaces
- Space for faculty, students, and cohort
- UQ libraries

As a guide, the following learning activities take place in informal settings:

- Students studying individually
- Students co-studying in pairs or bigger groups, usually no more than four, on their own tasks.
- Students working together in pairs or groups on an activity;
- Students working together on a group project; normally, group project teams consist of 5–6 persons.
- Students create or design physical objects.

These areas also serve as a place to:

- meet with friends and peers;
- heat food and eat it, perhaps while studying or chatting with friends;
- ask for assistance from others informally or through a formal system[1];
- host activities/events that foster student interaction and increase learner engagement;
- arrange meetings with academics, tutors, or business professionals.[2]

Whilst these activities take place in a variety of setting across the University campuses, the definition of 'what counts' as an informal learning space and an informal learning seat for space classification, benchmarking and reporting, is outlined in criteria *2.3.4 Methods of measurement*.

The ILSDG does not address:

- Formal learning spaces utilised for scheduled tutorials or classes that are also accessible outside these times, for ad hoc study (although this guide may be useful in designing these dual purpose spaces).
- technical requirements for maker spaces, such as fabrication shops and laboratories
- waiting areas (such as a bench seat without a writing table, a lounge, or a small amount of seating in a hallway);
- staff areas where students may be invited to a meeting to discuss their studies;
- facilities for food and drink.

Formal learning environments, such as laboratories and studios, and specialised subject-specific learning spaces are covered in separate documents.

Informal learning spaces are one part of the university's learning landscape[3]. The university strives to link what occurs in formal classroom settings with what occurs in informal settings and online, to create an integrated learning environment. Thus, it is important to take into account the design objectives of this guide in this broader context.

1.3 Methodology

The ILSDG is structured to promote ongoing innovation in design outcomes, as well as variety in design approaches and spaces. The requirements are described by:

[1] The Science Faculty has a system of senior students providing support for others at the Science Centre
[2] https://www.educause.edu/research-and-publications/books/educating-net-generation/learning-spaces
[3] Dougdale, S. (2009) "Space Strategies for the New Learning Landscape", *EDUCAUSE Review*.

a. the **intent** of a principle - an explanation of why, which is aligned with the UQ strategic plans;

b. the **requirements** – what the design needs to do; and

c. **additional considerations** - this includes reference documents for best practice solutions, describes preferred solutions (not mandatory as they may not be applicable to all situations), warnings regarding problems previously identified, aspect that should be considered in determining the right design solution, suggested approaches to the design principle.

The design and planning process is 'mission based', relating the provision of informal learning space back to the UQ's strategic goals.

The EDUCAUSE Learning Initiative (ELI) Learning Space Rating System[4], has been used as a guide to develop the ILSDG.

[4] Brown,M. Cevetello, J., et al.. (2017) *Educause Learning Initiative: Learning Space Rating System Version 2.*

Context, Planning and Support

2.1 Strategic Alignment

Intent

To ensure that informal learning spaces are designed in accordance with the University's strategic directions for its learning spaces, academic plans or initiatives. The University continues to seek creative and innovative solutions to achieving the strategic goals.

Requirements

Indicate in the project brief how the design intent complies with the strategic objectives, strategies, and activities of the University. Throughout the design process, refer back to these goals and demonstrate how the design fulfills these intents.

Strategic Context

The main strategic context is summarised below.

Other examples of context to be taken into account when creating project goals include faculty or school strategic plans, ITS activities to enable BYOD, or the Art Museum's "Art for Students" campaign.

2.1.1 UQ Strategic Plan

The Towards 2032 UQ Strategic Plan (2022-2025), serves as a broad roadmap for the provision of learning environments, articulates the university's vision, mission, and values.

The University is committed to creating a thriving, diverse community where all members of the UQ Community feel included, safe, and welcomed.

2.1.2 Campus Master Plan

The St Lucia Campus Master Plan (2017) encourages flexibility and adaptation to accommodate the ever-changing needs of staff, students, and educational requirements. In times of unpredictability and constant change, it is crucial to think about future-proofing building to maximise whole-life value. Other campus master plans (for Herston, Gatton, and other sites) will be brought into this strategic context as they are developed.

2.1.3 Learning and Student Experience Roadmap

Building on the Student Strategy (2016-2020), the experiences of the pandemic, extensive engagement, and the Strategic Plan, a roadmap for learning and student experience is being developed.

The 2016-2020 vision for learning environments, "to build a vibrant, practical and digitally-integrated environments that supports and enhances on-campus learning, community engagement and student life." (UQ, 2016, p.13) remains central to the creation of learning environments. The associated strategic initiatives from this strategy document are still applicable to the creation of informal learning spaces.

Initiative 1: Campus precinct development	Transform UQ's campuses into vibrant and sustainable communities of learning and innovation with residential, commercial, cultural, recreation, sporting, research and industry-based precincts.
Initiative 3: Enhanced multifunctional spaces	Continue to create high-quality, multifunctional student spaces that sustain and support formal and informal on-campus study, rest, and socialising.

2.1.4 Physical Learning Environments Action Plan

The ILSDG falls under the UQ Physical Learning Environments Action Plan (2023-2027) that has been developed to guide the development of new, refurbishment and maintenance, of learning environments.

2.1.5 Campuses on Countries: The Aboriginal and Torres Strait Islander Design Framework

In 2022, the university published the Campuses on Countries: The Aboriginal and Torres Strait Islander Design Framework (ATSIDF) with the vision to "embed Aboriginal and Torres Strait Island design values over time, reshaping UQ's campuses to better recognise, include and celebrate deep connections to places." All future informal learning space projects will form part of realising this vision to celebrate the diversity of Aboriginal and Torres Strait Islander cultures.

2.1.6 Disability Action Plan

The Disability Action Plan's (2019–2021) goals remain current and propel improvements in the built-environment that promote inclusion and physical access. Approximately 13% of Australians between the ages of 15 and 64 identify as having a handicap. The challenges posed by disabilities are varied, and only some of the design strategies that improve user comfort are covered by legislative regulations. To provide inclusive environments for the UQ Community, the ILSDG specifies goals and describes research-based design approaches.

2.1.7 Sustainability Strategy

The vision of the Sustainability Strategy (2021-2025) for Buildings at the university:

2025 Vision: University buildings and infrastructure are a showcase of green building materials and design, which are responsive to their environment, climate, surrounding landscapes and occupants. Operation and maintenance practices ensure buildings continue to operate at optimal performance.

2.2 Supporting Student Experience

Intent

To foster students' sense of cohort identity, student engagement and belonging by providing informal learning venues for student cohorts. Provide a minimum experience for all students.

Requirements

- Support faculties and other custodians to plan, develop and maintain informal learning space to recommended seat to EFTSL ratios. Refer 3.2 *Scale and capacity*.

Other Considerations

- Cohort specific informal space provides the most benefit for commencing and first year students who need to develop their sense of cohort identity, develop relationships and navigate a large new

environment. Minority groups also benefit from having a home base where they can feel safe, comfortable and a sense of belonging.

- Develop interim measures to provide a 'home base' particularly for first year students may be developed. For example:
    - in conjunction with the library book a venue/room for a school or faculty at a regular time each week, to hold peer to peer programs or other activities.
    - faculty / school tutorial rooms, computer laboratories or meeting rooms be made available for informal study at regular times each week.

  Students of that cohort know they can get help and study amongst their peers, plus study space is available for them. Communicating such initiatives will be crucial for their success.
- Faculties with small space portfolios will need greater support to provide informal learning space.
- Hosting activities in the cohort space such as peer to peer tutoring, presentations or talks, further provides enhanced benefits to the students.
- Faculty / school tutorial or computer lab space or spaces such as meeting rooms can be made available for informal study when not booked. This will be more effective if the availability is regular, so students know when they can use the space without having to check each time.

2.3 Planning and Design Process

2.3.1 Roles and responsibilities

Numerous university stakeholders must contribute in order for the planning, design, and subsequent delivery process for informal learning spaces to be effective.

Table 1: Key roles and responsibilities in the planning and design process for informal learning space projects.

Role	Position	Responsibility
Client Representative	DVCA or delegate Varies	Project Initiation. Preliminary Brief preparation. User stakeholder liaison and advocate. Learning Space Sub-Committee liaison. Post occupancy evaluation.
Project Manager	P&F Project Manager (as appointed by the Director, Project Delivery)	Project management. Preliminary Brief preparation. Cost control. ILSDG compliance oversight. Dissemination/coordination of information between the consultant design team and relevant UQ parties such as space measurements to UQ Space Planning.

Project Control Group (PCG)[5]	Consists of key stakeholders	Oversee the project. Receive and consider regular reports, make recommendations and/or endorsements.
Audio Visual Representative	AV Infrastructure	AV Design. Equipment supply. Installation and maintenance. Training and technical support.
Information Technology Services	Information Technology Services (ITS)	ITS. Equipment supply. Installation and maintenance. Training and technical support.
Consultant Design Team	Architects (lead consultant) Services Consultants	Design services, ILSDG compliance as specified in the brief Checklist Appendix B.
Infrastructure and Sustainability Unit	P&F Engineering Services	Reviewing compliance with the *UQ Property and Facilities Design Guidelines* and *Technical Guides*
Disability Inclusion Group	Disability Inclusion Project Manager	Provide overarching guidance on the provision of enhanced disability inclusion provisions across the space portfolio.
ATSIDF Implementation	ATSIDF Advisory Panel	Provide guidance and approval of the design and procurement strategies that seek to address the goals of the ATSIDF.

The project manager and client representative are in charge of creating the project's governance and organisational structure.

Project brief compliance

The project manager and client are responsible for developing the project brief in consideration of the whole document. They will delegate the continued detailed development of the brief to the consultant design team and other compliance responsibilities (if appropriate).

The project brief identifies the needs that are specific to the project, as well as the project delivery process and relevant information. The client, Project Manager and/or PCG will be responsible for reviewing the design solutions' compliance with the project brief.

ILSDG Compliance

Whilst this document is a 'guide', the project brief may reference this document or parts herein to be complied with by the consultant design team. The expected responsibilities for compliance are outlined in Appendix A *Responsibility Matrix.*

The consultant design team is responsible for developing a design in compliance with Sections 3,4,5,6. When it comes to refurbishments, compromises could be required. The resulting functional implications must be discussed with the client. The consultant design team will comply with or provide support to the university stakeholders in regards to Section 2, as relevant to the project.

