Linking discipline-based research and teaching to benefit student learning

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Brief Biography

- Economic geographer
- Director Geography Discipline Network (GDN)
- Co-Director Centre for Active Learning in Geography, Environment and Related Disciplines
- Co-Director ESRC TLRP Project on Disabled Students' Learning
- HE Academy Accreditor and elected member of Council
- Geography Advisor to Academy Subject Centre for Geography, Earth and Environmental Sciences
- VP for Europe International Society for Scholarship of Teaching and Learning
- National Teaching Fellow
- Research interests: scholarship of teaching; linking research and teaching; active learning; developing an inclusive curriculum for disabled students

Linking research and teaching

"The time has come to move beyond the tired old teaching versus research debate"

Boyer (1990, xii)

"Involving students in inquiry - in research - is a way of improving their learning, motivating them more. After all, what motivates large numbers of academics is engaging in the excitement of research. Bringing research and teaching together is a way of enhancing the motivation of both academics and students"

Brew, in Jenkins *et al*, (2003)

Linking research and teaching is a topic of national and international interest

Linking research and teaching

1. **Different ways of linking research and teaching**
2. **Disciplinary perspectives**
3. **Linking research and teaching: different views**
4. **The nature of *research***
5. **The nature of *teaching and learning***
6. **The nature of the *research-teaching nexus***
7. **Conclusion**

Different ways of linking R&T

- the content of courses is informed by staff research
- students learn about research methods
- staff use teaching methods which adopt a research-based approach, such as inquiry-based learning
- students undertake their own research projects, whether individually or in teams
- students assist staff with their research projects
- students gain experience of applied research / consultancy through work-based learning
- staff undertake pedagogic research, which benefits the quality of their teaching

Different ways of linking R&T: disciplinary perspectives

A key issue:

How may the linkages between research and teaching be developed to enhance the benefit for student learning?

In pairs each skim read the abstracts for ONE different group of DISCIPLINES pp. 5-17

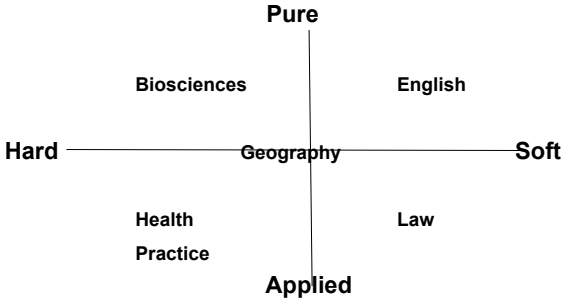
Discuss whether any of the ideas may be amended for application in your context

5 minutes

Linking research and teaching: disciplinary perspectives

- A discipline-based approach is important in studying the research-teaching nexus because the nature of knowledge construction and research methods differ between disciplines
- E.g. Biglan (1973) distinguishes between pure / applied and hard / soft disciplines

Linking research and teaching: disciplinary perspectives



Linking research and teaching: disciplinary perspectives

Linking teaching and research through the disciplines
Higher Education Academy Subject Centre projects:

Biosciences
Geography, Earth and Environmental Sciences
Health Sciences and Practice
Hospitality, Leisure, Sport and Tourism
Law

Plus: English; Medicine, Dentistry and Veterinary Medicine
http://www.brookes.ac.uk/genericlink/

Linking research and teaching: disciplinary perspectives

- Linking research and teaching is a topic of international interest
- It has generated much debate, some of it fairly emotive and polarised
- Many people hold the view that a key characteristic of universities is where research and teaching are brought together
- Some claim that the best researchers are usually the best teachers (e.g. Cooke 1998)
- Others dispute this claim (e.g. Jenkins 2000); many refer to examples of excellent researchers who are poor teachers and vice versa

Linking research and teaching: different views

Quickly scan through the different views about linking research and teaching shown in Table 2.

Discuss with your neighbour why you think there are such varied views?

(6 minutes)

Linking research and teaching: different views

The R-T nexus is complex and contested, in part because there are variations in nature of:

- Research
- Teaching and learning
- Research-teaching linkages

i.e. some of the confusion in the debate arises from a failure to recognise that some of the protagonists are using the terms of the debate in different ways

Linking research and teaching: the nature of research

Different *approaches* to research:

- Empirical science
- Interpretative investigation
- Applied inquiry

Different *types* of research

- Discovery
- Applied
- Integrative

Linking research and teaching: the nature of research

With shift from "Mode 1" disciplinary research to "Mode 2" knowledge production, boundaries between discovery research and application are much more messy and integrated. In a knowledge society:

> "research is context specific and multidisciplinary rather than being hypothesis led; it uses fuzzy, rather than empirically based data; it is problem solving rather than deductive. In what might be termed the commodification of knowledge, how knowledge is managed, synthesised and adapted become as important as knowledge itself."
>
> (Jenkins and Zetter 2003, 11)

Linking research and teaching: nature of teaching and learning

Types of teaching and learning have more in common than in research

Approaches vary between individuals rather than disciplines:

