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**Tribes, territories, research and teaching**  
Enhancing the teaching-research nexus

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## **Abstract**

We rethink the concepts underlying the notion of the “teaching-research nexus” based on a review of the literature, an analysis of a number of case studies and the findings of an interview study of teaching, research and the links between them in four creative subjects in the UK.

## **Executive summary**

### **1. Background**

There is considerable emphasis on enhancing the links between teaching and research, and a large amount has been written about the “teaching-research nexus”. In Scottish universities it is a priority area as part of the quality enhancement framework. In the 24 UK Subject Centres, whose mission is to enhance teaching within the disciplines, it is also a priority for 2007. Many universities are including this issue in policies and appointing staff to develop the links between the two functions. For the project reported here, empirical data were taken from the University of the Arts London in four creative design subjects: Graphic Design, Design for Performance, Fine Art and Fashion Design.

This focus on art and design and the University of the Arts London (UAL) is deliberate. A particular feature of the fields of art and design is that they are emerging fields for research, but with quite distinctive characteristics that we considered potentially illuminative of other cases. As a single institution the UAL is relatively new, and we considered that institutional influences on perceptions of research and research activity would be more apparent as a result.

### **2. Aims**

The aims of this project were:

1. To conduct a literature review in three areas:
  - a) linkages between disciplinary differences and research practices
  - b) linkages between disciplinary differences and teaching and learning
  - c) the nature of the “teaching-research nexus”.
2. To conduct new empirical work in different institutional settings among four different domains in art and design, providing new data on the differences between the conceptualisation, understanding and development of research-learning/teaching/assessment/curriculum (LTAC) linkages.
3. On the basis of the above, to provide an accessible framework and recommendations setting out the different patterns of linkage between research practices and LTAC, with a view to improving the student experience in this area.

### **3. Methods**

#### *Empirical data*

Sixteen semi-structured interviews were conducted with a purposive sample of respondents at the University of the Arts London. Interviews were mainly focused on research practices in the four areas of art and design named above. Respondents were located across all six of the constituent institutions of the UAL.

A parallel project on teaching practices in these same areas of art and design was conducted by the Centre for Excellence in Teaching and Learning based at the UAL, the CLIP CETL, and the authors of this report were involved in the development of that project and had access to the data. Eighteen interview transcripts in the same four domains of art and design were reviewed.

#### *Secondary data*

An extensive review of the empirical and non-empirical literature was conducted at the commencement of the project. The findings from this comprise Section 1 of this report.

Case studies available on the web concerning practical applications of the “teaching-research nexus” were analysed. Greatest attention was given to those available from the websites of the Subject Centres of the Higher Education Academy.

### **4. Results**

#### *The literature review*

Our review of the extensive literature on the “teaching-research nexus” (Trowler and Wareham, 2007a) found it to be characterised by a number of common features. There is a tendency to view the links between teaching and research in a mechanistic way. By contrast, analysis of the ways in which the “nexus” is described in the case studies and in the literature shows that there are multiple sorts of linkages and relationships being referred to. Partly for this reason we use scare quotes around the term “teaching-research nexus”.

Much of the literature adopts a normative position on the “nexus” issue. The assumption is that teaching and research can and should be better integrated than is currently the case. Linked to this, writing in this area is often oriented to establishing ways in which the “nexus” can be enhanced. The possible dysfunctions of integrating the two functions and the potentially difficulties of this task are usually given restricted attention.

A further general characteristic of this literature is the lack of theorisation at times. An empiricist approach is prevalent, and underpinning this is a foundationalist ontological position, which assumes a reality exists that can be apprehended by research that is sufficiently robust and extensive. An alternative position is a social constructionist one, which stresses situational contingency.

Linked to this is the need for greater conceptual clarification. There are multiple possible meanings of the “teaching-research nexus”, but slippage between meanings is prevalent. For example, it is often unclear whether authors are referring to the influence on teaching and learning of students doing research, staff doing research, staff practices being informed by research, the curriculum being informed by contemporary research, the research culture of a particular context and so on. The nature of the connections remains similarly unspecified in many cases. The following terms are variously used to describe the different character of the linkage, and sometimes used interchangeably, despite very significant differences between them:

- link
- inform
- support
- enhance
- add value to
- integrate, or integration.

Finally, with Rowland (2000), we noted a tendency for the conclusions of the literature in this area to merely state the obvious: that in some cases there is a positive influence of research on teaching, and in other cases not; that students both appreciated and are sometimes irritated by staff engaging in research; that “some of the most inspiring teachers are able researchers, but not all; that some prominent researchers are good teachers, but not all” (2000, p.1).

### *Empirically based findings*

#### *Diversity of disciplines*

Some of the literature on the “nexus” treats the notion of discipline as unproblematic and unitary. While disciplines clearly do share a range of practices and focus, it can also be seen that there is considerable diversity within them. The data from these interviews confirmed that sense of diversity. It was evident that institutional context was a powerful factor in how individuals viewed their disciplinary research. The causality of this was less clear – it was evident that some individuals had actively selected a particular institution because of its perceived values. In other cases, it appeared that the research approach was in part shaped by factors at play within the institution, such as institutional or school research strategies, or funding council opportunities. Also of considerable importance in the shaping of research approaches and ideologies was the personal biography of the individual: professional background, long-held personal philosophy, idiosyncratic opportunities, family history and current responsibilities were particular dimensions of this that became apparent. So while the disciplinary context clearly provided a framework within which research practices and philosophies were located, there was considerable variation within that framework.

#### *Nature of research*

The nature and definition of the term ‘research’ continues to be a subject of ongoing debate in the creative disciplines. Historically, research in the creative arts has referred to that set of practices that supports the creative process. There was a

sense that research was becoming more formalised, and this was partly happening through the growth of PhDs in the creative disciplines and the influence of the Research Assessment Exercise (RAE).

An important dimension of the specific nature of research in the visual arts was the nature of the language through which research is conducted and presented: primarily visual. The increasing requirement to use *verbal* language for the purposes of PhD study and the RAE could potentially undermine the legitimacy and value of the visual statement.

These unique characteristics are illuminative in that they shed light on other approaches to research and the often unconsidered assumptions that underpin them.

### *Ideological positions emerging*

In relation to Brew's (2001) four conceptions of research, discussed in this report and described in its Appendix (domino, trading, layer and journey), respondents saw different conceptions coming into play at different moments, with the two dominant conceptions being 'layer' and 'journey' when it came to personal choices and preferences. However, there was recognition that a trading approach was the one increasingly required by the academic research context. In relation to ideological positions (again this report identifies four: progressivism; traditionalism; social reconstructionism; and enterprise) the dominant one was 'progressivism'. Virtually all the respondents spoke about the purpose of their research being to offer insights and critical perspectives to the research community, the informed lay person and to the wider context of society. There was reference to those aspects of traditionalism that emphasised the mastery of techniques, but there was a sense that this was secondary to and supportive of practices inspired by a progressivist educational ideology. Similarly, while some respondents empathised with elements of social reconstructionism, this tended to be secondary. There was quite strong resistance among some respondents to the notion that social reconstructionism should be an explicit element of their teaching approach, even if it guided their own research and professional practice.

### *Research and teaching*

A strong pattern that emerged from these interviews was the congruence between values and philosophies of research and teaching. Several respondents indicated that they and their students were on a continuum of expertise in which the only substantive difference was the degree of experience and recognition. This feature was most strong where the work was largely creative. In this context, the academic staff reported that they very often learned a lot from their students, who, for example, might be experimenting with novel techniques or materials. On occasions this would stimulate and inform their own research. Where the disciplinary context was closer to a more mainstream traditional subject, there was more distance between the academic and the student, with a sense of 'teacher and taught'.

## **5. Conclusions and recommendations**

1. “Nexus” issues would be further illuminated by the light shed through an appreciation of wider social structural forces. So, for example, the RAE in the UK has had a tendency to push academics towards a view of research that is in line with Brew’s ‘trading’ conception (Elton, 2000; McNay, 1997; Jenkins, 1995). The adoption of this conception more widely is not a product of many individual choices made agentically, but of a policy and power context. This has repercussions for the “nexus” in a number of dimensions that go beyond “nexus” issues understood in a restricted way, perhaps most significantly into new discursive modes. At the root of this are issues of power, in particular with regard to thinking about the world and describing it, as well as in relation to what becomes difficult to express. Power issues emerged as significant in the data from our interviews. Staff were being increasingly obliged to reframe what they did in relation to the dominant research approaches of the academy rather than of their disciplinary origins. This was in contrast to the fluidity in authority relationships between teachers and students in these areas of teaching and research.
2. It would be beneficial to enhancement efforts to see orientations to teaching, learning and research (and so the linkages between them) as drawing on wider resources that can sustain new practices and new or alternative ways of thinking about and practising teaching and research. These include journals, conferences and social networks of academics that can sustain alternative approaches. Without this, enhancement efforts may be ghettoised and lack sustainability.
3. In planning to enhance the “teaching-research nexus” in specific contexts, it is important to consider current practices and ways of thinking, and the many alternative ways in which teaching and research can be better linked, or integrated. The issue of congruence between past, current and prospective future practices is important for the likelihood of successful and sustainable implementation.
4. In a university seeking to enhance the “nexus” managers and policymakers might wish to ask the question: what are the predominant ideological orientations to research and to teaching and learning in this university context and how would they have to be changed in order to enhance the “teaching–research nexus”? This question goes beyond individual academics’ ‘orientations’ to research and teaching, moving into the cultures found within the institution concerned. These cultures will vary according to departmental and other academic and social groupings. The prospects for change and the most appropriate dimensions of the “nexus” that might be the focus for change efforts in varying contexts will often be quite different, as will the readiness for change.

## **6. Summary recommendations for practitioners**

1. Consider the different ‘versions’ of teaching, research and the “teaching–research nexus” as well as the dominant characteristics of teaching and research in your context.

2. Consider which versions of the “nexus” might be most congruent with current practices and values where you are.
3. If necessary, consider ways in which current practices and values in teaching and research might be addressed and perhaps changed in order to benefit from any added value that enhancing the linkages might bring.
4. However, be clear about your goals in this. A general push to ‘enhance the links between teaching and research’ is unlikely to succeed without clear thinking about current practices and desired end-states, and the alternatives that exist.
5. Recognise that attempts to enhance the “nexus” need to appreciate both structural and agentic factors; for example, in:
  - how staff conceptualise their research
  - how staff understand what they are doing when they teach
  - fluidity and democracy of the specific research/teaching environment
  - incentives and disincentives to changing behaviours to enhance the links
  - cultures of institutions
  - cultures of departments and subsections within the institutions
  - influence of funders (funding councils and commercial sources).

Structural factors are hard to shift, but there is always at least a residue of agency, which allows managers and academic teachers leeway in what they do. Setting up new, alternative structures (journals, organisations, conferences) assists in any attempt to reformulate current practices because doing that gives sustainability to agency.

## The report

This report consists of two main sections:

1. A literature review conducted as part of this project in two areas:
  - a) organising principles regarding disciplinary differences
  - b) the literature on the “teaching-research nexus”.
2. A summary of the empirical aspects of the project, our findings and recommendations.

In addition to this report, the project has produced the following outcomes:

1. A project website: <http://www.lancs.ac.uk/fass/projects/nexus/index.htm>
2. Six conference presentations during 2007 at [HERDSA](#) (Adelaide), [Marwell](#), [HEA conference](#) (Harrogate), [ISL](#) (Dublin), [AISHE](#) (NUI Maynooth) and the SRHE conference (Brighton). One in 2008 [Creative Graduates Conference](#) (Glasgow)
3. A published paper: Trowler, P. and Wareham, T. (2007b)
4. A literature review and summary report, available at the above website and reproduced, with amendments, below.

## Section 1. Tribes, territories, research and teaching: enhancing the “teaching-research nexus”– literature review.

### Subsection 1: Organising principles

Three literatures in the area of the “teaching-research nexus” have developed, but largely in isolation from each other:

1. linkages between disciplinary differences and research practices
2. linkages between disciplinary differences and teaching and learning
3. the nature of the “teaching-research nexus”.

This paper, the final report of this project, sets out a summary of key themes in the literature in these three areas and explores the connections between the areas. The main emphasis here is on areas two and three because the first, the linkages between discipline and research practices, have been extensively reviewed in Becher and Trowler (2001).

A number of reviews of literature in the area of the “teaching-research nexus” have already been conducted (see References). Our view is that what is now required is an overview of the concepts and approaches taken rather than another descriptive review. Literatures in the first two areas (discipline and research, discipline and teaching and learning) have tended to grow up in different ways and offer disparate sets of perspectives. What is needed is a more developed conceptual framework

with which to make sense of current thinking, so that subsequent research can be better informed.

We propose a framework that evaluates three dimensions of the nature of the influence of discipline on academic practices and attitudes, as demonstrated in the literature considered in the review: a) cause, b) scope and c) strength. This framework is elaborated below and represented in the schema in Figure 1. This incorporates three axes along which can be placed the different perspectives on the relationship between disciplines on the one hand and academic practices (both teaching and research) on the other. We suggest that the three axes together offer a way of positioning particular studies with regard to the cause, the scope and the strength of the influence of disciplines, and indeed other structural features.

