A Student-Centred Experience: Learning Spaces

– creating the DIT campus of the future

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Context: work is changing

- Shift from paper processing to knowledge brokering

- Open and non-hierarchical organisations

- Value in ideas not the manufacture of product

- Work when we like, where we like, how we like

- Organisation mixture of “core staff”, “freelance staff” and “partners”
New paradigms of space ownership

CORE SPACE
- icon and image space
- long lease/freehold
- prime location
- highly serviced

FLEXI SPACE
- shorter leases
- administrative or sales space
- conference/training space

PAY-AS-YOU-GO
- licensed or pay for use
- shared/borrowed from partners

“Company’s assets are ‘know how’, not physical assets”
Virtual and physical space are complementary...

VIRTUAL SPACE
- convenient
- efficient

PHYSICAL SPACE
- meaningful
- symbolic
- engagement of the senses

....one type of space does not replace the other

WHATEVER THE INTERFACE YOU ARE ALWAYS PHYSICALLY LOCATED SOMEWHERE
The distributed workplace

Virtual

Private
protected access
individual or collaborative workspace

Privileged
invited access
collaborative project and meeting space

Public
open access
informal interaction and workspace

Physical

e.g. Home/office

e.g. clubs, airport lounges ('baby')

e.g. café, hotel lobbies airports (Bryant Park New York)

Knowledge Systems
e.g. VPN/Intranet
The Hive BP

Knowledge communities
e.g. IM, project extranets
video conference

Internet sites
e.g. public chat rooms,
information sources,
The city is the office

- ‘office is the city’
  - single location, owned space
- ‘city is the office’
  - multiple locations, shared spaces

Increased use of distributed, shared workplaces
Move from fixed to variable costs
Is a similar transformation occurring in education?
The rules are changing…..

• The internet has changed notions of place, time and space
• Emerging new methods of teaching and learning based on an improved understanding of cognition
• Effect of demographic changes on learning population
• Changing financial context for education: increased competition, pressure on resources
• Impact of changes in government policy: increasing participation, economic development priorities
• Blending of living, learning and leisure
• Life-long learning
Forces influencing learning

FORCES FOR INTEGRATION

• Just-in-time/On-the-job learning
• Interdisciplinary exploration for innovation
• Internships & experiential learning
• Fused learning patterns
• Convergence of media & IT technologies

LEARNING TOOLS & SUPPORT SYSTEMS

• Podcasts, streaming video & web delivery
• Rich multimedia, image sharing
• Portfolios
• Simulation & augmented reality experiences
• Proliferation of mobile devices
• Course management systems
• Wikis & collaborative tools
• Messaging & aggregation tools
New ways of learning

• **More collaborative**, active learning with hands-on experiences

• **Integrated**, multidisciplinary

• **Blended**, learning takes place anywhere/anytime, mobile technology with social activity

• **Immersive** with simulated or real-world experiences

• **Hybrid** activities, online with face-to-face, mixed reality
Utilisation of educational space

- Utilisation rates of 15% - 20% still common in UK universities
- Little attention paid to utilisation of library and social spaces
- Use of space out of core hours and term time is increasing
- Scope for major rethinking of use of space and time in education
Transforming the school educational experience:

• Major investment underway across all areas of education:
  – Building Schools for the Future (BSF): Refurbishment or replacement of every secondary school in England
  – £60 billion+ investment in England over 15 years
  – £5 billion -10 billion spend on IT
  – a new school every 3.5 days for 15 years

• Additional investment programmes for primary schools, Academies, plus Scotland/ Wales/ N. Ireland

• Revolution not evolution in education practice - rethinking education process, use of space, time, and technology
Project Faraday: rethinking science education

• Poor quality science spaces seen as major factor in reduction of science student numbers in HE

• Re-invent science spaces and the school ‘science experience’

• Make science more attractive to students

• Linked to changes in education policy – students as consumers of science rather than producers

• Achieve transformation within existing space and cost guidelines (BB98)
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Higher education

• Total UK HEI expenditure £17.7 billion p.a.
  Source: UUK 2006

• Universities and higher education colleges in London generate approximately £8 billion in goods and services across the UK every year – nearly 1% of the UK’s GDP
  Source: London Higher/LDA 2006
Ask the ‘customers’ what they think….