Refer to Appendix B *Design checklist* for a checklist of design requirements (Section 3,4,5,6) to assist the review of ILSDG compliance. The consultant design team will be responsible for submitting the checklist to the P&F project manager at the end of the Design Development Phase (which aligns with the PREM submission).

[5] PCG may not be required for small projects. More complex governance may also exist for large projects.

Property and Facilities design guidelines and technical guides compliance

The ILSDG is to be read in conjunction with the current version of *UQ Property and Facilities Design Standards* and *Technical Guides* and the *UQ Internal Signage Manual* which can be obtained from the P&F Project Manager. Property and Facilities Infrastructure and Sustainability Unit is responsible for reviewing compliance with the *UQ Property and Facilities Design Guidelines* and *Technical Guides.* The requirements of the ILSDG take precedent.[6]

2.3.2 Project planning and delivery process

Intent

The accomplishment of all the agreed-upon goals within the stated scope, time, quality, and budget criteria through the processes of initiating, planning, carrying out, regulating, and concluding as well as by the supervision of the project team's actions.

Requirements

- Create the project brief, choose the project delivery method, and inform the design team and other pertinent parties of this along with the necessary protocols and processes.
- Guide the project team and stakeholders through the delivery of the project.

Additional considerations

- The Design Requirements Checklist is a guide. Specify the relevant responsibilities to the consultant design team in the design brief.
- If conflicts are encountered between the ILSDG and the project brief, or planning and delivery processes, advise the P&F Project Manager and Office of the DVCA.

2.3.3 Stakeholder engagement

Intent

Include all stakeholders and key partners in the planning process for the learning space to produce evidence-based design solutions and stakeholder support.

Requirements

Engage in meaningful stakeholder engagement at every stage of the planning and design process. Use workshops, interviews, surveys, observational studies, and/or gatherings, to involve stakeholders.

Stakeholders may include: students, academics, ITaLI employees who support curriculum creation, technology AV staff, facilities planning, Aboriginal and Torres Strait Islander advocates.

Additional considerations

- The breadth of the stakeholder engagement should be commensurate with the scale of the project.
- Gather input to develop the project brief and ensure user needs and functional requirements are met.

[6] There may be conflicts between the ILSDG and the P&F Guidelines. The ILSDG contains specific requirements for the space use, that are also tailored to the practicalities and efficiencies of implementation. This guide does not follow the P&F Design Standard Acoustic

- Create an engagement strategy or communication protocol to keep user stakeholders informed of important design information and provide them the opportunity to offer suggestions.
- Provide summaries of meeting notes, user surveys, reports, or other written evidence of engagement to the Project Manager and client representative.
- Include stakeholders in post occupancy evaluations to gauge how well the spaces are performing.
- Include students and facilities managers in discussions with UQ ITS, UQ AV Infrastructure and other related UQ entities For the purpose of fostering cooperative connections and effective, consensus-based design outputs.
- The Aboriginal and Torres Strait Islander Design Framework Engagement Report was prepared to engage broadly with stakeholders and communicate the findings for small scale projects, where consultation with First Nations people may not be achievable.

2.3.4 Methods of measurement

Intent

To establish consistent methods of measurement of informal areas and seat capacity to enable accurate record keeping and benchmarking. UQ shall apply criteria that meets their strategic objectives, the needs and the preferences of the students.

Requirements

Measure the informal learning space area and the seat count as described below. Submit the data to the Property and Facilities Space Planning Unit to maintain up to date Archibus records.

Refer to UQ Space Planning for the current Archibus space categories, for preparing the measurement report.

Informal Learning Space

A space or venue inside a building, that is provided for the purpose of students undertaking self-directed learning activities.

External covered spaces may also be provided for this purpose, but are classified separately.

Seat Count

A seat provided in an 'Informal Learning Space' with a table, desk or table on which to place a device, writing material or the like is counted as an informal study seat.

Count the maximum viable study seating capacity of the space.

Area Measurement

For foyer, corridor and open plan space types, provide a diagram as part of the as-built documentation to record the area measured and recorded in Archibus.

Space Type	Method [7]
Enclosed Room	The whole room is measured to the internal surface of the fixed bounding walls. Storage cabinets, kitchenette benches may be

[7] The area measurements are to follow the University of Queensland standards for measurement of GFA.

	included however storage rooms, offices and service 'cupboards' that are accessed from within the room are excluded.
Foyer & Corridor	The space measured to the internal surface of the fixed bounding walls, including circulation space. Densities for this space type are therefore much greater than other space types.
Open Plan Single Identity Facilities (typically, libraries)	The space measured to the internal surface of the fixed bounding walls. Storage cabinets, lockers, kitchenette benches (if within the space not a separate lunch room) may be included. However storage rooms, offices and service 'cupboards', that are accessed from within the open plan area are excluded. Meeting rooms that may sit within the open plan floor plate are measured separately as an enclosed room.

Additional considerations

- Informal spaces may also include waiting seats, lounges, giant stairs or bean bags, however these are not considered 'study seats.' It does not preclude users from studying in these types of seating however these seat numbers are to be reported separately to informal study seats.
- Determine the maximum viable capacity of a space by allowing sufficient space for a student to occupy a 'seat' with a laptop and some ancillary items (water bottle, phone, sometimes notebook). Refer to 5.2 *Work surfaces (tables)* that describes minimum recommended table areas per student for individual or group study tables. Squeezing in seats leads to wasted resources and misrepresentation of space capacity in UQ records.
- Even if a small group of chairs and a coffee table are occasionally used to 'study,' they are not regarded as informal study spaces. An informal study space is designed and provided with intent for students to undertake self-directed learning activities.

2.3.5 Evidence-based planning and design

Intent

Base planning and design on research and documented best practices in learning space strategy and design.

Requirements

- Consult scholarly literature and expert publications of learning space design and associated disciplines.
- Review peer exemplars online, at UQ and other locations.

Additional considerations

- Benchmark successful and aspirational spaces.
- Engage on-campus or external learning space planning and design experts.
- Visit other institutions' informal learning spaces.
- Allocate project funds to support these activities.

2.3.6 Pilots and prototypes

Intent

Trial, test and evaluate informal learning space design concepts through pilots and/or prototypes in support of an evidence-based planning and design process.

Requirements

Use appropriate space to test concepts and drive consensus around strategies for new design solutions.

Additional considerations

- Component test with users, particular features of a space such as chairs, tables, BYOD screens.

2.3.7 Information technology and audio-visual integration

Intent

Foster a collaborative approach to the integration of IT AV tools and technology and pedagogy, to minimise potential conflicts between user aspirations and the technical and operational, budgetary requirements of technology systems.

Requirements

Review technology options, trade-offs and related implications on function, room design and budget with the client representatives and UQ IT AV.

Additional considerations

- Supporting BYOD is the university's strategic direction to ensure user experience and manage ongoing maintenance.
- Maintenance and replacement costs must be considered when planning the integration of technology systems. Refer to 2.3.9 *Maintenance and life cycle planning*.

2.3.8 Evidence-based research and assessment

Intent

To develop and implement a regular, iterative process of research and assessment that informs development of informal learning spaces and contributes to an institutional culture of evidence-based design.

Requirements

Create and maintain a learning space assessment and evaluation plan that involves multiple campus stakeholder groups with defined iterative evaluation cycles.

Provide recommendations to improve the space design.

Additional considerations

- Conduct post occupancy space performance evaluations.

- Collect and routinely review occupancy levels at important junctures in the semester (Week 3, Mid-Semester Assessment Periods, Study periods, randomised sample). Use the data to assess the effectiveness of the space layout, amenities. Refer 6.6 *Occupancy cameras*.
- Provide ongoing avenues for user feedback on specific learning spaces to improve support and operations. A feedback form may be linked to a QR code on the space signage. The QR code can be a digital link to various avenues to give feedback and provide support. Refer to 2.4.1 *User support.*
- Use research and evidence to determine refresh cycles to maintain relevance of informal learning spaces. Improvements do not have to wait for a full refurbishment. Incremental adjustments or refinements can make appreciable differences to student experience.
- At a defined timeframe evaluate whether the learning space has met the aspirations or goals of the project. Utilise multiple means of evaluation, gather baseline data and compare with earlier post occupancy evaluation.

2.3.9 Maintenance and life cycle planning

Intent

To maintain/prolong the value and relevance of the informal learning space for students and other users with proactive maintenance and life cycle replacement planning.

Requirements

In collaboration with relevant stakeholders develop and maintain a maintenance plan.

Plan and budget for proactive equipment cleaning, maintenance and replacement.

Plan and execute pre-warranty period completion inspections to ensure faults are picked up within the claim period. Include this requirement into furniture supply contracts to build the cost and planning into the project procurement.

Additional considerations

- Ask architects, designers, suppliers to provide warranty periods, maintenance or care instructions before signing off on selections. Recommended minimum warranty periods are included in this guide. Compliance with these recommendations can be included in a project brief to assist in planning.
- Develop a regular cleaning regime with UQ Cleaning. Schedule periodic checks of the space cleanliness and amend the regime as required.
- Plan and budget for deep cleaning in the holiday periods, such as steam cleaning of upholstery and carpets. Outdoor furniture also requires deep cleaning periodically.
- Recommended replacement timeframes for IT & AV equipment:
    - Desk Top Computers 5 years
    - Lap Top Computer 4 years
    - Audio Visual Equipment (LCD Screen, Sound Bar, Camera) 7 years
- Many factors influence the lifespan of finishes. The product selection, frequency of use and adequate maintenance will significantly influence lifespan. Typical lifespans of heavy duty commercial grade, interior items of a space listed below as a general guide for maintenance planning.
    - Gas lift task chairs 10 years

- Occasional chairs 10+ years
- Tables 10-20 years
- Cabinetry 10-20 years
- Upholstery 7-15 years
- Painting 5-10 years
- Carpet 7–20 years
- Lighting (12 hours use per day)
  LED 11 years
  Fluorescent tube 5.4-8 years
  Compact fluorescent 2.2 years
  Halogen <1 year
- Lighting drivers 2 .5 – 11 years

- Theft and wilful damage does unfortunately occur. Research indicates it is less likely to occur in well maintained, attractive and valued spaces and even less likely in 'supervised' spaces that are well occupied. Statistics on this loss are not available. It is recommended records are kept by custodians to establish a realistic budget to replace or repair equipment when wilful damage occurs.