- Transmission model
- Active learning

Emphasises research content	↔	Emphasises research processes and problems
Students are treated as the audience	↔	Students are treated as participants
Teaching is teacher-focused	↔	Teaching is student-focused

Three dimensions of curriculum design

Linking research and teaching: nature of research-teaching nexus

There is little evidence of a direct correlation between research productivity and teaching excellence (Hattie and Marsh 1996; Marsh and Hattie 2002)

However, relationship may be mediated by other intervening variables – scholarship (Elton 1986, 1992, 2001) and learning (Brew and Boud 1995)

For Scott (2002), with the shift to a Mode 2 knowledge intensive society, all students need to be researchers and all researchers need to be teachers. Hence, for him, much of the current debate about possibly breaking the link between teaching and research is about "separating the inseparable" (p.27)

Linking research and teaching: nature of research-teaching nexus

Variation by discipline group

Subject content – more difficult in hard disciplines than soft

Social processes – working with staff as part of a research team more common in hard disciplines than soft

Role of professional bodies – danger of 'curriculum creep' where accredit entry into profession

Students experience of learning in a research environment: Physics

What is research?	Breaking new ground; moving forward; exploration and discovery
How visible is it?	Laboratories and machinery (ie tools) but often behind closed doors
Where is it located?	Out there; at a higher level
Who does it?	Lecturers

Source: Robertson and Blacker (2005)

Students experience of learning in a research environment: Geography

What is research?	Gathering information in the world; answering a question
How visible is it?	Most visible in the field
Where is it located?	Out there in the field
Who does it?	Lecturers and (increasingly over time) students

Source: Robertson and Blacker (2005)

Students experience of learning in a research environment: English

What is research?	Looking into; gathering; putting it together; a focus of interest
How visible is it?	Not tangibly visible but apparent in the dialogue
Where is it located?	In the library; in the head
Who does it?	Lecturers and students

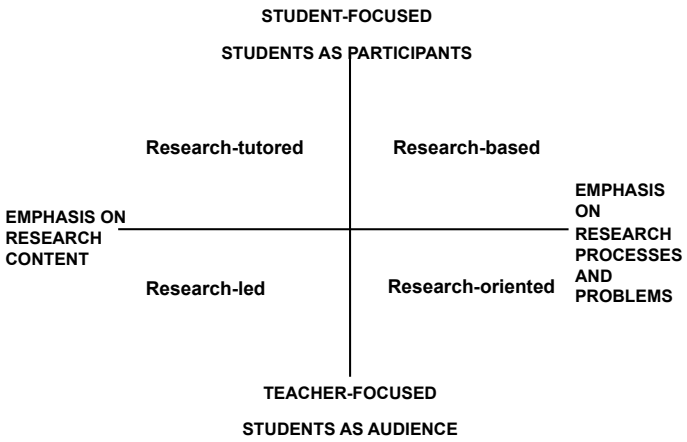
Source: Robertson and Blacker (2005)

Linking research and teaching: nature of research-teaching nexus

Griffiths (2004) makes a distinction between teaching which is:

- research-led – subject content
- research-oriented – inquiry skills
- research-based – inquiry-based activities

However, terms are used loosely and most academics use a mixture of these approaches



Curriculum design and the research-teaching nexus

Linking research and teaching: institutional perspectives

Skim read the abstracts for ONE group of INSTITUTIONS pp18-24

In pairs, discuss whether any of the ideas may be amended for application in your institution

5 minutes

For a framework for analysing institutional strategies see p28

Linking research and teaching: issues in developing R&T nexus

- How much do your u/g students know about the research which goes on in your department?
- What opportunities are there for students to present/publish/celebrate their research?
- Is research-based learning primarily for Level 3 and 4 students?
- Is research-based learning for all students or a highly selected group?

Linking research and teaching: issues in developing R&T nexus

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Linking research and teaching to benefit student learning

Working on your own design an exercise that you could use in your teaching whereby the students will benefit from linking with research.

5 mins

In threes act as supportive advisers to each other to enhance your exercises

15 mins

Linking research and teaching: conclusions

- Nature of the linkage between teaching and research is complex and contested
- Adopting a broader definition of research than is currently common is a way forward (Boyer *et al.*), which should benefit the learning of students in institutions with a range of different missions

Linking research and teaching: conclusions

Barnett (2003: 157) suggests that there are many pressures that are pulling research and teaching apart:

> "The twentieth century saw the university change from a site in which teaching and research stood in a reasonably comfortable relationship with each other to one in which they became mutually antagonistic".

Putting greater emphasis on actively engaging students with research, suitably adapted to recognise the variation and complexity of constructing knowledge in different disciplines, is one way of re-linking them in the twenty-first century.

Linking research and teaching to benefit student learning

THE END

Thank You

Linking research and teaching: conclusions

If an active / inquiry-based learning strategy is to become common place in higher education generally then the nature of higher education itself will need to be reconceptualised so that staff and students work together in what Brew (2003, 12) calls "academic communities of practice". This she argues:

> "means sharing power and it means being open to challenge" (p.16)

There is a need to do more thinking 'outside the box'.