### **1. Cause of influence**

The first question to address is: what causes any link between disciplines and practices and attitudes? (Axis A). These causes might be placed along a spectrum that moves from the structural to the agentic. The term *structural* is used to describe causal mechanisms that impose regularities and predictability on practices, values and attitudes around teaching and/or research. One very significant structural factor found in the literature is the epistemological character of different disciplines: the nature of the knowledge structures found there. Under *agentic*, conversely, are included causal influences due to choices made by individual people. Here, more psychologistic explanations come to the fore; for example, self-selection by particular types of people into different disciplinary areas or the ideological resources individuals draw on in considering the nature and purposes of higher education (Trowler, 1998). Between these two poles would come causal explanations that combine both structure and agency; for example, those that see disciplines as conditioning practices and attitudes but not totally determining them, leaving room for agency or at the least multiple conditioning factors.

### **2. Scope of influence**

A second question is: how pervasive is the link between disciplines and practices and attitudes? (Axis B). Under *pervasive*, the linkage is conceptualised as very extensive, moving beyond simple classroom practices, for example, into the everyday life and ways of seeing of academics and students. Under *restricted*, the linkage is conceptualised as much more limited: the restricted set of practices that occur only in particular places and underpinned by attitudes whose relevance and scope is limited to those contexts. Clearly there will be intermediate positions, this axis being a spectrum rather than bipolar.

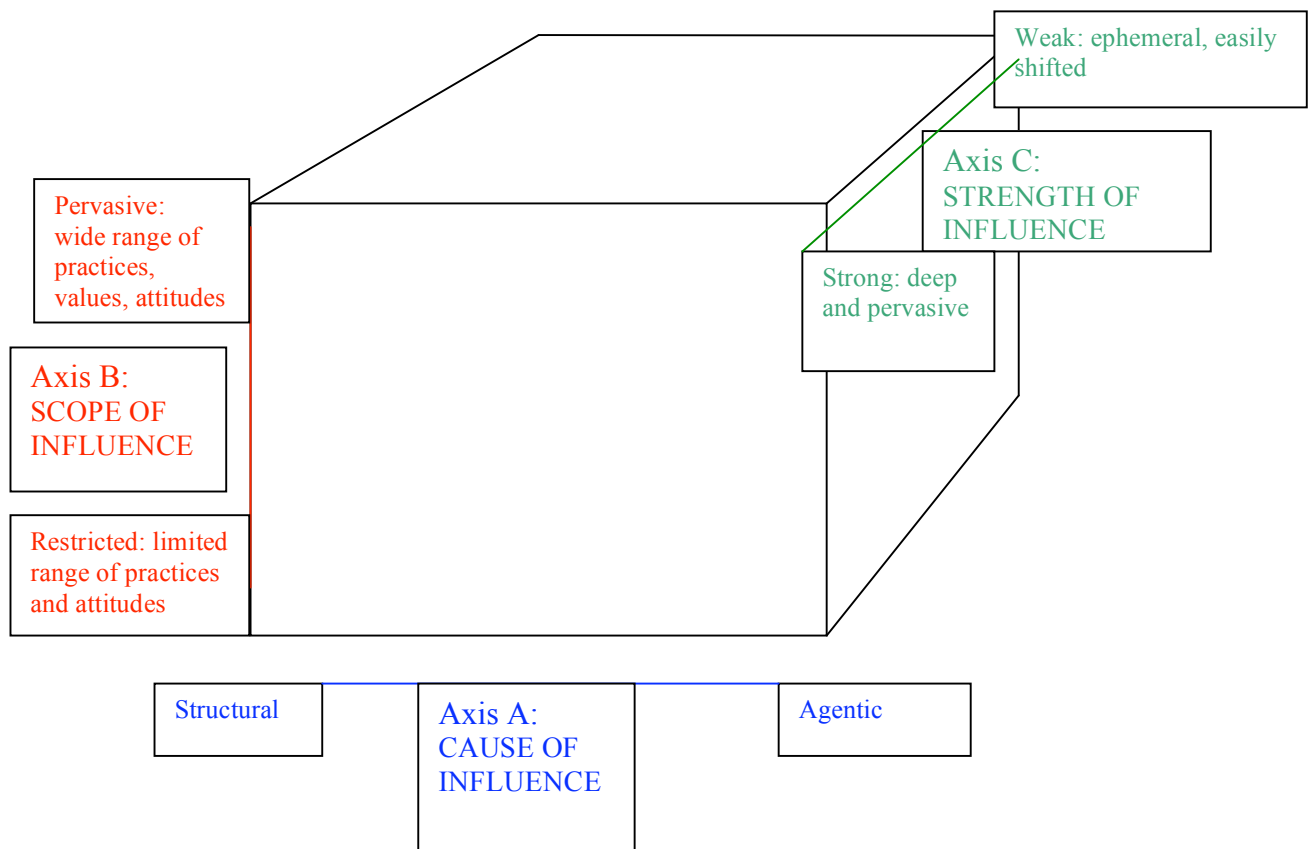
### **3. Strength of influence**

The third question is: how strong is the linkage between disciplines and practices and attitudes? (Axis C). At the stronger end of the scale the linkage is not easily shifted so that it is relatively impermeable to the influence of institutional context, local departmental cultures or other factors. At the weaker end of the scale the linkage, conversely, is easily displaced by other factors so that researchers find many

exceptions to a hypothesised relationship between disciplines on the one hand and practices, values and attitudes on the other.

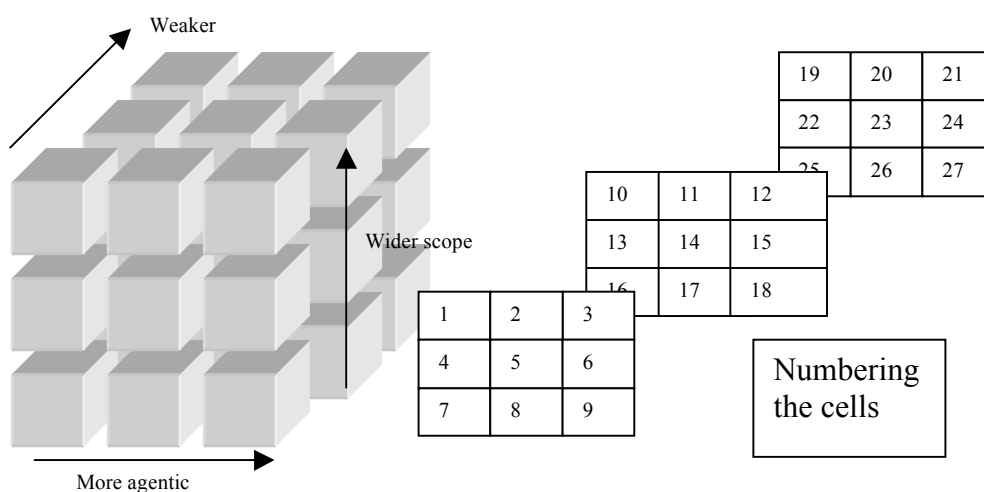
The inclusion of axes B and C is intended to address the need for the level of specificity about the extent and significance of causal effects. In the literature on the influence of disciplines on practices, there has sometimes been a certain vagueness about the strength and range of effects. This has been evident in the language used, which, for the same authors, can move between very different terms: 'preferences', 'styles', 'rituals', 'tendencies', 'conceptions', 'approaches' and 'practices'. Similarly the literature on the "teaching-research nexus" is unclear about whether there is an 'interaction', 'interconnection' or 'integration' between teaching and research, or perhaps simply an 'influence' of one on the other (Neumann, 1996, p.11).

**Figure 1: Conceptualising the relationship between disciplines and teaching, disciplines and research**



Simplifying, then, allowing for only three positions on each axis one can conceptualise this schema as 27 sub-boxes.

**Figure 2: Simplified set of positions on the three axes**



In this schema, cell 1 represents an exceptionally strong, essentialist position. There is very strong structural determination of linkages between disciplines across a wide range of practices, values and attitudes extending across different contexts. From this position it would be possible to say that certain teaching and research practices are always found among specified disciplines. Conversely, cell 27 represents a situation where individual agency within disciplines means there is little regularity between a particular disciplinary context and practices, values and attitudes found there. Whatever linkage there is tends to be weak and to extend only to a limited range of practices and attitudes. Such a tenuous linkage is at the limits of any claims for *disciplinary* distinctiveness. Here, there would be very few regularities identified across the same discipline in different contexts.

The following summary of key themes in the literature will not mechanically explore each of these 27 boxes, but the answers to all three key questions that the axes on this matrix represent will be an organising principle for analysing this literature.

#### **4. Strong epistemological-essentialist positions**

The 1989 edition of Tony Becher's classic book *Academic Tribes and Territories* classified disciplines according to both a cognitive dimension (elaborated by Kolb (1981) and Biglan (1973)) and a social dimension (developed by Becher himself).

The *cognitive* dimension divides disciplines into hard and soft, pure and applied, to give a four-cell matrix. Hard disciplines have well-developed theory, universal laws, causal propositions, are cumulative and have generalisable findings. Soft disciplines by contrast have unclear boundaries, relatively unspecified theoretical structure, are subject to fashions and have loosely defined problems. Pure disciplines are self-regulating and not directly applied to the professions or problems in the outside world, while applied disciplines are regulated by external influence to some extent (for example, the Law Society) and are more applied within the professions and to problems.

The *social* dimension again offers a four-cell matrix. This time the axes run between convergent and divergent on the one hand, and urban and rural on the other. Convergent disciplines have uniform standards and a relatively stable elite. Divergent disciplines sustain more intellectual deviance and frequently experience attempts to shift standards. Urban disciplines are characterised by intense interaction and a high people-to-problem ratio. Rural ones have bigger territories, less interaction and a lower people-to-problem ratio.

Combining these epistemic features, it appears possible to say that Physics, for example, is hard, pure, convergent and urban. Sociology is soft, pure, divergent and rural. Engineering is hard, applied, convergent and urban. Economics is hard, applied, convergent and rural.

Becher himself (1989) and others have tended to tie the epistemological (and related social) characteristics to practices, both research practices and learning, teaching

and assessment practices, in a very direct way. Thus Neumann *et al.* (2002) make claims for pedagogical differences between disciplines in different locations on the social and cognitive dimensions, offering the following sets of differences using the disciplinary classification system mentioned above.

**Table 1: Summary of disciplinary differences in learning, teaching, assessment and curriculum (Neumann *et al.*, 2002)**

<b>Learning, teaching and assessment dimension</b>	<b>Hard pure disciplines</b>	<b>Hard applied disciplines</b>	<b>Soft pure disciplines</b>	<b>Soft applied disciplines</b>
Curricular structure	Cumulative, atomistic curriculum		Reiterative, holistic curriculum	
	Linear programme design		Spiral curriculum	
Purposes of higher education	Purpose to acquire subject knowledge and reasoning powers	Emphasis on acquisition of problem-solving and practical skills	Purpose to acquire a broad command of intellectual ideas, fluency of expression	Emphasis on vocationally related skills, but broadly defined, with intellectual breadth and personal growth
Teaching methods	Instructive (didactic) methods to 'deliver' fixed content. Small groups work on predetermined problems		Constructive (student-centred) methods to explore ideas. Small groups work discursively	
	Teaching preparation is relatively quick		Teaching preparation is time-consuming	
	Large lectures with class labs. ICT use extensive	Practical experience provided	Face-to-face teaching predominates, smaller class sizes. More limited use of ICT	Practical experience provided, but knowledge base acquired first
Learning	Students need to memorise facts and apply problem-solving skills. Logical reasoning	Practical competencies are needed in addition	Students need to think laterally, read copiously and have good powers of expression. Critical thinking, fluency, creativity	The ability to solve open-ended problems is required in addition
Assessment	Outcomes of assessment objectively assessable		Outcomes of assessment require judgement	
	Objective tests and examinations often used		Essays, short answers, continuous assessment	

			often used	
	Assessment by teacher using model answers and guides		Assessment by peers and self sometimes used. Assessment intuitive	

As is indicated by this nomothetic approach (i.e. one which categorises into boxes) Neumann *et al.* take a position that sees disciplines as having a strong, structural and pervasive influence on practices (see Figure 1) and so one that lies at or near cell 1 in Figure 2, above.

Ylijoki's work (2000) on the *moral order of studying* in the disciplines of Computer Science, Library Science and Informatics, Public Administration, and Sociology and Social Psychology also stresses the significance of discipline. She argues that disciplines have their own traditions and categories of thought, which provide the members of the field with shared concepts of theories, methods, techniques and problems. They also have their own social and cultural characteristics: norms, values, motor interaction, lifestyle, pedagogical and ethical codes (2000, p.339). The *moral order* concept captures the basic beliefs, values, norms and aspirations prevailing in the culture that form the background ethos within the discipline. It operates as a form of social control, but is also significant in providing individual identity. Thus the disciplines studied by Ylijoki can be seen as tribes with different but very coherent moral orders. These give rise to distinctive practices; for example, learning by doing in Computer Science and, in Library and Information Science, teaching and learning practices following the professional practices within libraries. Somewhat as a postscript, Ylijoki does recognise the multivocality within disciplines, the significance of context and the dynamism of moral orders. However, "in spite of all these reservations... it can be argued that disciplines still have a crucial role to play in the functioning of higher education" (p.358).