- 2006 National Student Survey
- 157,000 respondents across the UK
- Universities and courses rated in terms of quality of teaching, assessment and feedback, academic support, organisation and management, learning resources and personal development
- Open University - highest overall rating for second year in a row (4.5/5)
- Open University - 11/53 of the ‘best’ rated courses, none of the worst rated courses

*What is the future role of the physical university if a virtual university can provide the highest quality ‘university experience’?*
The Open University

• 180,000 undergraduate students including 30,000 post-graduates

• 70% of students in full-time employment

• 25,000 students live outside the UK

• On-line conferencing system providing real time discussions – some student organised
Changing student expectations

• 55% of students are now 21 or over
• 45% study part-time
• 6% of all entrants are post-graduates
  Source: HEFCE Strategic Plan 2006 – 2011

• 55-60% of students have a job during term time
  Source: Scotsman 1 Sept 2006

• Students will graduate with an average of £20,000 debt
  Source: National Union of Students
“Thirty years from now the big university campuses will be relics. Universities won’t survive…..”

“….the cost of higher education has risen as fast as the cost of healthcare…. the system is rapidly becoming untenable. Higher education is in deep crisis.”

Peter Drucker, Forbes magazine, July 1997
Transformation not extinction: new space models

• **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
The new learning landscape

Central hubs
- City
- One-stop
- Knowledge
- Student

Learning spaces
- Study
- Teaching
- Skills
- Work

Lifestyle facilities
- Catering
- Sports
- Living
- Retail
Defining 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

**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

**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!
Supporting mobility

- “Touch down” settings

- Enable & support personally owned devices to become the learning tools

- Settings to spread out and work, with power outlets everywhere

- Movable furnishings to enable users to modify as needed

- Recognize that users can choose location - quality of the environment matters
Enriching transitions

• Spilling out from lecture halls & classrooms

• Making the most of time between activities or classes

• Nature of circulation spaces changes, become ad-hoc workplaces

• Transitions from public into semi-private realms, interface with faculty offices

• Intentionally providing opportunities for creative interaction
Blending spaces to support blended activities

• Work, eat, talk, relax

• Social learning, be with others

• Support multiple activities with diverse settings

• Flexible, allow user control and manipulation

• Exploit food as a catalyst

• Blending of information-based work and entertainment

"multiplexing of functions"
(Bill Mitchell)
Rethinking the academic workplace

• Workplace comprises 14% -28% of total estate in UK universities
• Based on SMG total space cost, a typical individual academic or administrative workplace in the UK costs £1400 to £1800 p.a.
• Providing efficient, effective and expressive space
• Enhancing the learning and teaching experience
• Key issues for the sector:
  - Drive for innovation & creativity
  - Interdisciplinary collaboration
  - Interaction and knowledge sharing
  - Balancing collegiality & privacy
  - Reflecting values
• One size does not fit all – academic work styles are very variable
  - amount and type of teaching, research, administration
  - lifestyle (the two home academic), ability/ desire to work from home

Scottish Funding Council research project on academic workplace futures: www.exploreacademicworkplace.com
Partnering to enhance facilities

• Blurring the boundaries between the university and the City

• Learning, leisure and working: creating the 24/7 university

• Opportunities for shared resources, new learning activities, work-life balance

• Innovative financing solutions for new facilities
Supported by appropriate technology

Basic
open access areas, cafes, circulation

Enhanced
all teaching spaces, LRC, labs

Advanced
selected teaching & specialist areas

Cutting-edge
specific use, e.g. simulation
Key technology trends that will impact future research and learning spaces