2.4 Support and Operations

2.4.1 User support

Intent

To provide ongoing, timely, physical and/or virtual support for informal learning space users.

Requirements

Provide the ability for space users:

- to contact support professionals for immediate or just-in-time help from within the learning space for IT AV equipment.
- to access online documentation that describes the capabilities of the room, how to use the equipment provided and answers frequently asked questions.
- to report a fault, broken piece of equipment or furniture
- to provide feedback on the space
- book a meeting room, zoom booth, or space

Ensure that the learning space support staff are able to both reactively and proactively diagnose, resolve, and handle issues that frequently arise in the learning environment.

Implement systems that will enable support staff to remotely monitor and control room systems in order to identify and address concerns.

Implement systems to address maintenance issues quickly.

Additional considerations

- A QR Code incorporated in the informal learning space signage with a short invitation to use the code to connect the user to the above-mentioned support and reporting options. The link may take users to a webpage where they can then select the relevant option / service provider.
- An 'Intelligent Advisor Form' is a structured form to log a maintenance job capturing pertinent details to find and rectify the issues. This structured form would be useful to capture data. Use of these forms requires UQ Authentication.

2.4.2 Furniture reset

Intent

Ensure that the layout of furniture in informal learning spaces provides maximum occupancy options and functionality, so the amenities provided can be fully utilised.

Requirements

Regularly (monthly or more frequently) reset furniture back to the layouts as designed or improved furniture layouts developed from observation of use patterns and user feedback. Very high use spaces with all loose furniture may require more frequent resets.

Other Considerations

- Some students feel comfortable moving furniture around spaces in sometimes dramatic ways and don't return furniture to its intended for efficient position. Other students don't feel comfortable or responsible for moving furniture, so spaces can become very inefficient and ineffective study spaces.
- Each space will have its own re-set requirements depending upon frequency of use, the amount and nature of mobile furniture.
- For efficiency, carry out a furniture re-set with an inspection to ensure the cleaning regime is sufficient and loss, damage or maintenance issues are logged and logged issues have been addressed.
- Refer to 5.1 *Furniture configuration flexibility* for discussion on fixed versus mobile furniture.

2.4.3 Daily cleaning and maintenance

Intent

To ensure the longevity of the learning space with appropriate and regular cleaning and maintenance.

Requirements

- Provide a handover meeting with precinct cleaning managers and other relevant maintenance personnel.
- Provide signage with instructions on maintenance if specialised, in a visible location or agreed consistent location in the space (cleaner's cupboard /room is typically the most suitable location).
- Ensure new cleaning staff are trained to maintain the materials in accordance with the training received, manufacturer's recommendations and warranty conditions.
- Undertake regular inspections/audits of the space to see how they operate and identify and report any issues that may be presented.

Other Considerations

- Materials specified may require cleaning equipment not currently owned by the University. Liaise with UQ Cleaning during the design to plan (budget and storage) for new equipment if required. Consider. In consultation with UQ Cleaning re-specification of materials if applicable.
- Ensure cleaning cupboards or rooms are sufficiently sized for the equipment necessary to clean the space and adjacent amenities.
- Understand and be aware of the services required in the cleaning rooms and cabinets to support the cleaning equipment.
- Schedule additional cleaning for busy periods such as assessment and exam periods. Spaces are more heavily occupied for longer hours and students use whiteboards more.

Planning and Layout

3.1 Locality

Intent

Locate informal learning spaces where they are visible and easily accessible, co-located with complementary facilities to leverage the benefits of a hub of synergistic activity and reinforce precinct identity.

Locate informal learning spaces to share resources, improve safety and security, manage noise disruption and pedestrian traffic and encourage cross-pollination of knowledge and ideas.

Provide informal learning spaces in distributed locations across campus to conveniently serve students that are timetabled in central spaces also widely distributed.

Design Requirement

Locate informal learning spaces:

- across all campus precincts
- in buildings that are universally accessible and close to major circulation paths through campus for a cohort in the heart of, or close to School/Faculty's 'home base', reinforcing the precinct identity and linking the informal space geographically with the custodian.
- near the building's entrance and primary vertical circulation (stairs and elevators)
- with compatible functions and supportive services / amenities, such as other types of learning spaces, student focused services and food and beverage options.

Additional considerations

- Informal learning spaces are to be located in easily discoverable locations.
- Provide clear and accessible routes from building entrances to the informal learning spaces. The route and locations should be logical without heavy reference to signage.
- Users should not pass semi-private spaces such as offices where noise levels usually associated with student traffic are not desirable.
- Separate noise-sensitive areas, such as offices and research labs, from learning spaces where there is a lot of foot traffic and class change noise.
- Distribution of informal learning spaces does not mean provide lots of little spaces, as small spaces are typically less effective and overall more costly to maintain.

3.2 Scale and capacity

Intent

Create informal learning space venues* of a scale that creates a motivating hub of activity (this may be quiet and focussed or collaborative and noisy) that is motivating and inspiring for students to occupy and be part of.

*'space venues' maybe a single isolated room, a destination/building where multiple Archibus listed sub-spaces are co-located or a library composed of multiple spaces. Co-located means the spaces are adjacent each other or visually connected (such as around an atrium, foyer, corridor or courtyard).

Design Requirement

Provide informal learning spaces commensurate with the scale of the cohort or surrounding formal learning space that they serve.

Informal learning space venues are to have a minimum capacity of circa 40 students.

UQ Library	Capacities are to be guided by the UQ Library Masterplan
Centrally managed venues co-located with formal learning space	Informal seats : Formal seats ratio targets <400 formal seats provide 1: 3 >400 formal seats provide 1: 4
Faculty / schools	Target 0.65 informal seats per EFTSL
Meeting rooms	2-6 seat rooms

Additional considerations

- Many students report finding the presence of other studious users motivating. For some environments that are buzzing with activity are motivating whilst others prefer the quiet focus of many minds. Aim to have a critical mass of users to create an atmosphere conducive to study, noting outside libraries occupancy of 40% or less is typical.
- Small isolated spaces are typically less effective, not as readily discoverable and can be more costly to maintain. Small spaces cost considerably more to refurbish per square metre than larger spaces.
- Meeting rooms are frequently underoccupied. Most group projects are set for groups of 5-6 students however frequently 6 person rooms are occupied by 2-3 students. A broader range of meeting room capacities needs to be provided to allow students to book spaces that suit their needs. Consult with users and research to decide preferrable ratios of different sized meeting rooms for the project.

3.3 Space density

Intent

To provide sufficient space per student to support a broad range of self-directed learning activities.

Design Requirement

Provide efficient space design to maximise yield and meet the statutory and functional requirements for the space to operate effectively and cater to the student's preferences.

Additional considerations

- Space density will be affected by equipment, room size, room proportions and features. Room populations from the brief must be tested by the design team, to ensure the other design requirements can be achieved.
- As a guide:

Room Type	Recommended m^2 per student
Open Plan	2.3 - 3.2 m^2
Meeting Rooms	< 2 – 2.5 m^2
Corridor / Foyer (including thoroughfare circulation)	3.7 - 5 m^2

- Spaces that are too dense will not be fully utilised by students and therefore the design efficiency/capacity is unrealised. Refer student preferred desk areas in 5.2 *Work surfaces (tables).*

3.4 Room ceiling height

Intent

To cater adequately for the intended uses and futureproof the spaces for reconfiguration.

Design Requirement

Consider the minimum floor to floor heights of surrounding functions or intended / likely new uses. Minimum ceiling height of new large open plan spaces to be 3 metres**.** Lower the ceiling heights may be appropriate in booths, meeting rooms and the like to provide comfortable proportions and acoustics.

Additional considerations

- The NCC Volume 1, F3 requires Class 9b to be a minimum of 2.4m for spaces serving 100 or less persons and 2.7m for spaces serving greater than 100 persons. Bulkheads (typically accommodating air-conditioning ducts) that are lower than these heights require a performance based assessment of this criteria.
- Consider removing ceilings in existing spaces that have low ceiling. Services must be carefully designed to create a pleasing aesthetic and acoustic conditions addressed.

3.5 Zoning

Intent

Maximise utilisation of informal learning spaces by zoning uses and avoiding incompatible adjacency within the learning space. Noise and movement disruption or acoustic privacy is a key issue of incompatibility.

Design Requirement

Plan uses within a venue to avoid incompatible uses being adjacent (eg. quiet individual study beside group study tables) or inappropriate locations within the venue. Locate noisier group study by high traffic circulation paths or use architectural devices to separate high traffic from quieter study zones.

Use dividers, acoustic absorption, alcoves, booths and other design strategies to mitigate noise disruption between zones.

Use signs, architectural features, and/or distinguishing markers to let users know what kind of activity will be taking place there.

Additional considerations

- Students generally have a high level of awareness of how their behaviour in a study space may impact others. Students read the cues from the occupants in the space as to how they can behave. Therefore, when students use group tables for individual study it moderates the behaviour of students around them, as they feel they cannot use these spaces for group discussion as it will be disruptive. This leads to underutilisation in spaces.
- Students typically avoid high traffic areas with the chance of noise and visual disruption for undertaking individual focussed tasks. Informal spaces located outside formal spaces are frequently viewed by students as short-term study venues before class.
- Small scale informal spaces are frequently furnished with a variety of furniture settings indicating both group work and individual study in close proximity, with the objective of being flexible and catering to a variety of needs, however this results in incompatible adjacency and can result in underutilisation. The validity of this approach should be tested through the design development with student consultations and scenario based design.
- Individual study desks are larger than group table areas, single sided or may have a divider between facing students.
- Study booths lined with acoustic absorptive finishes are useful to contain relatively quiet group conversations, in high density. Consideration needs to be given to the space adjacent to these booths as noise travels out of the open side of the booths. For example, don't locate quiet individual study seats beside booths, if the booths are intended for group work.

3.6 Circulation through space

Intent

Enable all users to easily circulate, interact, and form groups to support active engagement between users and comfortable personal space.

Design Requirement

Provide adequate space for occupants to move and circulate.

Provide adequate space for students' personal comfort while others circulate.

