Venturing into strange places: linking research and teaching to prepare graduates for the 21st Century

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4 questions

• What are likely to be defining characteristics of “21st century society” in the next decade?

• What (higher order) attributes will our graduates need to thrive (or at least survive) in the 21st century world we have envisaged?

• What kind of learning environments or teaching approach are most appropriate to foster the kinds of graduate attributes we identify?

• Are our academics happy to work in that way?

Question 1

• What are likely to be defining characteristics of “21st century society” in the next decade?

‘A radically unknowable world’

‘our ignorance expands in all kinds of directions’ (p.250)

Need for creative ‘knowing-in-situ’ and imagination. Mode 3 knowledge where all our knowledge - of the world, of our situations, of ourselves - is contested.

Pedagogy must be founded on openness, mutual disclosure, personal risk and disturbance’ (p.258).

(Barnett 2004: 247-260)

Characteristics of the 21st century

• Uncertainty
• Speed and acceleration
• Complexity
• Multiculturalism
• Mobility of the population
• Conflict (social, military)
• Inter-generational tension
• Need for ethical citizenship
• Information saturation
• Proliferation of knowledge
• Globalisation
• Internationalisation
• Private /public sector tension
• Increasing panic

• Unpredictability
• Risk
• Need for flexibility and agility
• Entitlement v responsibility
• Scarcity of resources
• Austerity
• Sustainability
• Need for prudence
• Transparency & accountability
• Discontinuity and rupture
• Shifting paradigms
• Poverty v influence
• Outsourcing of jobs
• Youthfulness
Supercomplexity

Unlike complexity, ‘interactions between the elements are unclear, uncertain and unpredictable’ (p.249) This is symptomatic of professional life with its competing demands, overload and stress. Challenges are never resolved because ‘it produces a multiplication of incompatible differences of interpretation’ (Barnett 2004 p.249)

Atmospheres of risk

... uncertainty, visibility, and accountability inevitably raise the emotional stakes of the pedagogical encounters.

Uncertainty produces both excitement and anxiety. These pedagogies create atmospheres of risk taking and foreboding, as well as occasions for exhilaration and excitement.

Lee Shulman, Signature pedagogies in the professions, 2005 p.57

Pedagogies of uncertainty

I would say that without a certain amount of anxiety and risk, there’s a limit to how much learning occurs. One must have something at stake. No emotional investment, no intellectual or formational yield.

(Shulman Pedagogies of Uncertainty, 2005:1)

Speed

supercomplexity
depth of geography
issues of democratic space
advent of universal real time
tyranny of the moment
slow and fast time
‘presentified’ history
single gaze of the cyclops

process
fragmentation
exploration
visual
volatility
fast time
consensus
openness

artefact
cohesion
exposition
visual
stability
slow time
authority
containment
What forms of 'technoliteracy' do we need to work in these spaces?

How can assessment regimes be re-crafted for these volatile spaces?

What digital pedagogies work in these environments?

How do these texts and technologies change the way academic knowledge is produced and distributed?

Plutarch’s fire

‘the mind is not a vessel to be filled, but a fire to be lit’.

(Plutarch c46 - 127AD).

Troublesome knowledge

Perkins 1999

Cultures in Higher Education (Land 2004)
corporatisation and erosion of trust

“...greater professional stratification for academics, reflecting distinctions between tenured and nontenured faculty... replacement of academic disciplines by ‘client services’ as the organizing principle for ‘instructional delivery’ (i.e., teaching), the corporatising of academic life, with the faculty serving as managed professionals and with less emphasis on academic values; a ‘renegotiation’ of the social contract between the faculty and the institution, with declining mutual loyalty and increased administrative oversight of academic affairs...”  (Head 2011, p.3)

a counter-response - enhancement

...interest has burgeoned around improving provision (and remaining accountable) in a different way – through notions of enhancement, through promoting innovation, critique, cultivating exploration and analysis, and adopting research-led approaches to practice. This approach also gives cause for unease, in that it involves a greater degree of risk, is less quantifiable, is often locally (discipline) based and depends on the academic’s knowledge and expertise. It can be, and arguably should be, troublesome.  (Land 2011, IJAD)

going with the grain of academic identity and preference

‘Such an approach seems to align better with the key sources of academic and student motivation...

It sits with the academic psyche, the desire to explore, to innovate, to seek new insights, unearth new truths, pass on these findings, promote reflection and evaluation, form and transform thinking, kindle the flame of learning”

(Gordon, in Land 2011, IJAD)

Question 2

• What are the higher order attributes that our graduates will need to thrive (or at least survive) in the 21st century world we have envisaged?

Higher order graduate attributes

• critical understanding
• disciplinary currency
• provisionality (knowledge, situations)
• contingency (knowledge, situations)
• problem formulation
• problem analysis and resolution
• evaluation
• evidence-based solutions
• argumentation
• deriving meaning from complexity
• modes of enquiry
• informed judgement
• advanced techniques
• independence
• learner responsibility
• creativity
• critical values
  – ethical
  – social
  – cultural
  – environmental
• wider professional conduct
  – contextual ‘savviness’
  – political astuteness
And at Master’s level

• constructing conceptual frameworks
• critical evaluation of current research and advanced scholarship
• originality in the application of knowledge
• reconciling complex issues
• forming sound judgments
• coping with incomplete data

CIHE international / intercultural GAs

Knowledge
• world geography, conditions, issues and events
• complexity and interdependence of world events & issues
• understanding of historical forces that have shaped the current world system
• knowledge of a foreign language, intercultural communication concepts, international business etiquette

Attitudes
• openness to learning & positive orientation to new opportunities, ideas and ways of thinking.
• tolerance for ambiguity and unfamiliarity.
• sensitivity & respect for cultural differences.
• empathy or the ability to take multiple perspectives.
• self-awareness and self esteem about one’s own identity & culture.

