Creating great spaces for learning and innovation

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Pressures for change in education

- Impact of technology
- **Shift to more** collaborative, active learning
- Increased emphasis on integrated, multidisciplinary learning and research
- Recognition that learning takes place anywhere/anytime
- Blurring of boundaries between learning, research, work and leisure
- Importance of diverse collaborative academic and commercial networks
- Encouraging and accelerating innovation and entrepreneurship

d.school, Stanford University, USA
New space models for education

- **Traditional categories of space are becoming less meaningful as space** becomes less specialized, boundaries blur, and operating hours extend toward 24–7.

- **Space types designed primarily around patterns of human interaction** rather than specific needs of particular departments, disciplines or technologies.

- **New space models focus on enhancing quality of life** as much as on supporting the learning experience.

Source: DEGW
Creating spaces to support the pedagogy

- **Thinking** spaces
  - spaces for conceiving ideas, deliberating, brainstorming

- **Designing** spaces
  - spaces for putting structure, order, and context to free-ranging ideas

- **Collaborating** spaces
  - spaces for enabling team activities

- **Presenting** spaces
  - spaces for showing things to a group

- **Debating** or negotiating spaces
  - spaces for facilitating negotiations

- **Documenting** spaces
  - spaces for describing and informing specific activities, objects, or other actions

- **Making** spaces
  - spaces for creating objects and artefacts using diverse materials and processes

- **Practicing** spaces
  - spaces for investigating specific disciplines

- **Sensing** spaces
  - spaces for pervasively monitoring a location

- **Operating** spaces
  - spaces for controlling systems, tools, and complex environments
Increasingly diverse learning approaches

- **Collaborative**, active learning with hands-on experiences
- **Integrated**, multidisciplinary
- **Distributed**, learning takes place anywhere/anytime, mobile technology with social activity
- **Immersive** with simulated or real-world experiences
- **Blended** activities, online with face-to-face, mixed reality

Design Factory, Aalto University, Helsinki
High Interaction

Team Learning/
Interactive Learning Environments
- Group Study Rooms
- Seminar Rooms
- Media Authoring Labs
- Synchronous Distance Learning

Interactive Knowledge Creation/
"Touch Down" Facilities
- Collaboration Spaces
- Consultation/Support Centers
- Virtual Environments
- Information Commons
- Cybercafes

Low Interaction

Training/
Independent Workstations
- Academic Computer Labs
- Training Rooms
- Lecture Halls
- Demo Labs

Independent Study/
Scholars Workstations
- Quiet Study Areas
- Reference Resources
- Print & Media Collections
- Navigation Assistance

© 1998 S. Dugdale/DEGW
Increased variety of learning settings
The learning landscape

**SPECIALIZED LEARNING SPACES**
Tailored to specific functions or teaching modalities

*Limited setting types:* formal teaching, generally enclosed

*Access:* Embedded, departmental

*Tend to be:*  
- owned within departments, subject specific  
- involve specialized equipment  
- require higher levels of performance specification  
- often higher security concerns

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**GENERIC LEARNING SPACES**
Range of classroom types

*Range of setting types:* formal teaching, open and enclosed

*Access:* In general circulation zones, access by schedule

*Tend to be:*  
- generic teaching settings  
- often limited in flexibility by furnishings  
- used when scheduled

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**INFORMAL LEARNING SPACES**
Broad definition of learning space

*Wide range of setting types:* informal and formal, social, open and enclosed

*Access:* Public, visible, distributed, inclusive

*Tend to:*  
- encompass richer range of settings  
- allow choice  
- be loose fit, unscheduled  
- work as a network of spaces rather than singular settings  
- have food!

Source: DEGW, 2002
Using time and space differently

- Increased use of on-line media to deliver notes, lectures and related course materials.
- Students review these materials on campus, at home and at their own pace.
- Students as producers of digital resources requiring new ways of assessing progress.
- Classroom periods are transformed into hands-on work periods where the lecturer answers questions, engages class-wide discussions or offers other means of support.

Computer Information Systems Lab, Bentley University, USA
Innovation is not new......
and it is not all about technology.
Synchronous and asynchronous learning

- **Face-to-face**
  - Instructor-led training/workshops

- **Synchronous**
  - Webinars/Live streaming
  - Live simulations

- **“Collaborative” Asynchronous**
  - Discussion forums
  - Social networking

- **Self-paced Asynchronous**
  - Online-self tutorials
  - Archived podcasts

Source: Unitec Institute of Technology, New Zealand
Shift from physical to hybrid environments

- Physical environments are increasingly equipped by, and formed through, new technological features supporting mobile ways of working.

- Physical environments find their extension in the non-physical environments of the digital world.

