Re-Imagining the University Library

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E. Smart Spaces
UAEU Libraries

• Context

• Vision

• Progress to date

• Barriers and Lessons
Background and Context

• Al Ain 16,000 students
  1000 faculty
  segregated campus
• Year of Reading
• Drivers for change
• Dean’s background
• Cultural factors
The Vision – The Garden Library

- Space as a change agent
- Activation & Engagement
- Measures of success
- Role of technology and innovation
• Consultation

• Design Concepts – exemplar for wellness & sustainability

• Design Brief

• Budgets, timelines
UAEU Library will be a Living Lab for Sustainable Design

Demonstrate Innovation & best practice passive & low energy and water use

Teach students about practical sustainability

Use for research for Engineering, Architecture, Agriculture, Psychology, Health etc
The new entry experience
BRINGING OUTDOOR INDOOR
ARTISTIC SHADING
NY Public Library in Bryant Park
New technology enables sustainable resource usage and gives users control over their working environment.

**Smart Lighting**

Lighting fixtures becoming multi-function

- Distributed intelligence
- Sensor integration (temp, RH, light, occupancy)
- Circadian lighting to match moods
- Individual control using smart phone
- High speed internet
New technology enables sustainable resource usage and gives users control over their working environment

Distributed Sensors

Detailed monitoring and analysis at the workstation

- Lux levels, radiant temperature, RH, air temp, occupancy, CO2
- Sensors can be easily relocated
- Low cost, simple monitoring systems
Using the new library as an exemplar -
Healthy Wellbeing & Happiness

We spend 90% of our time indoors

Our built environment has a profound impact on our health, well-being, happiness and productivity

Design the New UAEU Library as an exemplar for Best Practice WELL building supported by the latest research
Demonstration Kitchen with the College of Food and Agriculture
Kitchen Gardens at Medibank Melbourne
Community Gardens and BBQ areas
Stay Healthy and Hydrated with Bottle Filling Stations

Stay Hydrated on the Go - Refill Here!

Bristol Water and At-Bristol Science Centre want to keep YOU hydrated and fight the waste of single-use plastics.

In 2015 Refill Bristol saw over 200 venues sign up as refill stations where anyone can top up their reusable drinking bottles.

A Few Fresh Facts!

- 8% of people prefer bottled water when on the go, over half of them blame lack of access to tap water as the reason for their purchase.
- Tap water meets the world's standards.
- Bottled water can cost up to 1000 times more than tap water.
- The average adult human body is 60% water. It's important to keep hydrated!
- Drinking 8 glasses of water a day can improve brain function, mood, focus, digestive health and energy level.

Don't Have a Reusable Bottle? Buy One in the At-Bristol Shop Today!

www.refillbristol.org.uk
Sit to Stand Desks for Healthy Study

9 Ways Excessive Sitting Can Harm You.

- **HEAD**: Sitting for long periods of time can cause blood clots to form which can travel to the brain causing a stroke.
- **LUNGS**: You are twice as likely to develop a pulmonary embolism, or blood clot, if you sit most of your day.
- **ARMS**: The reduction of physical activity leads to hypertension or high blood pressure.
- **STOMACH**: Excessive sitting contributes to obesity & colon cancer. Enzymes in the blood vessels of muscles responsible for burning fat shut down leading to the disruption of the body’s method of metabolizing fuels.
- **FEET**: Numbness in the feet can be caused by poor circulation. It can also cause nerve damage or pressure on nerves when you sit for long periods.
- **NECK**: Fluid retained in the legs during the day moves to the neck at night & contributes to sleep apnea. Neck Muscles are stressed leading to pain.
- **HEART**: People who live a sedentary lifestyle are up to twice as likely to die or develop diabetes and heart disease than those who move frequently.
- **LEGS**: Fluid collects in the legs during sitting. Standing & walking helps pump it through your body.
- **BACK**: Sitting for long periods of time place a big amount on the spine. Over time, sitting can result in compression of the spinal disks. Because muscles are tight from pressure, sudden movements can lead to injury.
Sleeping Pods at University of Western Sydney
Examples of different study and collaboration settings

Australian Catholic University
Melbourne Campus
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Melbourne campus
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University of Adelaide Student Hub
Examples of different study and collaboration settings

Victoria University of Wellington Library
Examples of flexible help desks

University of Adelaide
Student Hub
Example of food service

Australian Catholic University
Melbourne Cafe
The Gallery at the Library by the Dock
Examples of seating and shelving
Providing Daylight and Views for the occupants
Providing Daylight and Views for the occupants