Skills
• research skills to learn about the world
• critical and comparative thinking skills
• ability to think creatively and integrate knowledge
• ability to use another language effectively and interact with people from other cultures
• coping and resiliency skills in unfamiliar and challenging situations

Strathclyde graduate attributes

• Enquiring
• Engaged
• Ethical
• Enterprising

Question 3

• What kind of learning environments or teaching approaches might be most appropriate to foster the kinds of graduate attributes that have been identified?
Research could be a strong condition that is aimed at bringing about supercomplexity in the minds of students.

(Barnett 1992 p.623)

What is distinctive about "higher" learning?

"It is furthermore a peculiarity of the universities that they treat higher learning always in terms of not yet completely solved problems, remaining at all times in a research mode ... Schools, in contrast, treat only closed and settled bodies of knowledge. The relationship between teacher and learner is therefore completely different in higher learning from what it is in schools..."

Wilhelm von Humboldt 1810

Idealistic (Humboldtian) approach. (Simons & Elen 2007)

- Research a kind of general education.
- Academic enquiry, morality (edification) and citizenship are linked.
- University different from schools (social needs) as well as from research institutions (govt needs, commercial interests)
- Education at the university solely guided by academic enquiry (one submits to the tribunal of reason, the spirit of truth, the force of the better argument.)
- Not influenced by pedagogic expertise or didactics, or managerial or moral or economic imperatives.
- State and society cannot ask for immediate returns.

What is distinctive about ‘higher’ learning?

"...At the higher level, the teacher is not there for the sake of the student, both have their justification in the service of scholarship."

Wilhelm von Humboldt 1810

potential research-teaching linkages

- Learning about the research of others
- Learning in research mode – enquiry based
- Learning to do research – research methods
- Pedagogic research – enquiring and reflecting about learning

successful graduate

responsible citizen
effective employee
Research-tutored Curriculum emphasises learning focused on students writing and discussing papers or essays.

Research-based Curriculum emphasises students undertaking inquiry-based learning or low-key research.

Research-led Curriculum is structured around teaching subject content.

Research-oriented Curriculum emphasises teaching processes of knowledge construction in the subject.

STUDENT-FOCUSED
STUDENTS AS PARTICIPANTS

EMPHASIS ON RESEARCH CONTENT

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EMPHASIS ON RESEARCH CONTENT

High Impact Activities

First-Year Seminars and Experiences
Common Intellectual Experiences
Learning Communities
Writing-Intensive Courses
Collaborative Assignments and Projects
"Science as Science Is Done"; Undergraduate Research
Diversity/Global Learning
Service Learning, Community-Based Learning
Internships
Capstone Courses and Projects

George Kuh (2008)

Illustrations of practice

• Induction week Materials Science – “a product in ten years time”
• 2nd yr Literary Studies – “Toni Morrison’s Jazz”
• 1st yr Mech Eng – “dissection of a car”
• 1st yr Basic Psychology – “online peer groups”
• 2nd yr Chemistry “forensic investigation of a (fictitious) death”
• ‘Exhibitions’ as a research-teaching linkage in a School of Art

‘Beyond Understanding’

Possessive Knowledge
Performative Knowledge
Proactive Knowledge

Threshold Concepts within the Disciplines
From demand culture to opportunity culture

- From very other-directed to significantly self-directed
- From extrinsic motivation to intrinsic motivation
- From cool to hot cognition
- From prototypical examples to include diverse and marginal examples and close counterexamples
- From ‘learning about’ to ‘learning to do’

- From learning the pieces to ‘whole game learning’
- From ‘designing to specifications’ to ‘designing the specifications’
- From problem solving to problem finding, problem defining
- From learning here and there to learning here, there and elsewhere


Question 4

- Are our academics happy to work in that way?

Academics for the 21st Century

- Forensics (criminal investigation)
  - Chemists, medics, police (SoCOs), lawyers, journalists, politicians, media, civil administrators, criminologists, counsellors, psychologists.

- Public Energy Utilities (tidal barrier technologies)
  - Electrical Engineers, civil engineers, ecologists, biologists, zoologists, financiers, economists, computer modellers, politicians, media, lawyers, urban planners, rural & community development, tourism, journalists, policy analysts, management scientists, sociologists

- Climate Change (global warming)
  - Environmental scientists, physicists, meteorologists, geologists, geographers, economists, statisticians, computer scientists, politicians, journalists, civil servants, policy analysts, sociologists
Disciplinary practice

‘The chains of habit are generally too small to be felt until they are too strong to be broken’.

Dr Samuel Johnson
1709 - 1784

Deconstructing terminology

Transdisciplinarity
Connecting fields, transcending barriers, though not making a unified super-formulation

Interdisciplinarity
Working at the crossroads of practical demands. Disciplines interacting and learning from each other.

Multidisciplinarity
Complementary but non-interacting disciplines

monocularism: the gaze of the Cyclops

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Project information at:
http://www.enhancementthemes.ac.uk/themes/ResearchTeaching/outcomes.asp