In this first category of explanation it is considered possible to make broad statements about whole disciplines, or about large categories (in the following example about academics in the sciences and humanities academics):

Academics in the sciences perceive a connection primarily at the postgraduate level, whereas humanities academics are described as being divided on this issue. (Jensen, 1988, reported in Neumann, 1996, p.12)

Donald (1995), for example, argues that:

Disciplines are the central source of identity for faculty...The degree of coherence or structure within a discipline and the principle methods of enquiry affect the quality of learning. (pp.53-4)

Further:

Psychology professors talked of developing students' capabilities through a series of courses which focus on different methods...In education, case studies are seen as important instructional methods to aid students in making complex situations coherent. English literature professors paid attention to the analysis of

text to determine the underlying assumptions...and they were concerned with the development of argument in their courses. (ibid., p.16)

## 5. Social-constructionist positions

Social-constructionist positions lie around the central part of Axis A. The basic argument is that, together, academics construct narratives about the nature of knowledge in their discipline, sharing and developing these narratives over time. Each discipline may have multiple narratives, and sometimes contrasting ones. Thus, for example, in Academic Law there are contrasts between black letter law, which emphasises the transmission to students of legal knowledge, and critical legal studies, which emphasises the fostering of a critical perspective among law students.

Quinlan (1999) suggests that academic historians as a group can hold very different beliefs about the nature of the discipline, learning goals for students, teaching approaches and the nature of student difficulties. There are intergenerational tensions along these lines, with sets of beliefs shared among distinct groups of academic historians. She came to similar findings in her PhD study of Engineering (1996). Hers is a social, not a psychological explanation (1999, p.462), with the departmental context seen as very significant.

In the literature on the “teaching-research nexus”, examples of authors who hold such a position are Brew (2003) and Robertson and Bond (2001). The latter state:

We suggest that it is our participants’ epistemological and ontological beliefs that shape their understandings of the research/teaching/learning experiential field and hence of the research/teaching relation. (p.10)

With regard to research practices, Latour and Woolgar (1986) and Gilbert and Mulkay (1984) argue that there may be a narrative of objective and rigorous research practices, especially in the natural sciences. However, the process of research is very much conditioned by social and psychological events and interactions in the laboratory or other context of research. It is a messy, social business, according to Brew (1999, 2001), which is only loosely linked to epistemological structures.

Many of the studies looking at the construction of such epistemological narratives and the significance for the “teaching-research nexus” tend to understate or occlude the significance of *multiple* narratives and *conflicting* narratives within the same discipline. Instead they characterise the situation as much more monolithic than it often is.

This central position on Axis A leaves room for multiple influences on practices that interact with each other; for example, institutional context and epistemological structures. An example here is Lattuca and Stark (1995), who place emphasis on this interaction:

Those who attempt to lead curricular reform may be more successful if they recognise both the strength of disciplinary culture and the campus contextual

factors that make faculty redefine discipline cultures to meet local needs. (Lattuca and Stark, 1995, p.340)

More recently, Lindblom-Ylänne *et al.* (2006) used two inventories administered to over 300 academics in three institutions in two countries to establish links between teaching and learning practices, and discipline and teaching context. They found that teachers from 'hard' disciplines were more likely to report a more teacher-focused approach to teaching, whereas those teaching 'soft' disciplines were more student-focused, findings similar to those of Lueddeke (2003) and Trigwell (2002). The pure and applied categories were not significantly different, however. They also found, however, that teachers who have experienced different contexts or who change teaching context will sometimes adopt different approaches to teaching in those different contexts. Disappointingly, this study tells us only that teaching practices correlate with these two variables: *how* this happens can only be speculated upon.

Recent studies at the University of Edinburgh and elsewhere have suggested in some detail the ways in which the nature of disciplines might interact with more social factors. For example, *ways of thinking and practising* (WTP) (McCune and Hounsell, 2005) is a concept designed to express the particular understandings, forms of discourse, values and ways of acting that are central to graduate-level mastery of a discipline or subject area. Similarly, the notions of *threshold concepts* and *troublesome knowledge* have come out of this research. Troublesome knowledge includes those ideas, techniques and concepts that create blockages to students, inhibiting academic progress. They tend to be counter-intuitive and so difficult to grasp. However, once mastered, troublesome knowledge can take students across the conceptual threshold:

A threshold concept can be considered as a key to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress. As a consequence of comprehending a threshold concept there may thus be a transformed internal view of subject matter, subject landscape or even world view. (Meyer and Land, 2003, p.1)

The significance of such epistemological concepts of practices is that they guide what lecturers consider to be appropriate ways of helping students come to terms with them; for example, in media studies the use of shocking videos to challenge students' world view, or in electronic engineering ways of dealing with student difficulties in understanding the significance of circuit characteristics. However, the authors make it clear that there are multiple influences, including contextual influences, at work in conditioning practices: they are located around the middle of the axes in Figure 1, not at extreme positions. Specific contexts can offer both affordances and constraints in relation to different ways of thinking and practising. As with other studies that recognise multiple conditioning factors, the team suggest that particular contexts can evoke responses that may be muted elsewhere. This recognition is much stronger than, for example, in Ylijoki's approach (2000), with which it otherwise has some commonality.

The work of Shulman (2005) on signature pedagogies and of Huber (2002) on disciplinary styles, both at the Carnegie Foundation for the Advancement of

Teaching, bear many similarities to the approach adopted in the research just mentioned. Shulman argues that in the professional disciplines at least there are 'signature' approaches to teaching and learning; for example, the practice of doing clinical rounds with novice medics in Medicine or the use of 'accountable talk' in law schools where case law is being taught and debated. Shulman writes:

What I mean by "signature pedagogy" is a mode of teaching that has become inextricably identified with preparing people for a particular profession. This means it has three characteristics: One, it's distinctive in that profession. Second, it is pervasive within the curriculum. So that students learn that as they go from course to course, there are certain continuities that thread through the program that are part of what it means to learn to "think like a lawyer," or "think like a physician," or "think like a priest." There are certain kinds of thinking that are called for in the rules of engagement of each course, even as you go from subject to subject. The third feature is another aspect of pervasiveness, which cuts across institutions and not only courses. Signature pedagogies have become essential to general pedagogy of an entire profession, as elements of instruction and of socialization. (Shulman, 2005, p.9)

Signature pedagogies are not necessarily the 'best' way to teach and learn according to Shulman, and neither are they inevitable. However, they do work, at least for the purposes for which they were originally designed, and they have become established routines wherever a particular profession is taught. They are the product not only of disciplinary characteristics, but of "complex sociological and political" factors (ibid., p.15).

Disciplinary styles, meanwhile, apply more broadly than just the professions. They offer conceptions that guide enquiry, influencing the problems we choose, the methods we use, and the arguments we find persuasive. The disciplinary style also shapes (but does not determine) the teaching and learning methods used, giving academics:

... a ready-made way to imagine projects and present their work – for example, metaphors such as the classroom as laboratory, as text, field site, or theater, might point you to different methods of inquiry and styles of analysis. (Huber, 2002, p.4)

However, like the WTP approach there is no singular driving mechanism at play here according to Huber. Disciplines are recognised to be divided and fissiparous:

... each discipline has its own intellectual history of agreement and dispute about subject matter and methods that influence what is taught, to whom, when, where, how, and why. (Huber, 2002, p.4)

## 6. Individual agency positions

In these positions, to the right of Axis A, the role of individual choice, action, beliefs and attitudes is the most significant variable. This understanding of the link between disciplines and practices is based on methodological individualism, which approaches the study of societies and organisations with the assumption that individuals' thoughts and decisions are more significant than the structures within which they operate. It is individuals' agency, their decisions and actions, which shape the institutions and social circumstances they operate within rather than vice versa.

Some studies suggest that self-selection into disciplines by particular sorts of personality types is a better explanation for any consistencies discovered within disciplines than, for example, the influence of epistemological structure. Greed (1991), looking at surveying as taught in universities, argues that personality and background are significant in determining the type of individual who goes into that profession. Stevenson and Sander (2002), whose title begins *Medical Students are From Mars*, argue that medical students arrive at university suspicious of student-centred learning methods and prefer more didactic ones. Their learning styles and general approach to studying as well as their experiences make them prefer what they see as more efficient and authoritative methods. As some of these students become lecturers they will tend to replicate their own preferred teaching styles, the argument runs, particularly as these are the ones still preferred by the types of students they find themselves teaching.

The outcome of student and staff choices is, again, regularities across the disciplines with regard to teaching, learning and assessment practices. Stevenson and Sander, for example, might agree with the depiction by Neumann *et al.* of disciplinary differences in relation to these practices (Table 1). However, the hypothesised causal mechanisms are very different – for Neumann *et al.* regularities and differences in practices across the disciplines are the result of structural determination by disciplinary knowledge differences. For Stevenson and Sander, by contrast, such regularities are the product of human choice of their preferred discipline and profession.

Other positions that lie roughly in the same area of Axis A suggest that individuals develop narratives about their discipline, and take individual positions on teaching and learning as well as research. Thus the psychological make-up of individual people, their life journey and experiences, as well as the choices they make, eventually lead to their particular position with regard to the “teaching-research nexus”.

Bain *et al.* (1998) suggest that “the educational context in which students learn is heavily influenced by the epistemological and educational assumptions of their academic teachers” (p.49), a position that is replicated in much of the ‘teachers’ beliefs’ literature, for example Hativa and Goodyear (2002). Taking three individual teachers as case studies (Joy, Frank and John) the authors draw on phenomenographic studies and concepts to explore the differences between the

three with regard to their pedagogical and curriculum beliefs and the ways these relate to their practice. They conclude that:

... academics differ in their beliefs about which forms of knowledge are valuable, how knowledge should be organized for learning, and what should occur during teaching and learning, and these differences influence the methods which they and their students use. (p.56)

Here the link to discipline is almost entirely lost. Indeed, these authors choose to dismiss that link by focusing on the different orientations towards teaching and learning that can be found within the same discipline, quoting (p.50) Quinlan's (1999) finding that two historians differed in thematically consistent ways. In this they choose to ignore Quinlan's major thesis that discipline does have a significant impact on LTAC practices, and that fractures in the discipline are 'recapitulated' at the individual level (Quinlan, 1999). Quinlan explicitly rejects an individualistic approach:

... this study has gone beyond most psychologically oriented studies of teacher thinking, by situating individual faculty members within the context of a department, a university and a discipline. (1999, p.462)

Psychologically oriented approaches, such as phenomenographic ones, tend to lack an appreciation of context generally, and of the social context of teaching and learning practices, values and attitudes.

## Subsection 2: Literature on the “teaching-research nexus”

### 1. The “nexus”: introduction

Clark’s 1994 paper offers one of the earliest overviews on what he calls the “research-teaching-study nexus”. In this he asks how much of the relationship exists among the activities involved in research, teaching and ‘study’ (or learning). Is there complete independence, or some form of compatibility or, at the extreme end, so much in common that “we can hardly tell one from another”? He looks at the conditions that enable the three activities to be more closely linked, arguing firmly that a strong “nexus” is a good “nexus”. Like much of the later literature, he moves through different levels of analysis: from the national system to the university and down to the ‘factory floor’ of higher education. He concludes:

The “nexus” is a magnet for resources, power and prestige. Nations honour it, academics pursue it, institutions seek to subsidise it; but as an increasingly expensive relationship, the “research-teaching-study nexus” tests the limit of scarce resources....Increasingly esoteric in substantive content, the “nexus” also tests the limits of university education. Its application pulls back from all students to limited cadres of highly advanced students... Institutionally delimited, the “nexus” becomes virtually *the* basis for the differentiation of higher education among types of institutions and across degree levels. (Clark, 1994, p.16)

### 2. A normative literature

Clark is right to note that the issue of the “nexus” is not value-neutral, and this is reflected in the literature in this area. Indeed the very word *nexus*, meaning “that which unites or binds”, carries an integrative and functional overtone. In the main, the literature is characterised by a normative perspective, which argues that there is strong value in enhancing the “teaching-research nexus” with regard to improving student learning and other areas. There is a common assumption that this enhanced relationship between teaching and research can and should be achieved. Brew (2006, p.xiv) writes: “I am passionate about bringing research and teaching together because I believe that this is the key to the enquiry-based higher education that I think we need for the future.” Jenkins (2004) begins his review of the research evidence on the teaching-research links with the section entitled *Statements of belief on the importance of teaching-research connections*. There is, however, no corresponding section of statements of belief of the reverse even though, as Coate, Barnett and Williams (2001, p.158) note, “there are a range of relationships – both positive and negative – between teaching and research”. In an earlier article (2000), Jenkins admits to having been previously biased in the other direction – believing that there was a negative or null relationship between teaching and research and viewing data from that perspective.

Dissenting voices to the dominant positive view include Barnett (1992 – although by 2000 he appears to have changed this position) and Webster (1985), who see the teaching role and the research role as separate enterprises requiring different sets of

skills and abilities. Romainville (1996) agrees, regarding the persistent belief in complementarity as somewhat ‘masochistic’. More neutrally, Ramsden and Moses (1992) found that there was no association between good teaching and the relationship with research across Australian universities. Good teaching can very well exist outside a strong research context, they conclude. Jenkins (2004) acknowledges that some research findings are ambivalent about the (at least potentially) positive relationship between research and teaching. He cites the conclusions from Zaman’s (2004) review:

... the evidence gathered for this document suggests that research and quality teaching are not contradictory roles. However, we cannot conclude from the information at hand that the link is strongly positive. The evidence indicates the relationship may be modestly positive, though it is likely to be stronger at postgraduate than undergraduate levels. The overall quality of the statistical analyses on which these conclusions are based is not high. (Zaman, 2004, p.5)

Rowland (2000) and Badley (2002) take a strong position that goes beyond complementarity, arguing that teaching and research are in effect the same activity (enquiry), simply with different audiences. Research has more ‘male’ characteristics and teaching more ‘female’, according to Rowland. The more usual position is that in an ideal world there would be a ‘seamless blend’ (Clark, 1987, p.30; Colbeck, 1998) between teaching and research, so that academic staff and students both benefit from the synergies achieved. Boyer’s (1990) “complementary” scholarships of discovery, integration, application and teaching can be included in this category of thinking.