Additional considerations

- Ensure doorways and circulation space facilitates efficient class change over in foyer and corridor spaces.
- In foyers and corridor spaces select furniture that deters students from moving it into circulation paths: fixed furniture, heavy chairs without casters.
- Allow at least 1.5 m between tables with back to back chairs, to facilitate circulation between.
- If mobile furniture is used so students can configure table setting to suit their needs, ensure there is sufficient room to be able to move the furniture to reconfigure it without compromising the function of the venue.
- Apply universal design principles for accessibility rather than isolated zones of access. Refer also, 3.8 *Accessibility and universal design*, 4.11 *Design for disability inclusion.*

3.7 Supporting amenities

Intent

To enable students to study comfortably in a venue for long durations, if necessary, by providing suitable supporting amenities.

Design Requirement

Provide suitable supporting amenities (considering the scale, location and purpose of the venue) within a short proximity, or within, the study area.

Utilise existing or shared amenities where possible.

Supporting amenities may include:

- accessible toilets
- lounge chairs (break out, rest or change of scene furniture settings)
- bottle filling stations dispensing chilled water
- boiled water dispensers
- microwave ovens
- refrigerators
- kitchenette amenities – including above plus sink, bench space, storage for shared food/beverage
- lockers
- vending machines (food, drink, technology)
- sleep pods
- printing

Additional considerations

- Kitchenette facilities are highly valued by students but are typically not appropriate for corridor and foyer spaces. Consider the smells associated with heating food. Separated kitchenette alcoves or outdoor covered kitchenettes can provide separation of food smells from study space.
- Some schools successfully provide shared food and beverage resources in their cohort kitchenettes.
- Vending machines are provided by UQ Commercial and UQ Union. Engage with these parties to establish the viability of vending machines in the project. Integrate vending machines (if appropriate) into the design rather than have them pushed into a corner at a later date. Power, ventilation requirements and maintenance clearances must all be taken into account.
- Bottle filler spouts must accommodate tall drink bottles to avoid water spillage. Spouts over sinks are preferable to contain spills. Drinking fountains are not used as commonly as bottle fillers and are difficult to fill a drink bottle with resulting in spillage and water on the floor.
- Bean bags and other loose light weight lounging furniture should be carefully considered before providing them in a space, as they often migrate to fill meeting rooms or walkways and are difficult to clean. Not all students are comfortable moving furniture so if no furniture resetting is not routinely undertaken loose furniture left in random locations reduces space functionality.

3.8 Accessibility and universal design

Intent

To create an inclusive, safe and accessible environment for diverse and differently abled users. Provide across the informal learning space portfolio different types of environments that support people with disabilities beyond the statutory requirements, allowing students to select spaces that suit their needs.

Design Requirement

- Comply with the *National Construction Code*, *Disability (Access to Premises-Building) Standard* and *AS1428.1 Design for access and mobility*, AS1428.2 Design for access and mobility Part 2. Enhanced and additional requirements – Buildings and facilities, to the extent they apply to the project.
- Supporting amenities are to be accessible (eg. Bottle filling stations, microwave ovens, kitchenette amenities, PWD toilets, signage).
- Provide inclusive amenities within informal learning spaces so users can study with their peers.

Additional considerations

- Refer 4.11 *Design for inclusion* for enhanced requirements.
- Manual door operation is preferred to automated door openers (excluding front doors with very high traffic volumes) however design factors may preclude a low tension manual door closer being effective to latch the door. Avoid door closers unless necessary. Specify good quality adjustable tension door closers. Automated door openers require by AS 3500 a minimum of 3 maintenance inspections/services per year. Sliding automated door openers are cheaper and better understood by users therefore less likely to be accidentally damaged. If an automatic opener is installed, the maintenance contract must be established and adhered to for the safety of users.
- Ramps are preferred to motorised lifts.
- Communicate the amenities available for disabled users clearly through online platforms.

3.9 Security

Intent

To provide consistent functionality and security across all informal learning spaces.

Design Requirement

Where a space is individually secured:
Provide electronic (swipe card) access at the entrance doors, with delayed action door closers. Refer to the UQ Security Technical Office for detailed security requirements.

Additional considerations

- Electronic mortise locks with cylinder (in case of electronic lock failure), free to exit (from inside) at all times, are preferred.
- Storage area locks to be keyed to ‘US-A8-4’ Assa Abloy. Consider whether additional keys are required as a result of new or refurbished spaces.
- Electromagnetic locks may be required for double doors. Ensure the location of the locks is considered and head heights are sufficient.
- In refurbishments, surface mounted conduits are not preferred. Consider the route of wiring so it may be concealed.

3.10 Future proofing

Intent

Maximise the value and longevity of learning spaces by enabling them to evolve (without complete refurbishment) with changing student preferences and needs, and necessary equipment replacement.

Design Requirement

The space design is to support or adapt to changing needs over time.

Additional considerations

- Consider the potential for reconfigurations, subdivision or amalgamation of spaces in the future.
- For all technological needs, consult UQ AV/IT. Wireless infrastructure is anticipated to be present.
- Provide a distributed power solution to enable future furniture configurations.
- Where appropriate, select loose furniture to enable reconfiguration or more minimal "tuning" of the space layout and amenities at a lower cost than custom built-in furniture.
- Provide even lighting across the study spaces to facilitates reconfiguration of furniture over time.

3.11 Campuses on Countries integration

Intent

To create inclusive informal learning environments that honour the unique cultural heritage of Indigenous Australians in exemplary projects.

Requirements

Implement the integrated Aboriginal and Torres Strait Islander Design Method and address the exemplary design criteria outlined in the Campuses on Countries Design Framework, in significant projects.

On projects* with a construction budget of $4 million and over:

- devote a minimum of 2% of the construction budget to visible design strategies that represent Indigenous Australians cultures.
- apply integrated design strategies (ie. with no additional project cost) that support the Campuses on Countries vision for the project. This may include non-visible strategies.

Additional considerations

- The above requirements do not preclude the implementation of the Design Framework to smaller scale or budget projects.
- ‘Visible design strategies’ refer to design solutions that communicate to the users and where the representation of Aboriginal cultures is recognised.
- ‘Integrated design strategies’ (with no additional cost) may include, the selection of materials with colours or textures that convey a story or meaning, spatial design that connects spaces to landscape (in a specific way), or procurement of materials or services from Aboriginal and Torres Strait Islander companies. Refer to the Design Framework document for a detailed discussion of design strategies and examples.

* this references the construction budget for the overall project not just the informal learning space component of the project. As such, the implementation of the Design Framework applies to the whole project.

3.12 Adjacent external informal [learning] space

Intent

Provide external informal [learning] spaces that complement the internal informal learning space venues, taking advantage of the campus outdoor amenity and our pleasant sub-tropical climate thereby giving students greater choice, activating the campus environment and supporting events.

Design Requirement

Where suitable, provide external seating with writing surfaces adjacent to informal learning space venues.

Access to power is desirable (but not always practical).

Determine the viability of the space being used throughout the year, particularly shade in hotter months.

Background noise levels should be less than 50dBA.

Design the space for student safety and provide security cameras.

Additional considerations

- External spaces may be covered where there is merit in doing so.
- External spaces can provide supplementary group study spaces, tutorial spaces, waiting space, social and breakout. Outdoor spaces do not imply the same etiquette requirements and therefore are more relaxed and flexible in their potential uses.
- Outdoor furniture should be fixed unless the space is contained and a furniture reset plan is in place.
- Waste bins should be provided within a reasonable proximity.
- Supporting amenities such as outdoor covered kitchenettes (microwaves, boiling, chilled water, vending machines) and/or BBQs support students taking a break and provide the services to host events.
- Outdoor environments can be used by all the UQ Community. Consider other potential users in the design of the space and make it attractive and inclusive for all.
- Select durable materials that are low maintenance; colours and textures that disguise dirt. Avoid solid seats on chairs and seating benches that will hold water.
- Consider the material's ability to retain heat in areas where furniture is directly exposed to the sun.
- Loose furniture should have a minimum 5 year warranty for the exposure conditions and be constructed of UV stable materials.

Environmental Quality

4.1 Daylight

Intent

To support learning and improve concentration and engagement by providing daylight into informal learning spaces.

Design Requirement

Provide direct access to daylight and the means to control it with sunshades, screens or blinds.

Additional Considerations

- Refer to 4.4 *Lighting quality* for other considerations.
- Illumination (natural light and artificial lighting) achieves a uniformity to provide visual comfort.
- Glare is eliminated on work surfaces, computer screens (typically BYOD) and AV displays.
- Internal blind control to be motorized and linked to the BMS excluding direct sunlight from worksurfaces yet retracting to provide the benefits of external views at other times.
- Refer to *Greenstar – 11 Lighting Comfort* and *12 Visual Comfort* for best practice standards.

4.2 Views

Intent

To support learning and improve concentration and engagement by providing views to outside from learning spaces.

Design Requirement

Provide line of sight to the exterior of the building or high-quality internal view (ie. through windows) with quality views that include vegetation, human activity or objects at least 7m from the exterior of the window.

Additional Considerations

- Access to external views is a strong preference for many students when selecting a space for studying.
- Refer to *Greenstar – 12 Visual Comfort* for best practice standards

4.3 Transparency

Intent

Showcase learning promoting interactivity, collaboration, building cooperation and sharing of information and ideas. Make the space welcoming by allowing users to visually assess a space upon approach. To improve safety and security.

Design Requirement

Provide windows between the informal learning space and adjacent corridors.

Provide a window wall or large window between informal meeting rooms and adjacent spaces to provide good views to and from the room.

Layout venues to allow line of sight to most spaces as you move through the venue.

Additional Considerations

- Informal learning spaces are communal spaces and activities that require privacy should occur in other types of spaces.
- Transparency allows passive surveillance by other users or passers by thereby reducing misuse of facilities and vandalism.
- Do not provide blinds or block out on internal glazing in meeting rooms. Limit translucent frosting to a zone between 0.5 and 1.8 metres above the floor if some visual mitigation of heavy traffic or other situations like this is required. However, it is best to avoid visually screening the room.

4.4 Lighting quality

Intent

Ensure optimal lighting conditions to support visual comfort for different learners and learning activities and promote user well being.

Provide spaces which, through lighting have inclusive value for all students, including those with visual sensory disabilities.

Design Requirement

Apply a holistic approach to the lighting design of spaces considering distribution of light, light colour, finishes, choice of luminaires, adequate glare control and elimination of unwanted reflections to ensure:

- Adequate task visibility
- Comfortable visual environment to minimise fatigue.