- The experience is the computer - innovation in display and input devices
- Virtualisation of technology and processing power
- Unlimited storage capacity and bandwidth
- Mobile computing
- Social computing/ Web 2.0
- Telepresence and virtual presence
- New ways of doing things: mashing up and new ways of publishing
Settings for new ways of learning

- Immersive learning experiences
- Game based learning
- Augmented reality - learning with distributed devices
- Visualization of complex data
- Flexible spaces, changing tools
- Demonstration, practice and assessment zones
- IT/ Information systems support
Impact of flexible learning on space requirements

Flexible learning settings

1.4 – 1.67 sqm/pp
- Designed for chalk 'n talk
- Supports teacher-centered passive learning
- Limits active learning activities
- Inadequate amount of space to support use of learning equipment (e.g. student laptop, portable whiteboard etc.)

1.9 - 2.8 sqm/pp
- Takes use of new technology into design consideration
- Primarily supports teacher-centered passive learning
- Limits active learning activities (such as small group discussion etc.)

2.3 - 3.25 sqm/pp
- Multi-purpose spaces for enhanced effectiveness of learning
- Improves effectiveness by supporting a variety of teaching and learning activities
- Achieves efficiency by increasing space utilization through flexible and adaptable design
Shift from physical to hybrid work environments

- Physical working environments are increasingly equipped by and formed through new technological features supporting mobile ways of working.
- Physical working environments find their extension in the non-physical working environments of the digital world.
- In combination the physical and the non-physical work environments lead to new hybrid work spaces and environments.
The changing role of the university library

Many university libraries are seeking to shift from their traditional role as repositories of information and other resources for individual, passive learning to places where learners meet, collaborate, and interact in learning processes that are much more dynamic. (Jamieson, 2005)
Challenges for libraries and research spaces

• Changing technologies
• Changes to researcher expectations
  • Contact any time, anywhere
  • Store, personalise, manipulate, repurpose, share
• New research methods
  • Multi-authoring
  • Cross disciplinary research
  • Collaborative Ph.Ds
  • Cross border research
  • Multiple formats and multimedia outputs
  • Importance of ephemera as well as formal documents
• Proliferation of digital information
  • Large scale digitisation
  • Born digital information
• Blurring of boundaries between academic and business worlds
  • Knowledge transfer and supporting entrepreneurship
The Future Library:
spanning the physical and the virtual

Knowledge Systems,
e.g. VPN/Intranet,
Servers and digital infrastructure

Research centre,
Digital archives,
Projection and presentation areas

Library
Internet sites,
information sources,
digital displays

WORK AREAS

private
protected access
individual or collaborative workspace

Invited access
collaborative research, project and meeting space

public
open access
informal work, social and display space

VIRTUAL

PHYSICAL

Work areas
Stacks,
Archives, conservation areas

Reading Rooms,
Collections

Cafés,
Courtyards,
Touchdown work areas, Lobby

©DEGW 2006
Warwick Learning Grid

- 1350 sqm facility over two floors
- Flexible social learning space designed to challenge and motivate students
- Encouraging students to explore new ways of responding to their courses and course assignments.
- Wireless enabled space open 24 x 7
- Broad range of technologies available including plasma screens, scanners, document visualizers, video cameras, video editing facilities, some fixed PCs, SMART boards, CleverBoards, magnetic screens, video and DVD players
- 10,000 volume reference library
- Adjustable computer tables, soft seating, movable screens, and tables for individual and group work (all on castors for easy reconfiguration) make it simple for students to configure the work areas as they see fit.
- Learning Grid is administered by paid students
Warwick Learning Grid
University of Nottingham Learning Hubs