Coate *et al.* (2001, p.165) summarise the possible relationships in this way:

**Table 2: Possible relationships between teaching and research (1) (Coate *et al.*, 2001)**

<b><i>Integrated</i></b>	
<i>Research and teaching are not distinct, considerable overlap (if not identical)</i>	
<b><i>Positive:</i></b> Research has a positive influence on teaching	<b><i>Positive:</i></b> Teaching has a positive influence on research
<b><i>Independent</i></b>	
<i>Research and teaching independent of each other (neutral relationship)</i>	
<b><i>Negative:</i></b> Research has a negative impact on teaching	<b><i>Negative:</i></b> Teaching has a negative impact on research

It is, however, possible that the relationship might be positive in one direction and negative in the other; for example, that research might positively influence teaching, but that teaching might negatively influence research. Thus the table could include an additional row:

**Table 3: Possible relationships between teaching and research (2)**

<b>Integrated</b>	
<i>Research and teaching are not distinct, considerable overlap (if not identical)</i>	
<b>Positive:</b> Research has a positive influence on teaching	<b>Positive:</b> Teaching has a positive influence on research
<b>Independent</b>	
<i>Research and teaching independent of each other (neutral relationship)</i>	
<b>Negative:</b> Research has a negative impact on teaching	<b>Negative:</b> Teaching has a negative impact on research
<b>Mixed</b>	
<b>Teaching positively influences research, research negatively influences teaching</b>	
<b>Teaching negatively influences research, research positively influences teaching</b>	

Moreover, it is possible that any pattern of relationships will hold true only for certain types of case: disciplines, institutional contexts, levels of course, subject matter and so on. Colbeck's paper (2004), based in part on observational studies of faculty in different disciplines, does show in some detail how disciplinary differences and other factors are important in this relationship. Serow (2000) shows that in a research-intensive university teaching duties can negatively impact on research because of the demands of time on academic staff. Similarly Robertson and Blackler (2006) show that in a research-intensive university, students' experience of the linkage between learning and research varies by location and over time according to the ways in which knowledge is represented across the disciplines and conceived by students.

Notwithstanding the fact that there is some disagreement, the dominant normative position in the literature is that teaching and research can and should be synergistic. Jenkins and Zetter speak for many:

We are convinced that re-shaping our departments in a way that better focus on the nexus can aid student learning, staff morale, their pride in their department and the overall effectiveness of the department and the institution. (Jenkins and Zetter, 2003, p.22)

This belief in and promotion of the "nexus" is not a coincidence of course. The relationship between teaching and research is a very political issue: the UK government has misinterpreted the findings from the Hattie and Marsh (1996) meta-analysis of studies of the relationship to justify a funding policy that separates teaching and research, with separate and very different funding streams for each. Taken to its logical conclusion, this could mean a system in which there are teaching-only universities and research-intensive universities, with research funding very concentrated on the latter. Many, though not all, academics find this idea anathema. Meanwhile, other areas of funding policy in the UK have tended to promote research rather than teaching, an inappropriate priority for those interested in teaching and student learning. The Research Assessment Exercise (RAE) has focused academics' and managers' attention very strongly in the direction of research and has led to some extent to the commodification of research, with academics being encouraged to deliver assessable products as quickly and frequently as possible. (Elton, 2000; McNay, 1997; Jenkins, 1995). While success in this field leads to financial reward for universities, there is little or no institutional financial reward for excellence in teaching and learning.

### **3. A distinctive epistemological and ontological position**

Related to the normative character of much of this literature are the ontological and epistemological positions adopted. Ontologically, a frequent standpoint is foundationalist and empiricist. There is a tendency towards the assumption of an objectively verifiable 'reality' in existence that research and scholarship can capture, or at least can approach with some degree of proximity. Epistemologically, the approach tends to be empiricist and instrumentalist; that is there is an assumption that a correct knowledge and understanding of reality can be rendered through empirical studies of sufficient rigour. Findings can then be used to change practices for the better, in ways that are more attuned to empirical realities.

An example may clarify the point. Jenkins and Zetter (2003, p.13) use work by Gibbons *et al.* (1994) to make the claim that professional and vocational areas of knowledge are moving to *mode 2* forms of knowledge creation (ones that are interdisciplinary, temporary, task-oriented rather than traditionally disciplinary in character). Here is a depiction of part of reality based on a particular type of research used to describe reality and, ultimately, offer proposals for changing it.

So what is problematic about adopting a foundationalist-empiricist perspective? One of the issues is to do with lacunae in the analysis from this perspective. Missing are the following:

- a) allowance for the fact that social life is in constant change in multiple directions and in a contextually contingent way
- b) acknowledgement of the role of theory: either of tacit theories underpinning the work referred to or of alternative theoretical perspectives. This work is based on abstracted empiricism. How one should theorise and conceptualise, for example, 'students', 'disciplines', 'institutions' and 'departments', and the extent to which such concepts are useful is only infrequently addressed
- c) an absence of the many 'isms' that permeate much of the rest of social science: modernism; feminism; critical social theory; and the rest. Bourdieu, Foucault, and many of the other 'stars' of social science make no appearance on this stage.

There are exceptions to this critique of course: Brew (1999, p.300) calls for a recognition of the "kaleidoscopic, ever-changing nature of the relationship between teaching and research in the context of challenges to ideas about knowledge and knowing" among those looking at the "teaching-research nexus". Likewise, Brew and Boud (1995) set out to unpick the concepts of teaching and research more thoroughly and argue that the "attempt to find such a link will always be confounded by different conceptions of the two enterprises" (p.261).

### **4. Problems arising in normative foundationalist-empiricist instrumentalism**

This stance has the effect of defocusing some authors regarding the complexities of the relationship between teaching and research in universities and occluding some of the dysfunctional characteristics that such a relationship can have. In particular, it is

noticeable that there are multiple possibilities as to what the benefits of this relationship are, and that these are often conceptually elided. They include:

- a) that students should become researchers (Scott, 2002, p.14)
- b) that students and lecturers should research together (NCIHE, 1963, para 555)
- c) that teaching is “enhanced and informed” by the lecturer being a researcher (NCIHE, 1997, p.8)
- d) that understanding the process of knowledge generation helps students understand the nature of supercomplexity (Barnett, 2000)
- e) that for staff, creating synergies between research and teaching can be time-efficient (Garrick and Rhodes, 2000)
- f) that for departments strong in one but not the other, funding from the stronger can be used to enhance the weaker (Zetter, 2002)
- g) that because both teaching and research are “about learning”, they can enhance learning when combined (Brew and Boud, 1995).

Zetter (2002) usefully summarises these links as falling into three categories:

1. experiential - as a process that benefits students and staff
2. conceptual - regarding societal needs and the development and communication of knowledge
3. operational - regarding the reciprocity of teaching and research as learning activities.

However, in the literature itself the precise nature of the linkage being referred to is almost always not delineated, and unacknowledged conceptual shifts occur.

## **5. The “teaching-research nexus”: dysfunctions?**

Because of the normative nature of most of this literature, any dysfunctional linkages between teaching and research are usually given limited attention with most discussions focusing on one issue: the distractions and absences of staff that research can create to the detriment of their teaching and learning role, and the feelings of exclusion that students can have as a result (e.g. Zamorski, 2000). Other dysfunctional relationships are possible. A far from exhaustive list would include:

- time spent teaching squeezes research into a ‘spare-time’ activity
- speaking to two different types of audience (research specialists and beginning students) results in poor communication with one or both
- research-led teaching results in a very narrow syllabus
- students are exposed to a narrow perspective.

The differential effects of any dysfunctional relationships on different categories of staff and students have received very little attention in the literature. Female staff, for example, are more likely to spend time with students doing what American feminists call ‘mom work’ (pastoral and counselling work), therefore this dimension of teaching is more likely to have detrimental effects on the time female staff have available for research than it is for male academics. As far as students are concerned, an elite research department may forget its duty to assist in widening participation when recruiting students.

## 6. Strategies for enhancing the “teaching-research nexus”

If there is a problem about the “teaching-research nexus”, it is that in a ‘state of nature’ research and teaching are independent constructs, and so the benefits of their binding need to be built deliberately (Pascarella and Terenzini, 1991; Hattie and Marsh, 1996; Marsh and Hattie, 2002).

Ways in which the link can be developed and enhanced are:

1. in the design of courses (Brew and Boud, 1995, p.272)
2. by developing students’ understandings of the role of research in their disciplines (Jenkins and Zetter, 2003)
3. by developing students’ abilities to carry out research in their disciplines (Jenkins and Zetter, 2003).
4. privileging research opportunities to selected students (Jenkins and Zetter, 2003)
5. managing students’ experience of staff research (Jenkins and Zetter, 2003)
6. making research-based learning the standard (Jenkins and Zetter, 2003)
7. making the first year of undergraduate courses enquiry-based and build on that experience (Jenkins and Zetter, 2003)
8. culminating courses with a capstone experience of learning through research (Jenkins and Zetter, 2003)
9. at the departmental level: developing an understanding of the nature of the “nexus” in one’s own context; reviewing current practice and culture; developing appropriate staffing policies; and integrating policies and structures for teaching and research.

## 7. Disciplines and the “teaching-research nexus”

However, operationalising these strategic and tactical proposals is made more complex by the fact that the nature of both ‘research’ and ‘teaching’ vary by discipline. This variable mediates in important ways what such maxims actually should mean in practice (Parker, 2002).

The literature on the “nexus” claims the following differences in disciplinary research:

1. there are ‘signature research methodologies’ in particular disciplines: informal learning and evidence-based research in Medicine and Health Sciences, for example (McKee, 2002)
2. that *mode 2* knowledge creation approaches have become prevalent in professional and vocational areas (Gibbons *et al.*, 1994; Gibbons, 1997; Nowotny *et al.*, 2001).

Unfortunately, the literature itself fails to make such clear-cut distinctions with regard to the claims made or causal mechanisms proposed. Healey (2000), for example, says the following in summarising arguments linking disciplines and teaching and research practices:

... for most academic staff their primary allegiance is to their subject or profession, and their sense of themselves as staff at a given institution is

secondary.... Secondly, there is a strong perception among staff that there are significant differences among disciplines in what academics do and how those activities are described.

There is much supporting evidence for these perceptions. Biglan (1973), for example, established that the structure and output of university departments are related to the characteristics of academic subject matter; while Kolb (1984) found that disciplines form clusters based on the learning styles predominant among their students. Furthermore, Moses (1990) has demonstrated that attitudes to teaching and research tasks, as well as patterns of communication, differ in different disciplines; while Donald (1997) has shown that learning goals vary between disciplines. These findings point to the need to consider how the characteristics of disciplines define limits on the extent to which studies in one area can be generalised to areas whose subject matter is different (Biglan, 1973, p.213). It is important, therefore, that the scholarship of teaching in higher education is not divorced from the content of the discipline being taught. As Rice (1996, p.vi) notes: "improvement of teaching needs to be rooted in the intellectual substance of the field". This principle has guided the development of the Carnegie Academy for the Scholarship of Teaching and Learning. For example, its Pew National Fellowships Program selects Carnegie Scholars in disciplinary groups to provide collegial interactions within the discipline. (Healey, 2000, p.173)

Building on this picture of the background Healey argues that:

The broad nature of geography means that geographers are used to borrowing and adapting ideas from outside their own discipline. Arguably, geographers are also more open than many other disciplines to innovations in learning, teaching and assessment (Healey, Jenkins and Kneale, 2000). There is evidence that in the United Kingdom and the United States, geography is one of the leading disciplines in pedagogic innovation. (Healey, 2000, p.13)

These passages include both an epistemological explanation and a social one, with movement between them. Referring back to Figure 1, there is something of a shift in explanatory position along the axes (A, B and C). Some statements are based on epistemological characteristics (a strong essentialist position, close to box 1 in Figure 2), while others either offer no causative mechanism being based on empirical data or claims, while still others refer to social causes. A multi-causal explanation is of course a perfectly reasonable one, but here there is shifting and mixing of types of explanation. This mixing would not matter if there weren't such significant differences between the different types of explanations. For example, although disciplines are in a constant state of change (Clark, 1996), their rate of change is much slower and less amenable to deliberative intervention than are attitudes. Epistemological disciplinary differences are, in addition, much less contextually contingent than social ones.