Additional Considerations

- To prevent glare and uncomfortable visual effects, both access to artificial lighting and natural lighting should be taken into account when designing a space.
- Screen-based tasks constitute a very high proportion of activities undertaken in informal learning spaces therefore minimising unwanted reflections in screens is of critical importance. Selection and location of luminaires is important, but also location of desks relative to windows. For example locating desks perpendicular to a window and avoiding seating with the chair back to a window, mitigates unwanted reflections from the brighter outside environment and avoids the need for more obscure blinds.
- Consider providing lighting where the colour adjusts to circadian rhythms, especially in spaces with poor natural daylight. As a minimum if colour control isn't provided 4000K (or natural white) caters for the majority of student preference (and is backed by research as ideal for alertness and focus), however spaces with warmer lighting 3000K are also desired by some students and with lower lighting (lux) levels. In larger spaces consider providing various lighting conditions in activity zones.
- The colour of internal finishes/colours and how they are illuminated will impact the visual comfort of users and for visually impaired users will impact orientation and perception of space. Refer to 4.11 *Design for disability inclusion* for further discussion on space colours and illumination levels for visually impaired users.
- LED bulbs with colour rendering index (CRI) 90+ emit the most balanced light (avoiding detrimental blue light) and are less glarey than lower performing bulbs.
- Students generally prefer evenly lit spaces without shadows on their worksurface.

- Light fittings that may be exposed to abuse or risk accidental damage should be constructed to withstand such conditions.
- *AS/NZS 1680.2.2-2008 Office and screen based tasks*, *AS/NZS 1680.2.3-2008 Educational and training facilities* and the associated AS/NZS 1680 standards provide guidance on lighting design for numerous tasks.
- Australian Institute of Architects Practice note 'Lighting guide for inclusive design' highlights the important aspects of designing lighting for universal inclusive environments and relevant references.

4.5 Lighting control

Intent

Ensure optimal flexibility of lighting control appropriate to different learning zones.

Design Requirement

- Provide sufficient LED lighting for different zones, for separate activities.
- Lighting control for colour control, saturation and brightness to circadian rhythms, in spaces with poor natural daylight is to be automatically controlled. Refer to UQ AV Projects for control standards.
- Refer to 4.11 *Design for disability inclusion*, for lighting control requirements to be implemented, when directed by the brief.

Additional Considerations

- If provided, user accessible lighting controls are to be standard across all teaching and learning spaces, to enable users to easily operate these systems in any space.
- Dimming control add cost and complexity to lighting systems. Ensure custodians understand costs and ongoing maintenance requirements.
- Communicate the availability of lighting control, if it is available, or 'low light zones' in 'Book It' and the web page directory so users who need these amenities can select appropriate spaces.
- Preset controls may be suitable in certain meeting rooms to accommodate a range of different activities anticipated in the space such as presentation, discussion, AV presentation.
- Light fittings and bulbs are to be readily sourced locally rather than from other countries.

4.6 Thermal comfort

Intent

To ensure thermal conditions of spaces are conducive to learning.

Design Requirement

Comply with *ANSI/ASHRAE Standard 55-2013, Thermal Environmental Conditions for Human Occupancy* to maintain uniform comfortable temperature across the learning space.

Additional considerations

- Refer to *AS1688.1:2015 – The use of ventilation and air conditioning in buildings, Part 1: Fire and smoke control in buildings and AS1668.2:2012The use of ventilation and airconditioning in buildings Mechanical ventilation in buildings.*
- Refer to *Greenstar – 14 Thermal Comfort* for best practice standards.

- *ASHRAE HVAC Applications 2019* and *ASHRAE HVAC Systems and Equipment 2020* provides further detail on the most viable options within the industry.

4.7 Acoustic quality

Intent

For speech to be intelligible to occupants when talking to one another in discussion, and to minimise disruption between occupants conversations, through effective acoustic design of the room.

For comfortable acoustic conditions in quiet study spaces.

Design Requirement

The acoustic design must cater to the intended purpose/s of the study space:

The **acoustic separation** of the room from adjacent spaces for airborne and impact noise must be sufficient to minimise crosstalk between rooms and account of any specific AV sound potentially disturbing users in adjoining rooms and spaces.

In group study areas and meeting rooms the **internal ambient noise levels** from building services, external noise intrusion and AV equipment must be suitable for speech intelligibility, from the presenter, audio content and for group discussions. In quiet individual study areas the internal ambient noise levels must be suitable for speech intelligibility and concentrated work.

The **acoustic reverberation** is to be at levels to enable speech intelligibility.

The acoustic design is to minimise disturbance or distraction between occupants, through spatial zoning of different uses (group work separated from quite individual study) and acoustic absorption. Where areas are absent of ambient noise, utilise Sound Conditioning which artificially elevates the background noise level.

The acoustic performance of the space must enable participants in all parts of the room to have a comparable experience.

Comply with:

Association of Australasian Acoustical Consultants, *Guideline for Educational Facilities*, Version 2, 2016.

AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors.

Additional consideration

- Engage an acoustic engineer to ensure the acoustic quality of the study space. Their scope of work should include:
  - Provision of advice to address all the acoustic design requirements above and any specialist acoustic requirements for AV or sound sources.
  - Testing of the completed spaces to demonstrate that compliance is provided with the AAAC Guideline and the Australian Standard.[8]
- Consider the numerous features that contribute to acoustic performance: building envelope, window ratings, door ratings, interior materials, HVAC systems, vibration control, AV systems.
- Establishing zones for activities which have different acoustic requirements, communicating the expected use of the spaces through signage and/or different furniture arrangements will assist users to select spaces that suit their noise level preference.
- Higher performance standards for acoustic separation and ambient noise levels will be required for rooms where video and audio recording are a substantial function of the room.

[8] This requirement may be deleted for smaller projects at the discretion of the Project Manager.

- Coordinate physical acoustic design with AV amplification systems. Amplification should not be provided at LCD screens in open plan study areas as the sound disrupts surrounding users. Amplification may be suitable for special events in open plan areas.
- Wall linings for the provision of sound isolation should extend up to the slab soffit or roof over in preference to ceiling insulation blankets that make access to the ceiling void for maintenance more difficult and may not be replaced properly. Do not assume existing partitions are acoustic rated or continue to the slab above.
- Consider the reduction in acoustic performance of dividing partitions that occurs at penetrations, recessed fitting, ducts, junctions with external glazing etc., and compensate accordingly in the design detail at these areas.

4.8 Indoor air quality

Intent

Provide healthy learning environments with good indoor air quality (IAQ): low levels of pollutants.

Design Requirement

Employ a wholistic approach to ensuring indoor air quality: material selections, sufficient and effective ventilation, filtration, monitoring (CO_2 sensors).

Additional considerations

- Refer *World Health Organisation Global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen, nitrogen dioxide, sulfur dioxide and carbon monoxide*, 2021.
- Select finishes that have low to no VOC emissions to maintain indoor air quality.
- Indoor air quality can be adversely affected by other pollutants such as fungi, microbial contamination, house dust mites, particulates, and air toxins such as formaldehyde. Poor maintenance and cleaning can lead to a build up of particulates in the environment. Consider maintenance, materials that demonstrate, through testing, to maintain indoor air quality. Be sure to understand the conditions of the testing are the same as the conditions of the application.
- Optimising indoor air quality requires a multifaceted approach, integrating numerous design strategies. Refer *ABCB Indoor Air Quality 2021 Handbook* and ASHRAE *Indoor Air Quality Guide: Best Practices for Design, Construction and Commissioning*.

4.9 Environmental quality

Intent

Create an environment that promotes engagement in learning activities, where all users feel welcome. Reflect in the high quality of the environment, the value the University places on its community and the education experience.

Design Requirement

Provide an environment that is welcoming, aesthetically pleasing, stimulating, engaging and culturally inclusive as a setting conducive to learning.

Additional considerations

- Diversity of space design embodies the diversity of the UQ Community and the campus experience, providing a richer and more engaging and memorable experience. Providing a varied portfolio of spaces allows students to select a learning environment that suit their study preferences and the task they are undertaking. Whilst the look and feel of spaces may differ, the way finding,

booking system, AV control, lighting control, signage should remain standardised, of high quality and reliable, to make it comfortable for users to navigate new spaces.

- Consider the cultural context that design features may be read, such as colour, motifs, patterns, artworks etc. For example overly bright monochromatic colour schemes or bold stripes or patterns may make some people physically uncomfortable.
- Consider using timber or timber look finishes as timber has been shown in recent studies to engender a sense of wellbeing in occupants. Students consulted did not identify bright, bold colours as a preference rather tolerated or didn't mind them in the few contexts they encountered them.
- Creating spaces that reflect the cohort identity through creating environments generally associated with the cohort (faculty, school or other), displaying subject matter, tectonics, helps support the development of students identity within the academic community. Signage identifying a space that is a 'cohort home base' is also a useful strategy at a minimum.

4.10 Sustainable design

Intent

To minimise the environmental impact of the informal learning space fit-outs throughout its life cycle: manufacture, construction, operation, maintenance and disposal.

Design Requirement

- Design spaces to minimise energy consumption, whilst achieving the functional requirements of the space.
- Specify materials and fittings with sustainability credentials (reused product, recycled content product, third party certification, stewardship programs) and no to low VOC emissions.

Additional considerations

- Specify materials and fixtures that are robust with straightforward maintenance requirements, available spare parts, and ongoing supplier product support to extend the life of the fit outs.
- Furniture and AV IT equipment has some of the lowest lifespans. Select suppliers that offer maintenance and end of life takeback. Build the cost of this into fit-outs with stewardship contracts and including maintenance contracts in tender selection criteria.

4.11 Design for disability inclusion

Intent

To create a portfolio of spaces that create welcoming, comfortable, inclusive environments beyond the minimum statutory standards.

Design Requirement

- Design spaces to cater for people with disabilities such that they may comfortably occupy a seat / area amongst their peers.
- Follow best practices and current research to cater for varied disabilities. Many design strategies are universal providing more comfortable environments for all, not just disabled users or people with one type of disability.
- Emergency warnings must have both auditory and visual warnings.

- Collaborate with the UQ Disability Inclusion Group and stakeholders to establish inclusion priorities for the venue, working toward the aim of catering for the diverse UQ community across the portfolio.
- Communicate the amenities available for disabled users clearly, through online platforms.

Additional considerations

The following list of disabilities is not comprehensive but address design strategies (outside the statutory requirements) for the three most prevalent disability categories in the Australian population 15-64. Within each category there is a spectrum of needs.