- In combination, the physical and the non-physical work environments lead to new hybrid learning and work spaces and environments.
Sony CLEDIS ultra high definition display visualisation wall.
Asthma Precision Medicine using the U-BIOPRED cohort with eTRIKS/tranSMART
‘Hakanai’ - haiku dance performance taking place in a cube of moving images projected live by a digital performer.
Journalism class, Wallenberg Learning Theatre, Stanford University, USA
CHAPTER 9
Heart Muscle: The Heart As a Pump
Blended learning lecture theatre,
University of Loughborough, UK
Blended learning lecture theatre, University of Leeds, UK
It is in fact a part of the function of education to help us escape, not from our own time — for we are bound by that — but from the intellectual and emotional limitations of our time.
Changing uses of libraries

- Between 2009 and 2015, total initial circulations in ARL libraries fell by almost half (from 36 million to 19 million).
- Average decline in circulations per student since 1995 is from 25 to 7 - a 72% decrease
- Declining circulation rates does not mean declining use of library resources overall, or decreasing engagement with library services.

Source: Rick Anderson, University of Utah, 2017
Saltire Centre,
Glasgow Caledonian University, Scotland
Group study space, Rankin Brown library, Victoria University, Wellington, New Zealand
"If all the elements are arranged in the order of their atomic weights, a periodic repetition of properties is obtained."
The networked learning landscape model

Layers of the Innovation landscape

Source Dugdale & Strawn 2017
http://er.educause.edu/articles/2017/2/crafting-an-innovation-landscape
## Defining the future learning landscape

### LEARNING SETTING ELEMENT LEARNING SETTING
- **physical**
  - Desk
  - Table
  - Chair
  - Filing cabinet
  - Bench
  - Power
  - Wall
  - Partition
  - Task light
  - Down light
  - Telephone
  - Computer
  - Network connection
  - Whiteboard
  - Data projector
  - Printer
  - Photocopier

- **virtual**
  - VIDEO CONFERENCE
  - INSTANT MESSAGING
  - SHARED VISUALISATION
  - CHAT ROOM
  - e-WHITEBOARD
  - e-MAIL
  - VR WORLD/ AVATAR
  - TEXT MESSAGE
  - VOICEMAIL

### LEARNING ARENA
- CLASSROOM
- INFORMATION COMMONS
- CORRIDOR
- LIBRARY
- LABORATORY
- STUDIO
- AUDITORIUM
- CAFÉ
- OFFICE

### LEARNING ENVIRONMENT
- SCHOOL
- COLLEGE
- UNIVERSITY
- LIBRARY
- MUSEUM
- ART GALLERY
- PARK/ GARDEN
- STREET/ CITY
- HOME
- OFFICE BUILDING

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Creation of learning-centred communities

The virtual learning environment

**Schools**
- Early Childhood Centres
- Secondary Schools
- Primary Schools
- 6th Form Colleges
- Joint use libraries

**Higher Education**
- Colleges
- Universities

**Innovation Centres**
- R&D facilities
- Executive Education
- Teaching Hospitals

**Workplace**
- Workplace based learning
- Professional Education Institutions
- Corporate Training Centres

**Public Libraries**
- Academic Retirement Communities
- Life long learning

**Culture/Leisure/Living**
- Art Galleries
- Museums
- Libraries
- Libraries
- Performance spaces

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Lasell Retirement Village – Lasell College, Newton, Massachusetts
Balanced innovation

Curriculum

Pedagogy

Space

Technology
Great spaces to learn

**Space**
Efficient, appropriate size, site and building technology infrastructure

+  

**Place**
Well-designed, meaningful spaces

+  

**Process**
Successful blending of learning, work and leisure activities

+  

**Experience**
Total experience before, during and after the learning event
Expanding the library landscape

- School libraries
  - Community Learning Centres
  - Technology Access Centres
- Joint use libraries
- Public libraries
  - Events & Performance spaces
  - Government Service Centres
  - Maker spaces
- Joint use libraries
- Academic libraries
  - Co-work spaces
  - Digital Scholarship Centres
  - Business & Intellectual Property Centres
The future learning experience

- Layered experience
- Creation of flexible activity zones to support learning, living and working
- Users choosing appropriate settings and technology for the tasks they want to achieve
- Space and experience changing over the course of the day: changing to reflect different types of users at different times of the day
- Blending of physical and virtual learning and research spaces
- Blurring of learning with working, living and leisure
- Creation of learning-centred communities
Aalto on Tracks, Mongolia.
The Bridge school, Xiashi, China

- Architect” Li Xiaodong (Atelier)
  Winner of the Aga Khan Award for Architecture, 2010
- The “Bridge School” bridges the two parts of the small village of Xiashi separated by a creek
- Pedestrian bridge suspended below the School now connects the two parts of the village
- School now the physical and spiritual centre of what was a declining village.
- Providing a central, social space for the village
- A public library separates the two classrooms
- The two ends of the school can be opened up to create open stages that are integrated with the public spaces outside.
Thank you.

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