## **8. Disciplinary case studies**

Griffiths (2004) conducted a case study of the "teaching-research nexus" in the built environment area. His conclusion concurs with Brew's view (1999) that the particular

characteristics of knowledge production have a strong influence on the nature of the relationship between teaching and research. In built environment disciplines, the professional bodies tend in effect to restrict academic research, promoting instead 'curriculum drift': the inclusion of more and more substance in the curriculum. Moreover, staff themselves tend to come from a professional rather than a research background, sometimes having an ambivalent attitude towards research. This is compounded by the fact that students want, or are perceived to want, knowledge of how to do the job, not how to conduct research in the area. These negative factors are mitigated to some extent by the presence of enquiry-based approaches in some areas of built-environment disciplines, which spill over into the academy, particularly at the dissertation stage of an undergraduate degree. For Griffiths, then, the characteristics of knowledge production are the significant variable in conditioning the nature of the teaching-research nexus" in disciplines.

In a small study of academic historians, McLean and Barker (2004) found two distinctive approaches to the understanding of student progression in the discipline: the 'acquisition of transferable skills' and 'becoming a practising historian'. They conclude that the first is an impoverishment of higher education, while the second requires both students and staff to engage in research practices. Indeed, McLean and Barker consider the practices being instilled in students in the 'becoming a practising historian' model to be indistinguishable from research. Unlike Griffiths' study, this one does not problematise knowledge-generation practices, but takes them for granted. This study then lies within the dominant approach to thinking about the "teaching-research nexus": the normative foundationalist-empiricist one.

## **9. The significance of institutional context**

Jenkins (2004) notes that there is limited research on the relevance of institutional context to the "teaching-research nexus" compared to other factors. Zubrick, Reid and Rossiter (2001) studied three contrasting institutions in Australia, while Colebeck (1998) studied two contrasting institutions in the United States, and Hattie and Marsh (2004) studied one institution in New Zealand. In each case, internal policies and structures, the nature of their staff specialisms, recruitment policies and institutional missions had strong effects on the linkages (or lack of them) between teaching and research. Further, in each case departmental influences as well as disciplinary differences had a strong conditioning effect on any institutional factors. Of course, disciplines and their institutional locations are not separate entities: choices are made in different institutions about the location of disciplines, often for reasons of convenience, economy or marketing: History might be in a social science faculty or a humanities one; Law is sometimes in with social sciences or may be located in a management school.

In reviewing the literature, Jenkins (2004) concludes that institutions are strongly impacted by national funding policies, which in the UK have largely had the effect of separating teaching and research (Gibbs, 2001).

## 10. The “teaching-research nexus” and the student experience

Jenkins’ (2004) review of the research evidence in this area found that with regard to students’ *perceptions*, they appreciated their lecturers and courses being up to date in relation to current research in their discipline, as well as lecturers being active and interested in the area they taught. On the downside, students often did not feel that they were stakeholders in staff research: it had little to do with them (Neumann, 1994; Jenkins *et al.*, 1998; Lindsay, Breen and Jenkins, 2002). For students, however, there could be negative consequences of research, particularly regarding staff absences and sabbaticals.

Astin’s study of over 200 American institutions took an even more negative view:

... a college whose faculty is research-orientated increases student dissatisfaction and impacts negatively on most measures of cognitive and affective development. (Astin, 1993, p.363)

The need for better management of the “teaching-research nexus” within institutions is an extremely common theme in this literature. Any negative effects of research on teaching can be mitigated if things are better managed, it is argued.

One study at Oxford Brookes University distinguished between different categories of students according to their motivational and attendance characteristics (along the lines of early American research about student cultures) and found that those who did not desire contact with staff were more likely to have a negative view of research. Zamorski (2000) sums up a common theme in her findings that:

Student engagement with research occurs in a number of forms and at many levels of learning. However, students do not always recognise this engagement, fully welcome it or find it to be sufficiently well taught to consider it a useful or pleasurable learning experience. Moreover, it seems that students who actively search for a closer engagement with research cannot always find or access it or they discover that the curriculum and assessment structures may interfere with such a desire. (p.426)

Brew’s (2007) review of the literature on research and teaching from the student’s perspective found a mixture of positive and negative attitudes towards their teachers doing research.

Moving from perceptions to the impact of the “nexus” on *student learning and development*, Neumann (1994) usefully categorises the different forms of effect from the “teaching-research nexus” as tangible (knowledge and skills), intangible (attitudes and approaches) and global (general direction of the curriculum). There is some weak evidence of effect in all three areas in some contexts, both from Neumann’s study and others. According to some studies of the *intangible* influence, students who engage in enquiry-led learning develop more sophisticated understandings of knowledge and its development (e.g. Blackmore and Cousin, 2003). This appears to be particularly the case at postgraduate level (Smeby, 2002).

Brew's (2007) review of the literature on students' responses to and learning from enquiry-based approaches to teaching and learning suggests that discipline is an important conditioning factor. While there was generally found to be a positive effect of these approaches on student learning, especially in some disciplines, Brew notes that initial student uncertainty needs to be well managed and that the questions being researched by students need to be authentic, important ones for them.

It is worth noting, though, that what is meant by the "nexus" tends to vary from student perceptions of *staff* engaging in research to *students* being engaged in research of different sorts, although Brew's review (2007) is very clear about drawing this distinction. This is another example of the conceptual shifts that tend to occur in this area of enquiry as noted above. Jenkins (2004, p.30) recognises this:

... perhaps we overstate or distort these relationships by referring to 'a' or 'the' teaching-research nexus.

## 11. Conclusions on the literature on the "teaching-research nexus"

The conceptual review above leads us to the following conclusions about the literature on the "nexus":

1. Much of it takes a partial position so that the potential negative features of research-teaching interactions tend to be underplayed. The possibility that separating the research and teaching functions might be beneficial to both is infrequently entertained.
2. Much of the literature would benefit from conceptual and theoretical elaboration: for example with regard to how complex phenomena such as disciplines, universities, university departments and research practices might be best conceived.
3. There is a tendency in the literature to use terms in a slippery way, the idea of the "teaching-research nexus" itself being the clearest example, all three terms in the concept being used in multiple ways. For example, it is often unclear whether authors are referring to the influence on teaching and learning of students doing research, staff doing research, staff practices being informed by research, the curriculum being informed by contemporary research, the 'research culture of a particular context' and so on. The nature of the connections, and the nature of 'research' also remain similarly unspecified in many cases.
4. Causal theories are rarely developed. Precise mechanisms of influence, strength of influence and range of influence of different factors on others tend to be left unelaborated.
5. There is a tendency to make unsubstantiated assertions. Elton just manages to refrain from noting that, like the Bellman in Lewis Carroll's *The Hunting of the Snark*, some of this literature takes the view that telling us a thing three times makes it so (Elton, 2001, p.54).
6. The findings of the literature sometimes state the obvious (Rowland, 2000): that in some cases there is a positive influence, and in other cases not; that students both appreciated and are sometimes irritated by staff engaging in

research; and that “some of the most inspiring teachers are able researchers, but not all; that some prominent researchers are good teachers, but not all”.  
(p.1)

## 12. Fruitful directions for further research

One could continue in the foundationalist-empiricist instrumentalism vein, seeking to fill in the gaps in our knowledge about the “teaching-research nexus” (Jenkins, 2004, p.32, helpfully offers a the map of where our knowledge still requires colouring in by more empirical research). One could use the same data collection instruments that are prevalent in the field, usually questionnaires and interviews, or one could even adopt more bold and innovative methods.

Arguably, as important is the expenditure of effort in theorising and conceptualising in more nuanced ways the lived experiences, influences and constraints on both staff and students as regards the “teaching-research nexus”. Empirical studies of teacher and student attitudes to an experience of the “nexus” is a field that has already been well ploughed.

We concur with Coate *et al.* (2001, p.173):

... it may be that there should be less effort spent on trying to establish that research enhances teaching, and more of an understanding of the ways in which different relationships between teaching and research are shaped.

Brew (2003, p.5) also agrees that it is time for to develop improved conceptual clarity:

... we need greater clarity about precisely which aspects of research and scholarship academics are focusing on. It is important to be clear what we mean by research, what we understand by scholarship and how these ideas are related to conceptions of knowledge and approaches to teaching ... Different ideas about the nature of research, scholarship, teaching and knowledge have different consequences.

In that article, Brew offers some very useful ways of categorising both research and scholarship, which add much to the debate about the “nexus”.

The next section of the report moves on to attempt to tackle some of these issues.

## **Section 2. Deconstructing and reconstructing the “teaching-research nexus”**

### **1. Reconceptualising the “teaching-research nexus”**

One key task addressed by this project was to unpick the sometimes slippery concept of, and the sub-concepts within, the term “teaching-research nexus”. This involved categorising the ways the “nexus” is conceptualised as a set of relationships between teaching and research, as well as elaborating and developing the different meanings that ‘teaching’ and ‘research’ have.

From our review of the literature (above), a search of relevant websites and reading other case study material, we identified seven different categories of relationship (here called ‘dimensions’) between teaching and research; although Krause’s (2007) finer-grained analysis of Australian University website “nexus” references identified 17 dimensions, all but one of these are subsumable into our seven. It is important to define these different sorts of relationship in order to help prevent the slippage and the inappropriate unitary use of the term “nexus” described above. Table 4 summarises the different uses we found, the benefits mooted in the literature and our reflections on the possible dysfunctions of each dimension (*not* usually found in the literature). The dimensions set out in Table 4 describe a series of possibilities. They can also describe a preferred future state, an aspiration. The ‘gap’ between the current state and the preferred state is the ground policymakers address.

**Table 4: Dimensions of the “teaching-research nexus”**

<b>Meaning of “nexus”</b>	<b>Practices</b>	<b>Suggested benefits</b>	<b>Possible dysfunctions</b>
<b>1. Learners do research</b>	Research-based learning approach Research community practices replicated – peer review, publication on web or paper	Range of skills developed Range of concepts developed Epistemological awareness developed	Learning too slow to cover curriculum Patchy coverage of curriculum Low-quality research with poor ethical control and saturation of respondents with requests for interviews etc Resistance from learners Modularised curriculum and timetable constraints mean impractical to do this
<b>2. Teachers do research</b>	Teaching cutting-edge material Teaching about their research	Develops passion for the subject, communicated to learners Professionalises academic staff Teaching-informed research agenda saves time and effort Skills developed in research reused in teaching Develops thinking abilities of teachers Engagement with pedagogic research and its outputs improves teaching The effect on individual academics’ identities of having a significant research role alongside and/or linked with their teaching activities	Teachers spend most of their time and energy on research to the exclusion of students Teaching assistants employed to replace teachers engaged on research resulting in student exposure to lower levels of expertise Students feeling abandoned
<b>3. Teachers and learners research together</b>	Students as research assistants Co-operative planning and implementation of research projects Development of “inclusive scholarly knowledge-building communities of practice” (Brew, 2006, p.180)	All of the above benefits, plus more task-oriented and co-operative relationship between teachers and learners	Learning too slow to cover curriculum Patchy coverage of curriculum Students effectively unpaid research assistants
<b>4. Research embedded in the curriculum (Research influences the what and the how of curriculum design)</b>	Research-based learning approach used Cutting-edge research and knowledge incorporated in curriculum design Students’ research skills foregrounded Students’ cognitive skills of enquiry foregrounded Pedagogic theory and enquiry-based practice inform curriculum	Action research feeds into quality review and enhancement Students gain benefits as in 2 and 3 above	Patchy coverage of curriculum Transmission of essential knowledge poorly effected
<b>5. Research culture influences teaching and learning</b>	Teachers and students discuss research together Research culture permeates practices in teaching and learning	Research culture provides motivational context for teaching and learning	Research prioritised over teaching, leaving non-researchers among the staff as well as students feeling abandoned
<b>6. The “nexus”, the university and its environment</b>	Both teaching and research are linked into the commercial environment and local communities, addressing needs and solving problems Knowledge transfer takes place “Integration of knowledge production and communication [expands beyond] university walls to encompass schools and further education colleges” (Lucas, 2007, p.18)	Research-teaching links offer opportunities for knowledge transfer The “nexus” can indicate improved institutional structures and strategies The “nexus” can indicate improved national policies on enhancing teaching and research Claims about a “teaching-research nexus” having instrumental value with regard to marketing of programmes and courses, and institutional reputation .	The needs and priorities of employers and others take precedence in the academy. Pure research and critical approaches to society become marginalised
<b>7. Teaching and learning influences research</b>	Research projects refined and developed as a result of discussion with students (particularly in areas of preparation for professional practice) Pedagogical research conducted in the context of teaching students	Mutual benefit to both teaching and research in a feedback loop Skills developed in teaching reused in research	Substantive disciplinary research becomes sidelined Low quality pedagogical research begins to predominate because of lack of training in methods and relevant social scientific disciplines

The asterisked items in the table above indicate indexical rather than substantive links between teaching and research: significant not in themselves but in the secondary effects they have. This throws up the important issue of the rhetorical nature of many claims about the “teaching-research nexus”: that the significant issue is not the “nexus” itself, but the claims made about the “nexus” and their effects.

Moving on to unpick the concepts of ‘teaching’ and ‘research’, we found that much of the work in this area has been based on phenomenography. Brew’s work on research (2001) uses a phenomenographic approach to identify four orientations to research (see Appendix 1). It is well known that phenomenography has become a standard approach in the study of teaching and learning in higher education (Saljo, 1979; Marton, Dall’alba and Beaty, 1993; Prosser and Trigwell, 1999; Trigwell and Prosser, 1996). Thus individual conceptions of research, for example, are itemised (as a *journey*, as *trading* etc for Brew); so are conceptions of teaching (as *conceptual change/student-focused* or *information transfer/teacher-focused* for Trigwell and others); so are approaches to learning (*deep*, *surface*, *strategic* for Saljo (1979) and others).