Physical disability

- Provide a minimum of 1 height adjustable desk in venues up to 100 seats. Provide a minimum of an additional 2 spaces at conventional desk height (720+/-20) that provide for the required width, depth and height clearance under the table in accordance with AS1428.2 distributed in the informal learning space. If study booths are provided, a minimum of one booth shall have a cantilever with the required clearance to enable a person in a wheelchair to join their peers at a booth.
- For venues over 100 seats, provide wheelchair accessible desks to AS1428.2 in quantities and distribution in accordance with the NCC D3.9.
- Use D handles doors and easily clasped handles for cabinetry.
- Comply with AS1428.2 to position power points and other controls (including taps or microwaves) within reach of users.
- Kitchenettes may be designed to AS1428.2 if deemed required in the stakeholder consultation process. Comply with side reach, height reach considerations outlined in AS1428.2 as a minimum. Heights recommended in AS1428.2 make for uncomfortable amenities for many abled bodied people and underbench clearances remove often valuable storage for water heater/chillers in kitchenette spaces.
- Provide voice activated controls for AV equipment in specialised locations.

Hearing impairment

- Many people with hearing loss rely upon spatial awareness to navigate the environment so good transparency allows user to anticipate people coming or going. Refer 4.3 *Transparency*.
- For people with hearing loss heavily rely upon their vision to communicate (signing, lip reading, reading body language) and to navigate a space and people around them therefore:
  - Good even lighting without dark shadows or glare is important to avoid eye fatigue and see clearly.
  - Wall colour tones that contrast with people's skin tones help visually distinguish their fascial expressions.
  - Generous circulation in spaces and good sightlines allow people to clearly see and communicate with their peers.
- Low reverberation and no flutter echo, low levels of background noise supports speech intelligibility and can also facilitate occupants picking up other sensory cues. Refer 4.7 *Acoustic quality.*

Vision impairment & visual sensory processing

- Floor colour should have a strong contrast with the walls to guarantee better orientation.
- Avoid glare disturbance through artificial lighting design and where required provide blinds to diffuse and refract natural light.

- Ceilings should be a neutral colour and/or confirm to the walls. Lights against black unlit ceilings cause glare and darker ceilings create a cave effect. The presence of high contrast for a student with visual sensory issues or visual impairment considering the importance of this visual signal can cause sensory overload and loss of attention.
- Glare from the desk surface must be avoided. High gloss surfaces in light colours can be a source of glare particularly if hit by sunlight or a 'hot spot' from a downlight.
- Provide user friendly light dimming control in suitable contained areas (such as study booths) to cater for users with visual impairment. The light level smoothly resets to the pre-set lighting levels after a predetermined period. Dimming switches in colour contrast to the background. Refer to 4.5 *Lighting control* for further discussion.
- Provide lighting suitable for the task and space. AS1428.2 provides minimum lux levels, however this should not be understood as adequate lighting. The lighting levels should be guided by the task, the minimisation of glare and various factors discussed here and 4.1. *Daylight*, 4.4 *Lighting quality* and 4.5 *Lighting control*.
- Controls, power points, dimmer switches should be in logical, easily seen locations and have a colour contrast of at least 30% with the background colour.
- Demarcate the main circulation routes through a space with a colour or pattern that contrasts with surrounding areas that are furnished. Monochrome spaces (where walls, floor and furniture are one colour) are difficult to navigate for a person with visual impairment.

In determining the disability inclusion priorities for a project consider the venue's:

- Location
- Space capacity
- Utilisation
- Users needs
- Location of other similar amenities (with the aim of distributing amenities)

Libraries, being the most prominent and highly utilised spaces for all students should provide and employ the highest level of accessible amenities and design strategies.

Finishes, Furniture and Fitout

5.1 Furniture configuration flexibility

Intent

Where suitable, provide furniture that is easily movable and configurable to support a range of learning activities and allow students to create settings that suit their needs.

Engender a sense of ownership for students by providing the ability to modify a space setting.

Design Requirement

Provide robust, movable lightweight furniture, that is matching and modular.

Additional considerations

- Provide modular square or rectangular tables that function as standalone tables or create group tables. Avoid tables with circular tops (unless for large banquette tables that are not intended for student to move) as students for lack of other options push them together in disjointed caterpillars. The circular tops provide relatively poor space amenity. If using rectangular tables ensure one side of each table is consistent with all other tables so they can be joined. Visual cues may be helpful such as coloured edge strips.
- If employing a flexible furniture strategy, develop a plan and budget for furniture resetting. Furniture rearranged organically over days or weeks reduces a space's functionality and capacity sometimes significantly. Not all students feel comfortable rearranging furniture and a chaotic looking space with furniture randomly position is off putting for many students. Resetting furniture is not typically the scope of cleaning staff.
- Provide one type of chair or matching chairs throughout a flexible space. Students will move chairs they find more comfortable from their intended areas and chairs will get mixed up. Most custodians do not have the budget for daily furniture resetting, therefore matching chairs will ensure the fitout looks cohesive even if the chairs aren't where they were initially placed.
- Stackable / nestable chairs and /or tables provide greater flexibility if a space is also used for other functions from time to time. For example cohort spaces may be used for presentations or events and the ability to move furniture away is useful. This many not be suitable for all spaces.
- Locate power so it can be accessed readily. Anticipate the ways students will locate desks to access the power points and distribute power points.

5.2 Work surfaces (tables)

Intent

To provide durable work surfaces to accommodate several devices and materials comfortably.

Design Requirement

- Provide at least 850mm wide by 500mm deep space per seat for collaborative seats – 900 x 600mm is preferred.
- Provide 1100mm wide by 550-600mm deep space per individual focus study seat.

- Provide a durable finish and edge protection, such as high pressure laminate with ABS edging.
- Provide table shapes and sizes that support their intended use. For group tables: facilitate eye contact, collaboration and discussion between participants. For individuals: more generous size
- Minimum 120 kg load rating or higher to suit the expected use.
- 10-year warranty for fixed tables. 10-year warranty for motorised height adjustable table frames and 5 years for electric motor components. Include a pre-warranty inspection by the supplier in the supply contract to ensure all tables are still in working order.

Additional considerations

- Refer 5.1 *Furniture configuration flexibility.*
- Students prefer desk height tables (720mm) to bar height tables. However, higher tables are used and can be useful to demarcated spaces or to enable users to appreciate views at windows with higher sill heights.
- Table leg systems must be robust, preferably inset from the table edge and situated so students don't need to straddle a leg system.
- If the tables are operable – height adjustable, flippable for nesting and storage, castors – consider if the operation required is logical, easy and safe.
- Avoid bright white and gloss finishes that cause glare.
- Avoid dark flat colours that show fingerprints and marks easily.
- Timber, timber look laminates and marmoleum finishes typically have good mark hiding qualities.
- Tables in rooms with video conferencing or AV capture should avoid polished table surfaces or strong saturated colours.
- Use design devices to communicate to users the intended use for individual study such as single sided desks (at walls or windows), desk dividers (short or tall), task lamps, power points, signage.
- The noise of height adjustable table motors can be very disruptive in quite spaces. Check motor noise when specifying.

5.3 Seating (chairs)

Intent

To provide robust, comfortable seating.

Design Requirement

- Provide seating that is comfortable for a variety of body types, heights and is ergonomically appropriate.
- Australian Furniture Research Develop Institute (AFRDI) rating Level 6 or equivalent quality
- Minimum 120kg load rating
- 7 year warranty for occasional chairs, 10 year comprehensive warranty (for all chair parts) for task chairs. Include a pre-warranty inspection by the supplier in the supply contract to ensure all chairs are still in working order.
- Provide seats that are robust with a durable, easy clean finish.
- Provide a sample when a new chair is being specified.

Additional considerations

- For longer duration study, students prefer height adjustable gas lift task chairs on casters. These chair types are not suitable for foyer or corridor spaces because they are so easily moved. As a minimum provide 'semi-ergonomic' seating with seat height adjustment and back adjustment. Seat remains static -no tilt. Gas lift task chairs often require more maintenance than static chairs.
- Students do not prefer hard plastic chairs or backless stools for study, although these types of seats are suitable for various reasons / settings.
- Good Environmental Choice Label (GECA) certification or similar environmental credentials preferred.
- Ergonomically contoured seats and back supports to be comfortable for 2-3 hours.
- Generous seat pan size preferred, min 440 x 420D.
- Consider the height of fixed seats relative to desk height. Ideal heights vary depending on the height of the individual (200-290mm). 240mm between chair seat cushion and desk top is an average distance but each situation should be considered relative to the specifics.
- Avoid easily stained or marked finishes and colours. Where mesh or vinyls are used, consider dark colours that will hide marks.
- Local retailers with after sales support services are preferred. Consider the lead time of the chairs when specifying to ensure they will be delivered in time.

Materials

- Plastics to be UV resistant.
- Heat set powdercoat as a minimum.
- Polypropylenes to be reinforced with fibreglass.
- Anti-static materials.
- Avoid light coloured seats.
- Stress points to be constructed in solid timber, reinforced polypropyle, steel or cast aluminium. Avoid rolled aluminium. Tube steel legs should be a min 2mm gauge (1.5mm suitable for auxiliary parts).
- Low maintenance materials – plastics, vinyls, wool blends. No pure wool,
- Foam to be injection moulded, multi-density foam. No slab cut foams for stand-alone furniture pieces. Treated with antibacterial properties. Main body no less than 50 kg/m3. No TDI (carcinogen) containing foams.
- Refer 5.9.4 *Upholstery.*

Easy to clean functionality

- Smooth shell and/or upholstery, without hard-to-reach cavities.
- Connection between seat & back: to be either continuous or concave upholstery, or with wipe-out gap between seat and back.
- Any separate cushions to be removeable for cleaning. Heavy duty Velcro or button fixings so not easily removed.
- Lounge chairs should be full height to the floor (with hard wearing lower section/not upholstery), or legs to be minimum 200mm H to facilitate cleaning under.

Upholstered furniture pieces

- Refer 5.9.4 *Upholstery*
- Vinyl is preferrable to fabric for stain resistance and cleaning.
- Vacuumed formed/tight upholstery.
- Upholstered products to have inner frames (timber, steel or reinforced polypropylene).
- Overstitched upholstery (double stitch). No single stitch.
- Tamper proof zippers.
- Standalone furniture pieces with full upholstery – no visible webbing.
- Foam backed upholstery preferred.