- Flexible learning environments and information centre created in each of the U of Nottingham libraries
- Access to a wide range of information resources and services and state-of-the-art multimedia technology
- Designed to support flexible learning activities including informal and collaborative group work
- Pervasive and integrated technology
- Flexible space and multi-adaptable furnishings: allowing chairs, tables, partitions and in some cases ICT equipment to be moved in order to form ad hoc group working facilities
- Area and noise zoning facilitated by the design: including some relaxed areas with comfortable furniture and catering facilities.
- Multi-skilled staff: supporting traditional library and IT enquiries.
University of Nottingham Learning Hubs
Saltire Centre, Glasgow Caledonian University

- Social Learning centre combined with traditional library
- 1800 seats – individual and group work areas
- Wireless networking throughout
- Registry and Student Services located on lower floor of Social Learning Centre: Student Services Mall
- Consultation rooms for careers and other advice sessions
- Café as part of social learning centre
- Art integrated into the space through commissions and exhibitions
- Resources available to staff to help them integrate the social learning space into their learning approach
Saltire Centre, Glasgow Caledonian University
University of Santa Clara, California

- Newest academic library in the US – opened April 2008
- 19,400 sqm on four levels.
- Over 1,100 reader seats in a variety of formats, including carrels, small tables, movable lounge furniture, and outdoor seating in the café and terraces.
- Building consists of library, learning commons, technology centre
- 25 collaborative workrooms with walltalker® whiteboard wallpaper for floor-to-ceiling note-taking
- 68 high-end computers, 11 media stations, two assistive technology stations
- Faculty development lab, Multimedia lab, drop-in computer lab with dual-display computers, videoconferencing room, two training rooms for library and technology instruction, two video editing suites, three Educational Experimentation Rooms for testing new educational technologies
- Automatic retrieval system attached to library – 1 million volume capacity
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British Library Digital Centre: responding to the changing nature of research

• Vision: “a new digital centre that will become the country’s premier holder of digital archives and meet the needs of the new generation of researcher”

• “redefine the role and purpose of the British Library in the information revolution of the 21st century”

• “the country’s largest repository of digital archives for media, the performing arts and creative services”
Goals for the Digital Centre project

• Creating a robust development plan that is achievable, affordable, exemplary
• Creating an inspirational place than integrates the physical and the virtual
• Creating a multi-layered experience
• Creating versatile space and IT infrastructures to support change
• Creating space for people not technology
• Creating an information service infrastructure

Source: Urban Screens 2005
University of NY, Buffalo

PRINCIPLES FOR THE LEARNING LANDSCAPE

The Visioning and Analysis Phase of the UB 2020 Master Plan process resulted in nine overarching principles to guide the development of the learning landscape at the University at Buffalo. By using the nine principles as a foundational guideline for the design and implementation of new and renovated learning infrastructure, the entire UB Campus is conceived as a “network of places” for learning, discovery, and discourse between students, faculty, staff, and the wider community.

1. **Animate** all significant paths and places with visible activities and landmarks.
2. **Create** magnetic hubs or “anchors” using core shared learning spaces.
3. **Increase** diversity and density of space types, uses and “ownership models” include a balance of “communal” and “territorial,” “formal” and “informal spaces.”
4. **Intersperse** “specialized” spaces with “multipurpose” and “in-between” spaces.
5. **Enable** significant places to serve multiple uses and user-groups, and empower students to interpret and use spaces in creative ways.
6. **Improve** flow and connections for people, activities and information.
7. **Consolidate and integrate** service access points.
8. **Demonstrate** results with pilot projects and learn from experimental spaces.
9. **Organize and clarify** space uses. Help users understand locations relative to visible landmarks, indoor and outdoor, and specific program elements.
University of Buffalo learning landscape principles

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Learning settings

**DIDACTIC**
- Lecture Hall
- Northeastern University
- Capacity: 100 and up
- Area per Person: 20-30 sq ft (fixed tables), 15-18 sq ft with tablet chairs
- Notable Physical Attributes:
  - High ceiling height
  - Wide teaching wall to accommodate wide aspect ratio screens and 2 – 3 images
  - Continuous counters with power for laptop use
  - Alternative: deep tiers with chairs that swivel to support small group discussion.