Yet a growing body of literature has begun to question the foundations and approach of phenomenography (Ashwin, forthcoming; Meyer and Eley, 2006), as well as the ‘approaches to learning’ literature that has grown out of it. Haggis’ work (2004), as well as the work on academic literacies by, for example, Lea and Street (1998), has emphasised the nuanced and complex character of learners and learning, and the significance of taking a social approach, based sometimes on social practice theory, to understanding learning situations. In particular, the life histories and social locations from which learners (and staff) come have important influences on practices and approaches in the present day.

Taking this more social rather than individualistic approach sees teaching and research as rooted in more structural ground. When academic staff develop orientations to their teaching and research, they do not do so *ab initio*. Rather they draw on resources that can be described as ideological, that is on an already-present framework of values and beliefs about social arrangements and the distribution and ordering of resources (Hartley, 1983). This framework provides a guide to and justification for practices in work contexts, including practices to do with teaching, with research, and the links between them. Table 5 summarises our thinking on this. It is based on Trowler’s earlier work (1998) summarising the literature on educational ideologies from which he distilled four: traditionalism; progressivism; social reconstructionism; and enterprise.

**Table 5: Conceptions of research and teaching as ideological**

<b>Ideological perspective</b>	<b>Educational ideology in relation to teaching</b>	<b>Research process/approach/type</b>	<b>Criteria of value in research</b>	<b>Key ideas</b>
<b>Traditionalism</b>	Teaching is about transmitting information, induction into the discipline  Information transfer/teacher-focused approach	Disciplinary focus, empirically based, peer review, clear boundaries between research and other activities (e.g. scholarship)  Often positivist	RAE-able  Of 'tradeable' value among the community of scholars (Brew, 2001)  Development of propositional knowledge ('knowing that': Ryle, 1949)	Development of robust new knowledge  Propagation to a wider community  Agglomeration of knowledge towards 'capturing' truth
<b>Progressivism</b>	Teaching is about developing students' minds so they can better appreciate the world, about making them autonomous  Conceptual change/student-focused approach	Can include the above; also likely to use interpretive enquiry, critical thinking  There may be fuzzy boundaries between research and other activities	Development of the mind  'Journey' conception of research (Brew, 2001)  Development not only of 'knowing that' or 'knowing how' (Ryle, 1949) but of 'knowing' itself: new ways of seeing, new concepts and theories, ways of thinking	Conceptual and personal development  Personal enlightenment  Illumination of a field of enquiry or practice
<b>Social reconstructionism</b>	Teaching is about empowering students to see the inequities and structured nature of advantage and disadvantage in the world, and to <i>change</i> it	Critique, making questions not taking them  Thinking differently, challenging  Clear boundaries between research and other activities	Power for social change  Development not primarily of 'knowing that' or 'knowing how' (Ryle, 1949), but of 'knowing' itself <i>for change</i> : new, critical, ways of seeing, challenging concepts and theories, new discourses and tools for deconstruction	Deconstruction  Challenging established practices and relations  Critique
<b>Enterprise</b>	Teaching is about giving students the skills to thrive in their careers and to contribute to the economy	Integrative, <i>mode 2</i> knowledge, action research, research skills important, research and business very close, practice-based research  Fuzzy boundaries between research and other activities (e.g. professional practice)	Value to enterprise economy  Development of 'knowing how' (Ryle, 1949): performative knowledge	Value  Global competition  Knowledge economy, knowledge transfer

Conceptualising teaching, research and the links between them as ideological does not reject the findings of phenomenography, but draws on them and incorporates them. Thus Brew's conceptions of research as well as Trigwell and Prosser's conceptions of teaching can be incorporated relatively easily into this table. The difference, however, is that ideologies provide resources upon which individuals draw selectively. They are sustained over time by, for example, particular sorts of journals, conferences and social networks. Within different universities there will be varying configurations of these ideological resources, with one or two usually dominant. For individual members of staff, ideological orientations go beyond simply conceptions of research or conceptions of teaching or learning into more fundamental issues. They raise and help answer questions such as the following: What are the purposes of higher education? What do I think I'm doing when I teach or do research? What preferred futures do I envisage? What are my criteria for success? How should the university interact with the world outside, especially industry? Which is most important, teaching or research? What are the characteristics of 'graduateness'? Many of these issues are extremely relevant to the "teaching-research nexus", though not directly related to that issue.

Although these questions are phrased in the first person singular, they in fact relate to broader ideological trends and resources. Thus, in feminist thinking there are specific approaches to both teaching and research that instantiate feminist principles. In English as a discipline, the different ideological branches of Leavisite approach (rooted in traditionalism) and critical theory (rooted in social reconstructionism) have very different implications for both teaching and research, and the links between them. Similarly in Academic Law, the black letter approach and critical legal studies are poles apart in relation to what to teach, how to teach it, the nature and purpose of research and the possible linkages between the two. These divisions, alternative perspectives, even conflicts within disciplines are entirely missed by approaches to the "nexus" based on methodological individualism.

We move on now to consider the data we collected for this project and how they relate to the more theoretical discussion above.

## **2. Research methods used and findings from the data**

Semi-structured interviews were conducted with 16 academic staff across the four disciplines of Graphic Design, Design for Performance, Fine Art and Fashion Design and across all six institutions that make up the University of the Arts London. The scope of the interviews focused mainly on research, although with some questions related to the connection of research with teaching. The sample for interviews was selected to cover the same subject areas as the parallel project being conducted by the CLIP CETL (see below). In addition, the sample aimed to include active researchers and those with an institutional responsibility for research, who were at the same time involved in teaching and course design. It included participants from each of the constituent institutions of the University of the Arts London, and two from the

University of Lancaster. The two from Lancaster were included to provide sample views from an established research-intensive university.

The interviews were designed with a dialogic approach in mind. A loose framework was established that would provide a focus on the main issues identified in the literature review. Interviewees were asked to describe their understanding of research and teaching, and to comment on four ideological positions in relation to these two activities. They were also asked to comment on Brew's four conceptions of research (see Appendix 1). Once responses to these prompts had emerged, themes from the responses were drawn out. In many instances, aspects of practice and thinking emerged that provided new material.

All the interviews were transcribed and analysed for both common themes across most of the interviews and novel views expressed by one or two respondents. Since this was a small sample, there was no attempt to achieve a sense of an objective truth about the views of typical art and design academics. Rather the aim was to gain some insights into their thinking and practice, which could be used to illuminate and inform future enquiry.

Data from a parallel project with 18 staff in those same disciplines (with some overlap of individuals) were also collected. These focused mainly on teaching, investigating the distinctive characteristics of teaching approaches in those disciplines. In this case interviewees were members of the University of the Arts London under the auspices of and with funding from the CLIP CETL based at that institution. Here photographs were provided by the interviewees and by the interviewer. These were catalysts for discussion about the kinds of teaching processes engaged in and preferred by the respondent, and the learning processes of students in that discipline. Further questions addressed any 'special' characteristics of learning, teaching and assessment in the discipline, as perceived by the respondent, as well as any use of online learning. Again, interviews were transcribed and analysed as described above.

This focus on art and design and the University of the Arts London in particular perhaps needs some explanation. In other contexts, we have found that an examination of an unusual example of a particular phenomenon has yielded insights and raised important questions about more mainstream versions of that phenomenon (Trowler and Turner, 2002). A particular feature of the fields of art and design is that they are emerging fields for research, but with quite distinctive characteristics, which we considered potentially illuminative in this way. A second characteristic that we considered important is that the University of the Arts London (UAL) is a relatively new institutional structure, and thus institutional influences on perceptions of research and research activity would be more apparent and less part of the tacit understandings of staff than in longer-established institutions. The UAL is composed of six pre-existing institutions with a diverse array of missions and cultures: Central Saint Martins College of Art and Design, Camberwell College of Arts, Chelsea College of Art and Design, London College of Communication, London College of Fashion and Wimbledon College of Art.

### *Diversity of disciplines*

As noted above, the interviews within the four selected disciplinary areas were conducted across all six of the constituent institutions of the UAL, and it was evident that institutional context was a powerful factor in how individuals viewed their disciplinary research, even where they were from the same or similar disciplinary backgrounds. The causality of this was less clear – it was evident that some individuals had actively selected a particular institution because of its perceived values. In other cases, it appeared that the research approach was in part shaped by factors at play within the institution, such as institutional or school research strategies or funding council opportunities that might, for example, emphasise collaborative or cross-disciplinary work. Also of considerable importance in the shaping of research approaches and ideologies was the personal biography of the individual: professional background, long-held personal philosophy, idiosyncratic opportunities, family history and current responsibilities were particular dimensions of this that became apparent. Some respondents talked explicitly about their sense of discipline, frequently qualifying the definition of graphic designer, or art historian, for example, by reference to either creative or academic practices that brought them into a different disciplinary domain. The graphic artist might, for example, indicate influences from historical studies; the fashion designer make reference to critical studies. So while the disciplinary context clearly provided a framework within which research practices and philosophies were located, there was considerable variation within that framework. The overall picture presented was of a kind of Venn diagram of overlapping and interacting research methodologies.

### *Nature of research*

The nature and definition of the term 'research' continues to be a subject of ongoing debate in the creative disciplines. Historically, research in the creative arts has referred to the set of practices that supports the creative process. Respondents referred to the way that this form of research is continuous, often unconscious, eclectic, visual and tactile rather than verbal, and unlikely to be goal-oriented in the same way that, say, scientific research might be designed with clear research questions, literature review, methodology and reporting processes. There was a sense that research was becoming more formalised, and this was partly happening through the growth of PhDs in the creative disciplines. The PhD was seen by some respondents as defining appropriate training for academic work within certain disciplines, where previously the indicators of esteem would have been more likely to be professional or artistic recognition within the particular field.

As well as the growth of the PhD trajectory into academe, respondents also referred to the strong influence of the Research Assessment Exercise (RAE) and of the policies of research funding councils in reshaping the traditional concept of research. Definitions of research for the 2008 RAE for the visual arts, it was agreed, were quite broad, incorporating exhibited work, publications, curation of exhibitions, performance and so on. Nonetheless, even the act of explicitly framing what was and was not defined as research

appeared to have a constraining effect on some of the respondents. For others, the increasing influence of the RAE and more formalised focus on research had served to support new work, giving it a legitimacy and, in many cases, additional resources that it would otherwise not have. One respondent referred to the way in which funding for research had meant that artists were freer to create, as they had been liberated from market demand.

An important dimension of the specific nature of research in the visual arts was the nature of the language through which research is conducted and presented. Several respondents alluded to the fact that the language of their work was visual and that learning about their discipline was essentially learning a visual language; one that expresses ideas and emotions as well as alluding to influences and contexts beyond the immediate piece. Some felt that the need to use verbal language about work that, in their view, came out of a process of research might somehow undermine the legitimacy and value of the visual statement. One respondent noted that at undergraduate level students were striving to develop a visual means of expression, only to have to move into verbal analysis and debate about the work at PhD level.

Another distinctive feature of the approach to research was that of playfulness and uninhibited activity that sought to challenge orthodoxies. Respondents from the areas of fashion design and graphics referred to the importance of play in relation to the creation of new work, talking about techniques to stimulate creativity and playfulness, both in their own work and that of their students.

#### *Ideological positions emerging*

In relation to Brew's conceptions of research many respondents felt that different conceptions came into play at different moments, with the two most dominant conceptions being those of the 'layer' or 'journey' when it came to personal choices and preferences. However, there was a recognition of the 'trading' conception as being that required by the academic research context. In relation to the four positions described in Table 5, the most dominant position was that of 'progressivist'. Virtually all the respondents spoke about the purpose of their research being to offer insights and critical perspectives to the research community, the informed lay person and to the wider context of society. There was reference to those aspects of traditionalism that emphasised the mastery of techniques, but there was a sense that this was only ever a means to support the progressivist approach. Similarly some respondents said that there was an element of 'social reconstructionism', but this might be a by-product of the critical approach in the progressivist ideology. There was quite strong resistance among some respondents to the notion that social reconstructionism should be an explicit element of their teaching approach, even if it guided their own research and professional practice.

## *Research and teaching*

A strong pattern that emerged from these interviews was the congruence between values and philosophies of research and teaching. Several respondents indicated that they and their students were on a continuum of expertise, where the only substantive difference between them and their students was the degree of experience and recognition. This feature was strongest where the work was largely creative. In this context, the academic staff said that they very often learned a lot from their students, who, for example, might be experimenting with novel techniques or materials. On occasions this would stimulate and inform their own research. Where the disciplinary context was closer to a more mainstream traditional subject, there was more distance between the academic and the student, with a sense of 'teacher and taught'.

### **3. Implications for theory and for enhancement efforts**

What does all this imply for our understanding of the "teaching-research nexus", and what are its implications should we wish to enhance the relationships between teaching and research?

First, thinking about the "nexus" would benefit from going beyond the emphasis on the individual deriving from the phenomenographic approach (and the methodological individualism that has usually underpinned efforts to understand it). "Nexus" issues would be more illuminated in the light shed by an appreciation of wider social structural forces. So, for example, the RAE in the UK has had a tendency to push academics towards a view of research in line with Brew's 'trading' conception (Elton, 2000; McNay, 1997; Jenkins, 1995). The adoption of this conception more widely is not a product of many individual choices made agentically, but of a policy and power context that needs to be fully acknowledged. Similarly the push towards vocationalism in higher education (Trow, 1992), what Barnett (1994) calls 'performativity', is intimately linked to the enterprise ideological framework. This has repercussions for the "nexus" in a number of dimensions, but also goes well beyond "nexus" issues understood in a restricted way, perhaps most significantly into new discursive modes. At the root of this are issues of power, in particular regarding thinking about the world and describing it, as well as in relation to what becomes difficult to express.