The University of Wollongong
University of Newcastle (NSW)
Learning Lounge

Learning Lounge
Now Open!
Australian Thesis Library
IT IS NOT THAT I’M SO SMART
BUT I STAY WITH THE QUESTIONS MUCH LONGER
ALBERT EINSTEIN
The University of Wollongong

Library Rooms
Examples of different study and collaboration settings

University of Melbourne
Baillieu Library
Examples of different study and collaboration settings

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Baillieu Library
Examples of different study and collaboration settings

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University of Melbourne
Examples of different study and collaboration settings
Examples of different study and collaboration settings

La Trobe University
Sydney Campus
Examples of different study and collaboration settings
More Examples - UNSW
Shared Screens to assist collaboration
More Collaboration Spaces
Lockers – model of co-working
Makers Spaces The Edge SLQ

FabLab
Coding with Raspberry Pi
Hackathons
Children’s Literacy - Library by the Dock, Melbourne
Music Practice Rooms - Sound & Video Editing Suite
Community Performance Space - Library By the Dock
Interconnecting stairs for Health and Connectivity
Interconnecting stairs for Health and Connectivity
Stairs for Health and Connectivity
Balconies for Access and Collaboration
Creative Lighting
Colour Changing LEDs
Creative Lighting
Creative Lighting
Internal Landscaping for Biophilic Benefits
Vertical Gardens

Circular Economy
Putting research into practice
Air-Conditioned Bus Stops
Outdoor Projection Screens
Opportunities for Projection ART
Opportunities for Projection ART
Zayed University Library
The Library by the Dock, Melbourne
Adaptable Space
Water Features - Monash University
Clayton Campus
Water Features - Monash University Clayton Campus
Different Study Spaces
Different Study Spaces
Formal and Informal Meeting Spaces
Formal and Informal Meeting Spaces
Breakout Spaces
Breakout Spaces
Technologies
Lighting

LIGHTING

• Task lighting
• Movable light fixtures for optimal task lighting and ergonomics
• Smart lighting
Future Smart Meeting Rooms

1: Future smart lighting
   Power over ethernet (PoE) LED lighting with intelligent sensors and
   the ability for user app control. Future LiFi wireless data.

2: Smart room central sensor
   Key head for monitoring presence and lux (lighting) level as well as BLE
   radio node to pick up occupancy and sociometric badges as well as data
   from other wireless sensors in the room. On the cabled IP backbone.

3: WiFi Smart Access Point (AP)
   WiFi coverage as well as location layer data and ‘digital exhaust’.

4: Door sensor
   Door sensor for measuring occupancy and intelligent door sign for room
   booking and NFC check in.

5: Air quality smart sensor
   Wall mounted wireless sensor for measuring air quality (CO2 etc).

6: Sociometrics
   Smart badges that report on location and manage presence and occupancy.

7: Smart phone
   App based control of environment, mood setting, audiovisual as well
   as services such as food and drink.

8: Immersive AV
   Smart collaboration systems, such as Microsoft’s Surface Hub, Oblong
   or Nureva with video conference and side digital ‘cork boards’ as well
   as haptic control.

9: Wireless presenter
   Connectivity for portable devices to connect and share content.

10: Big data
    Visualisation and presentation of data, from the ability to show building metrics
    such as energy efficiency to a ‘who’s in’ and ‘find the expert’ platform.

11: Smart audio
    Ability to create discrete sound fields, use automated ‘assistants’
    and voice control.
Other Technologies

ELECTRONIC ROOM BOOKING

• Apps
• Touchscreen calendar pads for room booking
• Intelligent display
• Electronic tables
SOPHISTICATED ACCESS CONTROL

• Electronic control system
• Elegant glass and steel design

SWITCHABLE ELECTRIC PRIVACY GLASS

• When activated, the glass changes from transparent to translucent
• This gives control of privacy

WIRELESS PHONE CHARGING MAT

• Wirelessly charges electronic devices
Other Technologies

BUILDING INFORMATION

• Display in lifts / lobbies / communal areas
• Display business strategies / sustainable features of the building
• Advertisements
• Information to occupants
Activated outdoor space

Northern Plaza, MGS, TCL, Neo Construct 2016
Photo: Andrew Lloyd
Barriers and Lessons

- Drivers
- Culture
- Consultation
- Pace of Change
- Physical change as agent for organisational change
Thank you

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