**HYBRID**
- Case Study Room
- Loyola University
- Capacity: 40-100
- Area per Person: 26-30 sq ft
- Notable Physical Attributes:
  - High ceiling height
  - Wide teaching wall to accommodate wide aspect ratio screens and 2 – 3 images.
  - Continuous counters with power for laptop use

**COLLABORATIVE**
- Learning Studio
- University of Maryland
- Capacity: 40-84
- Area per Person: 27-35 sq ft
- Notable Physical Attributes:
  - High ceiling for sight lines
  - Plan accommodates efficient alternative layouts
  - Movable furnishings
  - Multiple screens
  - Sight lines to screens are important drivers
  - Group project work capture

**FLEXIBLE**
- Flexible Classroom
- University of Chicago
- Capacity: 24-60
- Area per Person: 20-30 sq ft
- Notable Physical Attributes:
  - Movable tables and chairs
  - Distributed power outlets in floor
  - All walls enabled, as white boards or projection surfaces
  - Collaborative software and systems to capture group products

**CONVERSATIONAL**
- Seminar Room
- SUNY Binghamton
- Capacity: 16-24
- Area per Person: 25 sq ft
- Notable Physical Attributes:
  - Non-hierarchical table layouts
  - Room proportions more square than rectangular
  - Walls enabled for group work
  - Simultaneous writing and projection
  - Dual image projection
  - Group project work capture

**CONNECTIVE**
- Meeting Room
- University of Chicago
- Capacity: 8-12
- Area per Person: 25-30 sq ft
- Notable Physical Attributes:
  - All walls engaged in data display, multiple images
  - Ceiling grid for multiple projectors and devices in swappable locations
  - Capability to engage remote participants or network data, e.g. Access Grid
  - Additional space for supplemental devices

**EXPERIMENTAL**
- Technology Sandbox
- MIT Media Lab
- Capacity: 15-25
- Area per Person: varies depending on function
- Notable Physical Attributes:
  - Flexible infrastructure with good power and data distribution
  - Supports introduction of advanced technologies
  - Movable furnishings to support multiple functions
  - Fit up tailored to local need and purpose
Learning corridors
Learning corridors (2)

LINEAR CAFE
- Study Counter
- Work Table

CUL-DE-SAC
- Enclosed Group Work Room
- Lounge Seating
- Collaboration Table

OPEN THEATER
- Theater Set

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Faculty Hubs

Spaces | Distributed Teaching and Learning Hubs

FACULTY HUB

The "Faculty Hub" is a scalable, social/collaborative center for faculty that supports interdisciplinary collaborative research and scholarship while also providing a place to work with as they move between campuses. A variety of individual workspaces and meeting spaces enables collaborative work, and conference rooms are equipped for visualization and large scale distributed meetings with remote collaborators. The Hub concept can be scaled to meet the needs of an academic unit, neighborhood, or campus, in support of UB’s Strategic Strengths.

Enclosed spaces for small meetings or individual work measuring approximately 100 sf. These spaces are bookable to allow faculty from other campuses to be productive between meetings or to continue discussions with colleagues after larger meetings break up.

Faculty/Scholar Workstations

Touch-down workstations for faculty/scholars from across campuses and/or visiting from other institutions. Ideal for short-term tenure, the work area is shared and unassigned, and provides access to network resources and scholarly applications.

Visualization / Meeting Spaces

Collaboration spaces for 6-8 or 12-15 people that can be reserved, equipped as an Access Grid type node. These rooms, open to all faculty, enable group-to-group interactions with remote colleagues and visualization of distributed data. Infrastructure allows easy conversion of technology, furnishing layouts.

Lounge / Breakout Space

Informal group area with a café counter or kitchenette. The space is centrally located in the Faculty Hub creating visual and physical connections to enable collaborative activity. A presence/information wall might create an always-on virtual connection with remote colleagues, display of work or events.