Power issues emerged as significant in the data from our interviews. In all the UAL institutions, there was a programme of training and coaching academic staff to be able to articulate their research outcomes in appropriate terms for the RAE: staff were being obliged by RAE requirements to reframe what they did in relation to the dominant research ideology of the academy rather than of their disciplinary origins. In the context of teaching, the issue of power was also apparent. The way that the respondents spoke about their students displayed a fluidity in authority relationships, so that at times the academic was leading students and at other times students were in a more powerful role. The democracy apparent in common teaching practices, such as the

public 'crit', indicated relationships quite different from those exhibited in practices elsewhere, such as the formal lecture.

Very much linked to that, it would be beneficial to enhancement efforts to see orientations to teaching, learning and research (and so the linkages between them) as drawing on wider ideological resources that have structural roots. These ideological resources are articulated differently in different disciplines, but have social structural roots in (for example) journals, conferences and social networks of academics with different ideological orientations. Where agency is applied, it is activated differentially in a particular social-structural context. Resources, both discursive and otherwise, are already available for academics to draw upon – they do not invent their conceptions of teachings anew. This means that, to some extent, it is possible to see patterns in ways of thinking, and thus in likely responses to enhancement efforts; for example, where there may be congruences between new developments and established attitudes and associated practices.

Developing that theme, reflection on Table 5 reveals that there will be congruence between some understandings of research and some understandings of teaching, while at the same time there will be antipathy between other sets of understandings. These are ideologically founded sets of compatibilities and incompatibilities. Some combinations are amenable to enhancement with regard to the “nexus”, while others are much less so. So (to revert to phenomenography for a moment), Drew's (2004) teaching orientations category 4 *Teaching as helping students change conceptions (using self-directed research to develop conceptual skills)* might easily be incorporated into some versions of the “nexus”, particularly in contexts where Brew's (2001) concept of research as a personal journey (also her category 4) is prevalent. It is more difficult to envisage enhancement of the “nexus” where the conception of research is a ‘trading’ one (Brew), or where teaching is seen as oriented to professional practice in the creative industries (Drew). Again, these are not just about individual academics' orientations: such orientations are epiphenomena of wider educational ideological positions. In this case, these two category 4 orientations are indicative of a progressivist ideological stance more generally. Thus, for example, in a university or department where a traditionalist educational ideology is prevalent, there will be no difficulty with the ‘teachers do research’ dimension of the “nexus” (dimension 1 in Table 4) or even dimension 4: research embedded in the curriculum. However, managers and change agents there would experience considerable difficulty in trying to introduce other dimensions of the “nexus”, such as the more radical versions of dimension 3 in Table 4 or the more industry-oriented version of dimension 6. This would be especially difficult if there were a simultaneous attempt to introduce understandings of teaching and research that are compatible with those dimensions of the “nexus”.

So, finally, with regard to institutional policy, in a university seeking to enhance the “nexus” managers and policymakers might want to ask the question: what are the predominant ideological orientations to research and to teaching and learning in this university context, and how would they have to be changed in order to enhance the “teaching–research nexus”? This

question goes beyond individual academics' 'orientations' to research and teaching (the boundary of interest of phenomenography), moving into the cultures found within the institution concerned. These cultures will vary according to departmental and other academic and social groupings. In addition, the multiple cultural configuration (Alvesson, 2002) of one institution (say an ex-polytechnic or community college) will be quite different from that of another (say an elite university), and this will be very significant indeed for the ideological configuration found there and hence for the "nexus" itself. The prospects for change and the most appropriate dimensions of the "nexus" that might be the focus for change efforts in these two contexts will be quite different. In some contexts some dimensions will be amenable to change, in other contexts they will be rigid and very difficult to shift.

#### **4. Summary recommendations for practitioners**

1. Consider the different 'versions' of teaching, research and the "teaching-research nexus", as well as the dominant characteristics of teaching and research in your context.
2. Consider which versions of the "nexus" might be most congruent with current practices and values where you are.
3. If necessary, consider ways in which current practices and values in teaching and research might be addressed and perhaps changed in order to benefit from any added value that enhancing the linkages might bring.
4. However, be clear about your goals in this. A general push to 'enhance the links between teaching and research' is unlikely to succeed without clear thinking about current practices and desired end-states, and the alternatives that exist.
5. Recognise that attempts to enhance the "nexus" need to recognise both structural and agentic factors; for example, in:
  - how staff conceptualise their research
  - how staff understand what they are doing when they teach
  - fluidity and democracy of the specific research/teaching environment
  - incentives and disincentives to changing behaviours to enhance the links
  - cultures of institutions
  - cultures of departments and subsections within the institutions
  - influence of funders (funding councils and commercial sources).

Structural factors are hard to shift, but there is always at least a residue of agency, which allows managers and academic teachers leeway in what they do. Setting up new, alternative structures (journals, organisations, conferences) assists in any attempt to reformulate current practices, because doing that gives sustainability to agency.

## Note

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<http://www.chelsea.arts.ac.uk/cetl.htm>

## References

- Alvesson, M. (2002) *Understanding Organizational Culture*. London: Sage.
- Ashwin, P. (forthcoming) Accounting for structure and agency in 'close-up' research on teaching, learning and assessment in higher education. *International Journal of Educational Research*.
- Astin, A.W. (1993) *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.
- Badley, G. (2002) A Really Useful Link Between Teaching and Research. *Teaching in Higher Education*. 7 (4), pp.443-5.
- Bain, J. D., McNaught, C., Mills, C. & Lueckenhausen, G. (1998) Understanding CFL practices in higher education in terms of academics' educational beliefs: Enhancing Reeves' analysis. In: R. Corderoy (ed.) *Flexibility: The next wave. Proceedings of the 15th annual conference of the Australasian Society for Computers in Learning in Tertiary Education* (pp.417-24). Wollongong, NSW: University of Wollongong.
- Barnett, R (1992) *Improving Higher Education: Total Quality Care*. Buckingham: Society for Research in Higher Education and Open University Press.
- Barnett, R. (1994) *The Limits of Competence*. Buckingham: Society for Research in Higher Education and Open University Press.
- Barnett, R. (2000) *Realizing the University in an Age of Supercomplexity*. Buckingham: Society for Research in Higher Education and Open University Press.
- Becher, T. (1989) *Academic Tribes and Territories: intellectual enquiry and the cultures of disciplines*. Buckingham: Society for Research in Higher Education and Open University Press.
- Becher, T. and Trowler, P. (2001) *Academic Tribes and Territories: intellectual enquiry and the cultures of disciplines*. 2<sup>nd</sup> ed. Society for Research in Higher Education and Open University Press.
- Biglan, A. (1973) Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology*. 57 (3), pp.204-13.
- Blackmore, P. and Cousin, G. (2003) Linking teaching and research through research-based learning. *Educational Developments*. 4 (4), pp.24-7.
- Boyer, E. (1990) *Scholarship Reconsidered: priorities of the professoriate*. Princeton, N.J.: Carnegie Foundation for the Advancement of Teaching.
- Brew, A. (1999) Research and teaching: Changing relationships in a changing context. *Studies in Higher Education*. 24 (3), pp.291-301.
- Brew, A. (2001) *The nature of research: inquiry in academic contexts*. London: Routledge/Falmer.

- Brew, A. (2006) *Research and Teaching: beyond the divide*. Basingstoke: Palgrave Macmillan.
- Brew, A. (2007) Research and Teaching from the Students' Perspective. *Paper presented at the International Colloquium on Research and Teaching: International policies and practices for academic enquiry. Winchester, UK. 19-21 April*. Available from: [http://portal-live.solent.ac.uk/university/rtconference/2007/resources/angela\\_brew.pdf](http://portal-live.solent.ac.uk/university/rtconference/2007/resources/angela_brew.pdf) [30 April 2007].
- Brew, A. (2003) Teaching and research: New relationships and their implications for inquiry-based teaching and learning in higher education. *Higher Education Research and Development*. 22 (1), pp.3-18.
- Brew, A. and Boud, D. (1995) Teaching and research: Establishing the vital link with learning. *Higher Education*. 29 (3), pp.261-73.
- Clark, B. (1987) *The Academic Life: small worlds, different worlds*. Princeton, N.J.: The Carnegie Foundation for the Advancement of Teaching.
- Clark, B. (1994) The Research-Teaching-Study Nexus in Modern Systems of Higher Education. *Higher Education Policy*. 7 (1), pp.11-17.
- Clark, B. (1996) Substantive Growth and Innovative Organization: new categories for higher education research. *Higher Education*. 32 (4), pp.417-30.
- Coate, K., Barnett, R. and Williams, G. (2001) Relationships between teaching and research in higher education in England. *Higher Education Quarterly*. 55 (2), pp.158-74.
- Colbeck, C. (1998) Merging in a seamless blend. *The Journal of Higher Education*. 69 (6), pp.647-71.
- Colbeck, C. (2004) A Cybernetic Systems Model of Teaching and Research Production: Impact of Disciplinary Differences. *Paper presented at the International Colloquium on Research and Teaching: Closing the Divide? Winchester, UK. 17-19 March*. Available from: [http://portal-live.solent.ac.uk/university/rtconference/2004/resources/colbeck\\_paper.pdf](http://portal-live.solent.ac.uk/university/rtconference/2004/resources/colbeck_paper.pdf) [last accessed date].
- Donald, J. (1995) Disciplinary differences in knowledge validation. In: N. Hativa and M. Marincovich (eds.) *Disciplinary Differences in Teaching and Learning: Implications for practice*. San Francisco: Jossey-Bass.
- Donald, J. (1997) *Improving the Environment for Learning: academic leaders talk about what works*. San Francisco: Jossey-Bass.
- Drew, L. (2004) The Experience of Teaching Creative Practices: conceptions and approaches to teaching in the community of practice dimensions. In: A. Davies (ed.) *Enhancing Curricula: towards the scholarship of teaching in art, design and communication in Higher Education*. London: Centre for Learning and Teaching (CLTAD), pp.106-23.
- Elton, L. (2000) The UK Research Assessment Exercise: unintended consequences. *Higher Education Quarterly*. 54 (3), pp.274-83.
- Elton, L. (2001) Research and Teaching: conditions for a positive link. *Teaching in Higher Education*. 6 (1), pp.43-56.
- Garrick, J. and Rhodes, C. (2000) *Research and Knowledge at Work*. London: Routledge.
- Gibbons, M. (1997) Development of Science and Basic Research: the implications of mode 2 science. In: H. Etzkowitz and L. Leydesdorff

- (eds.) *Universities and the Global Knowledge Economy: a triple helix of university-industry-government relations*. London: Cassell Academic.
- Gibbons, M. et al.. (1994) *The New Production of Knowledge*. London: Sage.
- Gibbs, G. (2001) *Analysis of Strategies for Teaching and Learning*. Available from: [http://www.hefce.ac.uk/Pubs/hefce/2001/01\\_37a.htm](http://www.hefce.ac.uk/Pubs/hefce/2001/01_37a.htm) [27 November 2001].
- Gilbert, N. G. and Mulkay, M. (1984) *Opening Pandora's Box: a sociological analysis of scientists' discourse*. Cambridge: Cambridge University Press.
- Greed, C. (1991) *Surveying Sisters*. London: Routledge.
- Griffiths, R. (2004) Knowledge production and the research-teaching nexus: the case of the built environment disciplines. *Studies in Higher Education*. 29 (6), pp.709-26.
- Haggis, T. (2004) Meaning, identity and 'motivation': Expanding what matters in understanding learning in higher education. *Studies in Higher Education*. 29 (3), pp.335-52.
- Hartley, A. (1983) Ideology and Organisational Behaviour. *International Studies of Management and Organisation*. 13 (3), pp.26-7.
- Hativa, N. and Goodyear, P. (2002) *Teacher Thinking, Beliefs and Knowledge in Higher Education*. Dordrecht: Kluwer.
- Hattie, J. and Marsh, H. W. (1996) The Relationship between Research and Teaching: A Meta-Analysis. *Review of Educational Research*. 66 (4), pp.507-42.
- Hattie, J. and Marsh, H.W. (2004) One journey to unravel the relationship between research and teaching. *Paper presented at the International Colloquium on Research and Teaching: Closing the Divide? Winchester, UK. 17-19 March*. Available from: [http://portal-live.solent.ac.uk/university/rtconference/2004/resources/hattie\\_marshall\\_per.pdf](http://portal-live.solent.ac.uk/university/rtconference/2004/resources/hattie_marshall_per.pdf)[15 February 2004].
- Healey, M. (2000) Developing the scholarship of teaching in higher education: a discipline-based approach. *Higher Education Research and Development*. 19 (2), pp.169-89.
- Healey, M., Jenkins, A. & Kneale, P. (2000). Small worlds on an interconnected planet: Teaching and learning geography in higher education. In: C. Rust (ed.), *Improving student learning*. Oxford: OCSLD.
- Huber, M. (2002) *Disciplines and the Development of a Scholarship of Teaching and Learning in the United States of America*. Discussion paper for the Learning and Teaching Support Network. York: LTSN.
- Jenkins, A. (1995) The Impact of the Research Assessment Exercises on Teaching in Selected Geography Departments in England and Wales. *Geography*. 84 (4), pp.367-74.
- Jenkins, A. (2000) *Summary/Review of the Research and Scholarly Evidence on Teaching/Research Relationships in Higher Education*. Prepared for seminar on Teaching/Research Relationships, Southampton, January 2000; as part of HEFCE Fundamental Review of Research. Published in *The Relationship Between Research and Teaching in Higher Education: Present Realities, Future Possibilities*. Southampton: Southampton Institute, pp.23-33.
- Jenkins, A. (2004) *A Guide to the Research Evidence on Teaching-Research Relations*. York: Higher Education Academy.