Optional design features to consider

- Height adjustable chairs to have glides, or braking castors for informal spaces (reduce the likelihood of moving them).
- No arms, or low arms. Generally, arms should not be higher than 650mm when the chair is adjusted to its highest point.
- Multi-use environment
- Minimal adjustments
- Minimal moving parts
- Stacking caps on stacking chairs
- Replaceable parts.
- Manufacturers with ISO 14006/9001/14001

Maintenance

- Every 6 months deep clean recommended (ie. Vacuum castors, removable cushions to be removed and cleaned under).
- Every 12 months: product specific maintenance: tighten bolts & screws; gas lift maintenance.
- 12-18 months prior to end of warranty period: Full audit and action on any warranty claims.

End of Life Stewardship

- Request suppliers to offer take back programme, where furniture items can be collected, refurbished for reuse, or broken down for recycling. Cost of programme to be reviewed every 3 years.

5.4 Seating (built-in)

Intent

To provide comfortable, ergonomic custom seating.

Design Requirement

- Design built-in seating to support comfortably using a laptop on an adjacent table.
- Construct the seating of high quality, durable and low maintenance materials.

Additional considerations

- For booths overhang the table, over the edge of the seat 50mm.
- Seat height should be determined relative to the table height and consider the compression of the foam seat cushion if a cushion is provided.
- Seat depth is recommended to be 425mm to the backrest.
- Recess plinth or cantilever seat so users can tuck their feet under the seat.
- Seat cushions should be level. Do not slope backward towards the rear of the seat.
- Slope the seat back no greater than 10° from vertical. If the seat back is too reclined the user is too far from the work surface or their back is unsupported and vertical cushions are uncomfortable for many users.
- Attach cushions to plinths or support frames with clips or zips so that cushions cannot be easily removed by students.
- Detail vulnerable external corners to withstand impact from cleaning equipment, chairs and bags.
- Refer 5.9 *General Finishes.*

5.5 Writable surfaces

Intent

To provide writable surfaces to facilitate interaction for individuals and groups.

Design Requirement

- Provide a large format whiteboards which are easily viewable by occupants at an adjacent table setting.
- Writable surface to be smooth, nonporous, blemish free, scratch resistant such as vitreous enamel (porcelain/ceramic) on steel. The surface should be easily cleaned with a proprietary eraser and regular application of a whiteboard cleaning fluid. Minimum 10 year warranty.

Additional considerations

- Minimal quantity of joints between boards is preferred (as joints tend to discolour).
- Provide frames around whiteboards or a change of surface level between whiteboard and wall to indicate what is a writable surface, as participants draw off the edge of whiteboards that have seamless edges to wall surfaces.
- If using vitreous enamel steel mounted on mdf or similar heavy board, ensure the substrate, framing or the like will carry the asymmetric load of the boards. If the existing wall is not straight or plumb, provide battens or similar to provide a straight surface for Z-clips to be fixed. Z-clip rails are light gauge metal and will deflect between intermittent packers.
- Students use whiteboards most during examination study periods.

5.6 Signage

Intent

To provide signage to assist users in finding and operating within the learning space.

Design Requirement

Provide signage in accordance with the UQ Signage Manuals.

Develop in conjunction with the UQ Signage Officer, a suite of informal learning space signage:

- Space Identification Signs for open plan and bookable meeting rooms incorporating a QR code with the link to user support options.
- Gathering Point Regulations with relevant protocol pictograms.
- User etiquette (this may be for a quiet study space, a reminder of shared amenities and therefore cleaning up, vacate for a disabled user)

Provide digital booking panels for bookable meeting rooms or as a minimum signage with a QR code to view room availability and booking options.

Additional considerations

- Consider if additional signage is required for wayfinding.
- Consider if the building directory signage needs upgrading to incorporate the informal learning spaces.
- Digital signage is not recommended for informal learning spaces that are not bookable. It is typically underutilised or not used as enthusiasm and resources to generate content wanes. Refer to UQ ITS AV for digital signage specifications if required. Ensure framing and substrates are adequate to support digital signage panels.

5.7 Physical storage

Intent

To provide storage within informal learning spaces for equipment, or furnishings, to minimise clutter and support the functioning of the space.

Design Requirement

Provide enclosed storage for equipment and furnishings.
Do not provide open shelving.

Additional considerations

- When security is an issue, provide lockable storage.
- The following functions should be considered:
  - Artefacts, resources for various activities regularly held in the space. (Typically most relevant for faculty or school spaces).
  - Area to store furniture components so layouts can be changed rapidly to accommodate different activities.
  - Examinations dividers or other supporting equipment for adjacent rooms.

5.8 Waste disposal

Intent

To provide easy access to waste disposal to encourage users to keep the informal learning spaces clean.

Design Requirement

Provide a double cabinetry enclosure for waste receptacles for general waste and recycling, or triple for green waste adjacent to main circulation routes.

Additional considerations

- Locate the bin enclosure within clear sight of the entry to the learning space. For smaller informal venues and enclosed rooms the bins should be located outside of the space.
- It is preferable that the enclosure accommodates two, 240L wheelie bins. Smaller bins may be acceptable in small spaces.
- Bins should be able to be pushed into the enclosure and the design should ensure the waste goes into the bin, not between the door and bin.
- Each receptacle should be labelled with UQ standard signage.

5.9 General finishes

Intent

To provide finishes that look good for the lifespan of the fitout and contribute positively to the environmental quality of the space.

Design Requirement

Finishes are to be:

- Durable
- Low maintenance and/ or easy to maintain (for example carpet requires frequent vacuuming to maintain its appearance and function however this maintenance is considered easy).
- Contribute low or no VOCs
- Meet the minimum appliable fire hazard properties required by the NCC.

Additional considerations

Refer to 4.11 *Design for Disability Inclusion.*

5.9.1 Wall finishes

- Provide chair rails or other method (eg. soft or hard acoustic panelling, whiteboards, wall vinyl) of protecting non-masonry finishes in rooms with moveable furniture.
- Wall finishes should not include large areas of high-contrast repetitious patterns such as stripes, as they are problematic for video-conferencing and for some room occupants. Immersive strong colour schemes, whilst graphically dramatic, have been similarly problematic, eg. all yellow rooms.
- For video-conferencing wall finishes should preferably have 40- 60 % reflectance. Use neutral colours and avoid black, (brightly lit) brilliant white or saturated colours such as orange, yellow, green or red. Do not use polished metal surfaces that may cause ‘hot spots’.

5.9.2 Floor finishes

- Floor covering choices include carpet tile, resilient flooring, polished concrete or the like. The acoustic properties of the finish must be considered in the holistic design of the space.
- With floor finishes but particularly carpet tiles consider colours and patterns that conceal marks. Avoid light colours and plain single colour tiles. Carpets are cleaned maximum once a day so spills/soiling may not be cleaned until many hours later. Specialist cleaning may be days/ months

away. Light colour show all manner of marks and stains. Dark coloured plain finishes show lint, dusty foot prints, light coloured debris and whilst this can be vacuumed up the space may look dirty all day due to one dirty pair of shoes.

5.9.3 Ceiling finishes

- Ceiling finishes to be matte and sound absorbing. Preference is given to a solution that is easily removable or provides easy access to services. The ceiling finish should be serviceable ie. easily cleanable and if designed to be removable, easily removed.
- Avoid use of ceiling tiles that are difficult to source or physically replace (eg. ship lapped tiles).
- Ceiling space is to be easily accessible for servicing and maintenance of lighting, learning technology, and other services systems.

5.9.4 Upholstery

- Heavy duty commercial rated fabric or vinyl. Martindale Abrasion Rub Test: min 100,000 rubs.
- Warranty minimum 3 years, 5 years preferred.
- Vinyls with stain resistant, antimicrobial treatment with urethane top coat have greater stain resistance than fabric. Do not use un-coated vinyls.
- Vinyls to be bleach cleanable in concentrations specified by the supplier.
- Soft leather look/feel vinyls avoid the plastic feel that is undesirable for users.
- A heavy duty fabric's lifespan is typically dictated by its ability to resist or hide stains / marks rather than the degradation of the fabric, resulting in furniture being discarded before it fails. Stain resistant fabrics are only resistant if the mark is removed within 24 hours. To maintain their appearance fabrics will need steam cleaning or upholstering shampooing at regular intervals to stay looking clean. Therefore, vinyls are preferred in the majority of situations to prolong the life of furniture and reduce maintenance costs.
- Vinyls typically split or fray at high wear areas. To prolong the life of built in furniture: use high density foams, detail seams and corners of cushions with rounded edges to void sharp corners in high wear locations, design cushions to be removable (by a professional, not students) for re-upholstering.
- High density foams to be a minimum of 40kg/m3 with anti-microbial treatment. No TDI containing foams (Australian made foams must not contain TDI).

Technology and Tools

6.1 Technology and tools coordination

Intent

Provide spaces that achieves the user functional requirements, UQ engineering and UQ ITS AV quality standards and is coordinated with the architecture and services.

Design Requirement

- Coordinate the design layout of all applicable technology and tools with UQ ITS AV and relevant stakeholders, commencing with sketch design room layouts. The level of engagement will depend upon the complexity of the equipment required.
- Provide substrates or structure to support the physical loads of equipment.
- Set out tools and equipment in design, to scale, in required locations to ensure coordination with other services (to avoid conflicts).
- Retrofitted cables cannot be reticulated in the storey/room below the learning space.

Additional considerations

  - UQ ITS AV will supply an AV brief including a list of equipment to be used, AV responsibilities and building contractor responsibilities and cabling schedule for incorporation in the design documentation.
  - AV equipment supply and fit off is by UQ ITS AV. Installation of cabling and terminations is the responsibility of the building contractor, in accordance with the design documentation.

6.2 Electrical power

Intent

To ensure that the majority of users in a space have access to electrical power to support the BYOD use for learning activities.

Design Requirement

- Provide convenient access to electrical power for end-user devices through dedicated power at participants' location.
- Provide both 3 prong 240V and USB-A and USB-C sockets. Preferably in a single power plate.
- Provide a minimum of 50% of users with access to a power point from their seat. Ideally, provide power to each seat.
- Power points are to be surface mounted in logical, visible locations and colour contrast to the background by a minimum of 30%. Switchless socket units are preferred (turned on by the insertion of the plug).