Support and Storage

Depending on scale of the hub, a reception area may be included to greet visiting faculty and provide support. Other support areas include a copy/print area and lockable temporary storage.

PROGRAM SYNERGIES

- Part of a network of collaboration centers for scholars and researchers to support the Strategic Strengths.
- Makes visualization facilities available to the majority of faculty who do not currently have access to them.
- Provides a collaborative environment where UB faculty across campuses can connect.
- Fosters community building across discipline boundaries.
- Proximity to transportation, related activities, and academic offices.
- Could be located within or outside of Libraries.

POTENTIAL SITES

The Faculty Hub is scalable, and may be programmed as a central hub or edge condition. A small or medium-sized Hub serving an academic unit may include space for approximately 10 or 20 faculty respectively, and will be located at the edge of the related academic neighborhood it serves, whereas a large hub with spaces for more than 40 faculty will be located at a central campus location.
Learning landscape process

**PROCESS MAP**

The "Campus Concepts" phase of U of I’s master planning process will establish a tangible trajectory towards the UI 2020 Vision. Campus Concepts for the Learning Landscape are grounded in the vision, analysis and input from the first phase of the planning process. They aim to communicate actionable ideas for consideration and discussion within the UI Community. It is through this feedback, drawing on UI values and priorities, that these concepts will be edited, refined and implemented.

DEGW’s Campus Concepts report is structured by a disciplined, non-linear process that moves visions into strategies, strategies into concepts, and concepts into built realities. This process begins with the input of the UI community to define a vision and establish guiding principles for the campus. These aspirations become a lens through which we study and assess the current campus, its people, places, infrastructure and processes. Strategy follows this assessment - a plan of action which suggests particular 'tactical' learning space concepts, before being realized these concepts must then be filtered and refined through a series of 'Implementation Filters' to ensure they are addressing both immediate and long term needs. At the same time basic upgrades are made to existing deficiencies. Pilot Projects can plant the seeds of new ideas, spaces and learning styles on campus. Through exciting pilots and strategic improvements, a thriving learning landscape can emerge – where the entire campus supports the learning, discovery, and engagement of a dynamic intellectual community - a place everyone wants to be.

**VISIONING**
Formulating visionary possibilities from strategies and models of analysis that reflect the real, diverse and cohesive values of UI

**STRATEGY**
A plan for action that characterizes growth as opportunity for transformation, the right mix of spaces for interactive learning, and space concepts for new pedagogies and technologies

**CONCEPTS**
From furniture to infrastructure, classrooms to case-inventories, each campus concept offers specific and synergistic contributions to the UI vision

**ASSESSMENT**
Understanding society by learning spaces, projected growth, changing demographics and pedagogies through direct observation, data and personal interaction

**IMPLEMENTATION FILTERS**
Those filters allow concepts to be evaluated according to their ability to meet certain basic practical criteria. Having determined four basic categories of learning space the premises are used to ensure that concepts are working on one of the several levels of improvement.

**DISTRIBUTION**

**CAPACITY**

**CONCEPTS**

**DESIGN CRITERIA**

**PROPORTION**

**PILOT PROJECTS**

**THINKING LEARNING LANDSCAPE**

Learning Landscapes are designed to create rich and memorable user experiences as we navigate physical places and virtual environments. Magnets, landmarks, and icons as well as strong connections and close organization help bring people and activities together in a meaningful way. Within this collage of spaces and programs, users and communities are - each part of a system of layered amenities as in a lively urban neighborhood - so that the campus may grow into a fertile ground for learning, discovery, and interaction.
Next steps for DIT

• Working within the context of the DIT masterplan
• Exploring the future DIT learning landscape
• Creating an efficient, effective and amazing place to learn and work
• Immediate task is to work with each Faculty and central Departments to look critically at future space requirements:
  – How much space is needed to deliver current and future activities?
  – How can space be used more intensively?
  – What are the opportunities for sharing space and resources across DIT?
• Schedule of Accommodation supporting the development of building and space briefs
DEGW