- Jenkins, A. and Zetter, R. (2003) *Linking research and teaching in departments*. Available from: [http://www.heacademy.ac.uk/assets/York/documents/resources/resource\\_database/id257\\_Linking\\_Research\\_and\\_Teaching\\_in\\_Departments.pdf](http://www.heacademy.ac.uk/assets/York/documents/resources/resource_database/id257_Linking_Research_and_Teaching_in_Departments.pdf) [24 January 2004].
- Jenkins, A., Blackman, T., Lindsay, R. and Paton-Saltzberg, R. (1998) Teaching and research: Student perspectives and policy implications. *Studies in Higher Education*. 23 (2), pp.127-41.
- Kolb, D. (1984) *Experiential Learning: Experience at the source of learning*. New Jersey: Prentice Hall.
- Kolb, D. A. (1981) Learning styles and disciplinary differences. In: A. Chickering, (ed.) *The Modern American College*. San Francisco: Jossey Bass.
- Krause, K-L. (2007) The Institutional Perspective. *Paper presented at the International Colloquium on Research and Teaching: International policies and practices for academic enquiry. Winchester, UK. 19-21 April*. Available from: [http://portal-live.solent.ac.uk/university/rtconference/rtcolloquium\\_home.aspx](http://portal-live.solent.ac.uk/university/rtconference/rtcolloquium_home.aspx). [2 June 2008].
- Latour, B. and Woolgar, S. (1986) *Laboratory Life: the Construction of Scientific Facts*. Princeton, N.J.: Princeton University Press.
- Lattuca, L. and Stark, J. (1995) Will Disciplinary Perspectives Impede Curricular Reform? *Journal of Higher Education*. 65 (4), pp.401-26.
- Lea, R. L. and Street, B. V. (1998) Student Writing in Higher Education: An academic literacies approach. *Studies in Higher Education*. 23 (2), pp.157-72.
- Lindblom-Ylänne, S., Trigwell, K., Nevgia, A. and Ashwin, P. (2006) How Approaches to Teaching are Affected by Discipline and Teaching Context. *Studies in Higher Education*. 31 (3), pp.285-98.
- Lindsay, R., Breen, R. and Jenkins, A. (2002) Academic research and teaching quality: the views of undergraduate and postgraduate students. *Studies in Higher Education*. 27 (3), pp.309-27.
- Lucas, L. (2007) Research and Teaching Work Within University Education Departments: fragmentation or integration? *Journal of Further and Higher Education*. 31 (1), pp.17-29.
- Lueddeke, G. R. (2003) Professionalising teaching practice in higher education: A study of disciplinary variation and teaching-scholarship. *Studies in Higher Education*. 28 (2), pp.213-28.
- Marsh, H.W. and Hattie, J. (2002) The relation between research productivity and teaching effectiveness. *Journal of Higher Education*. 73 (5), pp.603-41.
- Marton, F., Dall'Alba, G. and Beaty, E. (1993) Conceptions of learning. *International Journal of Educational Research*. 19 (3), pp.277-300.
- McCune, V. and Hounsell, D. (2005) The Development of Students' Ways of Thinking and Practising in Three Final Year Biology Courses. *Higher Education*. 49 (3), pp.255-89.
- McKee, A. (2002) Evidence-based practice in Health Sciences. *Exchange*. 3 (Autumn), pp.19-20. Available from: <http://www.exchange.ac.uk/issue3.asp>. [26 January 2008].

- McLean, M. and Barker, H. (2004) Students making progress and the 'research-teaching nexus' debate. *Teaching in Higher Education*. 9 (4), pp.407-19.
- McNay, I. (1997) *The Impact of the 1992 Research Assessment Exercise on Individual and Institutional Behaviour in English Higher Education*. London: HEFCE.
- Meyer, J. H. F. and Eley, M. G. (2006) The Approaches to Teaching Inventory: A critique of its development and applicability. *British Journal of Educational Psychology*. 76 (3), pp.633-49.
- Meyer, J. H. F. and Land, R. (2003) Threshold concepts and troublesome knowledge (1): linkages to ways of thinking and practising. In: C. Rust (ed.) *Improving Student Learning – ten years on*. Oxford: OCSLD.
- Moses, I. (1990) Teaching, research and scholarship in different disciplines. *Higher Education*. 19 (3), pp.351-75.
- National Committee on Higher Education (1963) *The Robbins Report*. London: HMSO.
- National Committee of Inquiry into Higher Education (1997) *The Dearing Report*. London: DfEE.
- Neumann, R. (1994) The teaching-research nexus: applying a framework to university students' learning experiences. *European Journal of Education*. 29 (3), pp.323-39.
- Neumann, R. (1996) Researching the Teaching-Research Nexus: A critical review. *Australian Journal of Education*. 40 (1), pp.5-18.
- Neumann, R., Parry, S. and Becher, T. (2002) Teaching and Learning in their Disciplinary Contexts. *Studies in Higher Education*. 27 (4), pp.405-17.
- Nowotny, H., Scott, P. and Gibbons, M. (2001) *Rethinking Science: Knowledge and the Public in an Age of Uncertainty*. Cambridge: Polity.
- Parker, J. (2002) A New Disciplinarity: communities of knowledge, learning and practice. *Teaching in Higher Education*. 7 (4), pp.373-86.
- Pascarella, E. T. and Terenzini, P. T. (1990) *How College Affects Students*. San Francisco: Jossey-Bass.
- Prosser, M. and Trigwell, K. (1999) *Understanding Learning and Teaching: the experience of higher education*. Buckingham: Society for Research in Higher Education and Open University Press.
- Quinlan, K. M. (1996) *Collaboration and cultures of teaching in university departments: Faculty beliefs about teaching and learning in history and engineering*. Unpublished dissertation, Stanford University.
- Quinlan, K. M. (1999) Commonalities and Controversy in Context: a study of academic historians' educational beliefs. *Teaching and Teacher Education*. 15 (4), pp.447-63.
- Ramsden, P. and Moses, I. (1992) Associations between research and teaching in Australian higher education. *Higher Education*. 23 (3), pp.273-95.
- Rice, R. E. (1996) Making a place for the new American scholar. *Paper presented to AAHE Conference 'Faculty Roles and Rewards', Atlanta, GA, 20 January*.
- Robertson, J. and Bond, C. (2001) Experiences of the Relation between Teaching and Research: what do academics value? *Higher Education Research and Development*. 20 (1), pp.5-19.

- Robertson, J. and Blackler, G. (2006). Students' experiences of learning in a research environment. *Higher Education Research and Development*. 25 (3), pp.215-29.
- Romainville, M. (1996) Teaching and research at university: A difficult pairing. *Higher Education Management*. 8 (2), pp.135-44.
- Rowland, S. (2000) Teaching and research: A marriage on the rocks? *Presented to the 6th European Conference on Educational Research, Edinburgh, 20-23 September*. Published in *THES*, 27 October, pp.28-9.
- Ryle, G. (1949) *The Concept of Mind*. Harmondsworth: Penguin.
- Saljo, R. (1979) Learning in the Learner's perspective: some commonsense conceptions. *Reports from the Institute of Education, No 76*. Goteborg: University of Goteborg,
- Scott, P. (2002) A lot to learn: we are all researchers now. *Guardian Education*. 8 January, p.13.
- Serow, R. C. (2000) Research and Teaching at a Research University. *Higher Education*. 40 (4), pp.449-63.
- Shulman, L. (2005) *The Signature Pedagogies of the Professions of Law, Medicine, Engineering, and the Clergy: Potential Lessons for the Education of Teachers*. Available from: <http://hub.mspnet.org/index.cfm/11172> [16 October 2006].
- Smeby, J-C. (2002) Consequences of project organisation in graduate education. *Studies in Higher Education*. 7 (2), pp.139-51.
- Stevenson, K. and Sander, P. (2002) Medical Students are from Mars – Business and Psychology Students are from Venus – University teachers are from Pluto? *Medical Teacher*. 24 (2), pp.27-31.
- Trigwell, K. (2002) Approaches to teaching design subjects: a quantitative analysis. *Art, Design and Communication in Higher Education*. 1 (2), pp.69-80.
- Trigwell, K. and Prosser, M. (1996) Changing approaches to teaching: a relational perspective. *Studies in Higher Education*. 21 (3), pp.275-84.
- Trow, M. (1992) Thoughts on the White Paper of 1991. *Higher Education Quarterly*. 46 (3), pp.213-26.
- Trowler, P. (1998) *Academics Responding to Change: new higher education frameworks and academic cultures*. Buckingham: Society for Research in Higher Education and Open University Press.
- Trowler, P. and Turner, G. (2002) Exploring the Hermeneutic Foundations of University Life: Deaf academics in a hybrid community of practice. *Higher Education*. 43 (2), pp.227-56.
- Trowler, P. and Wareham, T. (2007a) *Literature Review, The 'teaching-research nexus'*. Available from: [http://www.lancs.ac.uk/fass/projects/nexus/docs/Deliverable\\_1\\_\\_\\_literature\\_review\\_30.4.7.doc](http://www.lancs.ac.uk/fass/projects/nexus/docs/Deliverable_1___literature_review_30.4.7.doc) [6 April 2007].
- Trowler, P. and Wareham, T. (2007b) Reconceptualising the Teaching-Research Nexus. In: *Proceedings of the Annual HERDSA Conference 2007: Enhancing Higher Education Theory and Scholarship. 8-11 July, Adelaide, Australia*.
- Webster, D. (1985) Does research productivity enhance teaching? *Educational Record*. 66 (4), pp.60-2.
- Ylijoki, O-H. (2000) Disciplinary Cultures and the Moral Order of Studying. *Higher Education*. 39 (3), pp.339-62.

- Zaman, M. Q. (2004) *Review of the academic evidence on the relationship between teaching and research in Higher Education*. London: Department for Education and Skills.
- Zamorski, B. (2000) *Research-led teaching and learning in Higher Education*. Norwich: Centre for Applied Research in Education.
- Zetter, R. (2002) Teaching-research: making the departmental link. *Exchange*. 3 (Autumn), pp.12-14. Available from: <http://www.exchange.ac.uk/issue3.asp>. [26 January 2008].
- Zubrick, A., Reid, I. and Rossiter, P. (2001) *Strengthening the nexus between teaching and research*. Canberra, Australia: Department of Education, Training and Youth Affairs,. Available from: [http://www.dest.gov.au/archive/highered/eippubs/eip01\\_2/01\\_2.pdf](http://www.dest.gov.au/archive/highered/eippubs/eip01_2/01_2.pdf) [28 January 2004].

## Appendix 1: Brew's findings on conceptions of research

**Domino orientation:** "Research is viewed as a series (often a list) of separate tasks, events, things, activities, problems, techniques, experiments, issues, ideas or questions, each of which is presented as distinct" (Brew, 2001, p.276). The domino metaphor describes the ways in which these separate tasks can be configured in a variety of patterns. The domino effect (sequential tumbling) also applies – other problems may be solved after one has been cracked.

**Trading orientation:** In the foreground here are "products of research: publications, grants, and social networks. These are created and then exchanged in a social situation for money, prestige or simply recognition" (ibid., p.277).

**Layer orientation:** "It is helpful to think of this variation as describing two or more layers. Data, previous theories or ideas are initially in the foreground. There is an internal orientation, where the researcher is bringing to light the ideas, explanations and truths lying in the background by illuminating or uncovering the underlying layer. The researcher is absent from the focus of awareness" (ibid., p.278).

**Journey orientation:** "Encounters with the data are viewed holistically as transforming theoretical and experiential understandings of the issues which are the focus of interest. The researcher grows or is transformed by this. The content or topic of the investigation is less important than the issues or underlying questions posed, or the ways in which they dovetail with the researcher's life or career. The researcher is central to the focus of awareness" (ibid., p.279).

### **Conceptions of Research** (adapted from Brew, 2001, p.280)

<b>Conception</b>	<b>Characteristics</b>	<b>Processes</b>
Domino conception	sets (lists) of atomistic things, techniques, problems etc. These separate elements are viewed as linking together in a linear fashion	a process of synthesising separate elements so that problems are solved, and questions answered or opened up
Layer conception	data containing ideas together with (linked to) hidden meanings	the process of discovering, uncovering or creating underlying meanings
Trading conception	products, endpoints, publications, grants and social networks. These are linked together in relationships of personal	a kind of social market place where the exchange of products takes place

	recognition and reward	
Journey conception	the personal existential issues and dilemmas. They are linked through an awareness of the career of the researcher and viewed as having been explored for a long time	a personal journey of discovery, possibly leading to transformation