Additional considerations

  - Refer 4.11 *Design for disability inclusion* regarding locations.
  - Outline a range of desirable or anticipated activities and their power requirements to determine appropriate capacity for a range of usage scenarios. Greater than 50% power provision will be desirable in some venues.

- Consider a distribution grid in the floor to provide flexibility in positioning power receptacles and to accommodate multiple layout options to provide for future flexibility.
- Provide appropriate receptacles locations or cable management raceways such that cables to not obstruct traffic paths.
- Floor boxes must have robust lids, and adequate cable access hatches for the intended purpose, so the larger lid may be fully closed. The design layout and quantity of power outlets should deter students from trying to utilise floor boxes for power. Floor boxes should be used to provide power to soft wired desk outlets that are robust and easy to use.
- Fit starter sockets to floor boxes that are intended for softwiring connections, to deter students from unplugging softwiring to use the GPO directly.
- Softwiring must be tested and tagged as per the UQ Electra-safe guidelines.
- For table mounted power, use robust fixed outlets with a slightly raised profile. Avoid high profile surface mounted modules that obstruct sharing materials over the desk, desk troughs with outlets which get filled with litter and dust or outlets with operable parts which get broken.
- Select and locate power outlets to accommodate chargers with large offset transformers (Apple products for example). For this reason avoid steeply angled power plates that sit flush on the desk.
- Surface mounted floor boxes should be avoided as they limit room layouts, being a trip hazard.
- Skirting/electrical ducts where necessary (surface mounted skirting ducts collect dust and are frequently damaged) must have clip in covers (not drop in covers), in long lengths.

6.3 Network connectivity

Intent

To enable all participants to access wireless or hardwired network solutions to support a range of informal learning activities.

Design Requirement

Provide wireless connectivity with appropriate bandwidth, latency, and capacity to support connections for all occupants, including guests, available in real-time without prior arrangement.

Provide wired connectivity to strategic areas of the room that require high-bandwidth/ low-latency connections.

Additional considerations

- Outline a range of desirable or anticipated activities and their potential bandwidth requirements to determine appropriate bandwidth capacity.
- Wired connectivity will only be required to support specific functions. Determine cables connectivity requirements at strategic points
- Design flexibility into the system to allow for increased connectivity as demanded by course applications.
- WiFi Access Points are to be in visible locations and must not be concealed in ceiling voids.

6.4 Visual displays

Intent

To enable sharing of visual data by all participants, easily available, visible and readable for special events.

Design Requirement

- Provide visual displays of a contemporary standard appropriate to the intended room use and function, layout, dimensions and content types.

Additional considerations

- Visual displays such as data projection or large LCD monitors may be suitable in specific circumstances but are typically not provided in open plan informal learning spaces.
- Liaise with UQ ITS AV for display selection and viewing angles and mounting requirements. Refer also to the *Collaborative learning Space Design Requirements*, 6.4 Visual displays for additional considerations.

6.5 Technology enabled interactivity - Meeting Rooms

Intent

Support group study activities with technology solutions.

Enable synchronous participation in learning activities by groups from informal leaning space locations outside the classroom affording students greater flexibility and independence.

Design Requirement

Provide technology to enable participants (at each connected location) to perceive each other's actions, allowing them to work collaboratively in creating, sharing, annotating, and displaying information. The system should be user friendly and intuitive to use.

As the default, provide technology that can be powered by a user's device, in line with the BYOD policy.

Additional considerations

- Technology enabled bookable meeting rooms are recommended to be located in libraries and faculty/school spaces.
- The recommended 'standard' meeting room equipment setup with docking station:
  - Large LCD screen, wall mounted
  - Conferencing bar with speakers, microphones and camera
  - USB-C or HDMI plus USB-A docking for BYOD
  - Keyboard & Mouse

  A student connects their device via preferred docking connection, waking up the screen and they can display content, join a Zoom or Teams session etc.
- Interactive technology setups with audio should not be provided in open plan locations because they cause disruption to surrounding students.

6.6 Occupancy cameras

Intent

By monitoring utilisation at key semester periods, provide evidence to identify opportunities to improve utilisation and to inform policy decisions.

By monitoring utilisation in real time provide students with information to inform availability of seating to study at.

Design Requirement

Provide people counters in informal rooms, linked to the campus database. Locate the camera/s to enable full capture of room occupants.

Coordinate camera specification and locations with UQ ITS AV.

Additional considerations

- The utilisation of data is address in 2.3.8 *Evidence-Based Research and Assessment*
- Coordinate camera locations with other services to avoid conflicts.

6.7 Student computers and BYOD displays

Intent

Ensure students can use their own devices (laptop computers and tablets, phones) in informal spaces to provide comfortable and convenient user experience.

Ensure students have access to computers, where software or hardware requirements are specialised, to support a variety of learning activities.

Design Requirement

Provide power, network solutions and interfaces with UQ AV IT equipment to support students BYOD.

Provide computers of a specification appropriate for the intended activity, where required.

Additional considerations

- Provision of computers should be assessed on a case by case basis and co-ordinated with ITS. The university supports BYOD and rooms that do require UQ supplied computers should be designed to function if the computers are removed.
- Students studying for long periods appreciate a large screen (24” +) and keyboard they can plug their laptop into as typically it is more ergonomic than working at a laptop – ‘BYOD Display’. Review the need and suitability of the space to provide ‘BYOD Displays’.
- UQ IT AV equipment is monitored via a cloud based system to provide real time diagnostics to the IT AV teams (in their office) for prompt maintenance. Confirm data point requirements to enable monitoring.

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Appendix A
Responsibility Matrix

All parties must make themselves aware of the full scope of the guide as whilst the direct implementation responsibility may not be 'theirs' the principle's intent may have implications for other aspects of the project.

The Responsibility Matrix provides the recommended responsibility for implementation; however this must be tailored to the specific needs of each project.

Section		UQ	Consultant Design Team Assistance	Consultant Design Team
Context, Planning and Support				
2.1	Strategic Alignment	x		
2.2	Supporting Student Experience	x	x	
2.3	Planning and Design Process	x		
2.3.1	Roles and responsibilities	x		
2.3.2	Project planning and delivery process	x		
2.3.3	Stakeholder engagement	x	x	
2.3.4	Methods of measurement	x	x	
2.3.5	Evidence-based planning and design	x		x
2.3.6	Pilots and prototypes			x
2.3.7	Information technology and audio visual integration	x		x
2.3.8	Evidence-based research and assessment	x	x	
2.3.9	Maintenance and life cycle planning	x	x	
2.4	Support and Operations			
2.4.1	User support	x		
2.4.2	Furniture reset	x		
2.4.3	Daily cleaning and maintenance	x		

Planning and Layout				
3.1	Locality	x	x	
3.2	Scale and capacity	x	x	
3.3	Space density			x
3.4	Room Ceiling Height			x
3.5	Zoning			x
3.6	Circulation through space			x
3.7	Supporting amenities	x	x	
3.8	Accessibility and universal design			x
3.9	Security			x
3.10	Future proofing			x
3.11	Campuses on Countries integration	x		x
3.12	Adjacent external informal [learning] space			x
Environmental Quality				
4.1	Daylight			x
4.2	Views			x
4.3	Transparency			x
4.4	Lighting quality			x
4.5	Lighting control			x
4.6	Thermal comfort			x
4.7	Acoustic quality			x
4.8	Indoor air quality			x
4.9	Environmental quality			x
4.10	Sustainable design			x
4.11	Design for disability inclusion	x		x
Finishes, Furniture and Fitout				

5.1	Furniture configuration flexibility			x
5.2	Work surfaces (tables)			x
5.3	Seating (chairs)			x
5.4	Seating (built-in)			x
5.5	Writable surfaces			x
5.6	Signage	x	x	
5.7	Physical storage			x
5.8	Waste disposal			x
5.9	General finishes			x
Technology and Tools				
6.1	Technology and tools coordination	x	x	
6.2	Electrical power			x
6.3	Network connectivity	x	x	
6.4	Visual displays	x	x	
6.5	Technology enabled interactivity - Meeting Rooms	x	x	
6.6	Occupancy cameras	x	x	
6.7	Student computers and BYOD displays	x	x	

Appendix B **Design checklist**

Project Name:

Design Consultants:

Indicate if you have complied with the design requirements. Provide this completed checklist to the Project Manager. Non-compliance is to be signed-off by the nominated client representative/s.

Section		Comply	N/A	Non-compliance
Planning and Layout				
3.1	Locality	☐	☐	☐
3.2	Scale and capacity	☐	☐	☐
3.3	Space density	☐	☐	☐
3.4	Room ceiling height	☐	☐	☐
3.5	Zoning	☐	☐	☐
3.6	Circulation through space	☐	☐	☐
3.7	Supporting amenities	☐	☐	☐
3.8	Accessibility and universal design	☐	☐	☐
3.9	Security	☐	☐	☐
3.10	Future proofing	☐	☐	☐
3.11	Campuses on Countries integration	☐	☐	☐
3.12	Adjacent external informal [learning] space	☐	☐	☐
Environmental Quality				
4.1	Daylight	☐	☐	☐
4.2	Views	☐	☐	☐
4.3	Transparency	☐	☐	☐
4.4	Lighting quality	☐	☐	☐
4.5	Lighting control	☐	☐	☐

4.6	Thermal Comfort	☐	☐	☐
4.7	Acoustic quality	☐	☐	☐
4.8	Indoor air quality	☐	☐	☐
4.9	Environmental quality	☐	☐	☐
4.10	Sustainable design	☐	☐	☐
4.11	Design for disability inclusion	☐	☐	☐
Finishes, Furniture and Fitout				
5.1	Furniture configuration flexibility	☐	☐	☐
5.2	Work surfaces (tables)	☐	☐	☐
5.3	Seating (chairs)	☐	☐	☐
5.4	Seating (built-in)	☐	☐	☐
5.5	Writable surfaces	☐	☐	☐
5.6	Signage	☐	☐	☐
5.7	Physical storage	☐	☐	☐
5.8	Waste disposal	☐	☐	☐
5.9	General finishes	☐	☐	☐
Technology and Tools				
6.1	Technology and tools coordination	☐	☐	☐
6.2	Electrical power	☐	☐	☐
6.3	Network connectivity	☐	☐	☐
6.4	Visual displays	☐	☐	☐
6.5	Technology enabled interactivity - Meeting Rooms	☐	☐	☐
6.6	Occupancy cameras	☐	☐	☐
6.7	Student computers and BYOD displays	☐	☐	☐

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