

# THE INTERACTIONS BETWEEN RESEARCH AND TEACHING

## **ANNEX B**

### **Academic activity**

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*part of a consortium report*

for the Fundamental Review of Research  
Higher Education Funding Council for England

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July 2000

## **1 Background**

- 1.1 This Annex focuses on academic activity at the departmental level of institutions. The relationships between teaching, research and other activities are examined.

## **2 Aims**

- 2.1 The aims of this part of the project were to:
- analyse the relationships between teaching and research in different subject areas and institutions
  - determine the main factors which have an impact on this relationship
  - elicit staff perceptions of the ways in which teaching and research are related in their own work
  - develop models of these relationships, and to test these models as the fieldwork progresses
  - analyse the relationships between teaching, research and research training, particularly through the perspectives of research students
  - analyse the impact of HEFCE policies on research, teaching and research training.

## **3 Method**

- 3.1 The methodology was largely built around fieldwork in eight institutions, representing a range of higher education institutions (all 'Groups' were represented except Group F; see Appendix for details). In each institution, up to three departments were visited, depending on which subject areas were offered. Four subject areas were chosen, again to represent different types, broadly from the arts & humanities, sciences & technology subjects, and professional subject areas: these were business studies, chemistry, engineering and history.
- 3.2 Visits were made to each department for a semi-structured interview, typically with the head of department (sometimes the dean of school, or the deputy head) for about one hour, followed by a 'focus group' interview with about five members of academic staff in that department (hereafter called 'respondents'). We normally requested that these groups include both senior and junior staff, as well as a mixture of mainly research, mainly teaching, or both teaching and research staff, and possibly staff with particular responsibilities for research training. In most departments, the staff focus group meeting was followed by a focus group meeting with research students. In some departments, we conducted focus groups with undergraduate students. All fieldwork was carried out between December 1999 and March 2000.
- 3.3 The majority of the interviews and focus groups were recorded with the participants' agreement and with an assurance of confidentiality. A selection of these have been

- fully transcribed, and extensive notes have been written for all interviews and group meetings.
- 3.4 We collected institutional documentation where available, such as mission statements, TQA and RAE results, prospectuses, learning and teaching strategies, and annual reports. Some departmental materials were also collected: examples of staff workload management systems, web-site information, course brochures, and research training documents.
- 3.5 We were also informed by data from a previous research project directed by Professor Barnett (ESRC funded 'Changing Patterns of Undergraduate Curricula' project), especially where the case study institutions were the same. This data consist of large amounts of curricula materials and transcripts of interviews with academic staff.
- 3.6 The emerging hypotheses of the research were continually fed back into the data collection process, so that ideas were tested with the respondents. In addition, we circulated a draft copy of this report prior to submission to HEFCE for respondents' comments who have so requested.
- 3.7 As this was a project on the relationships between teaching and research, we only visited departments with some type of research activity. To examine institutional variations in-depth, it was necessary to focus on a few subject areas. There were therefore sectors of the higher education system which were not included in this study. It should also be noted that the majority of respondents were white, male academics (the subject areas chosen and the general under-representation of women and black academics in senior posts are both factors to be considered here).

## **4 Framework**

- 4.1 We distinguish between three broad categories for the purposes of analysis:
- volumes
  - values
  - relationships.
- 4.2 The *volumes* of research and teaching refer to the staff time and resources dedicated to each activity. Respondents were asked to consider how much time proportionally they spend on either teaching and research, and which has priority.
- 4.3 The *values* accorded to research and teaching were in evidence through such indicators as career promotion criteria, academics' perceptions of whether they prefer teaching or research, or which activities took priority. Respondents were asked which activity they consider to be valued most by their department, their institution, and in terms of their own career satisfaction.
- 4.4 We have identified six relationships between teaching and research. The first is an integrated relationship, with considerable overlap between teaching and research. At this level, teaching and research may even be identical. The next two relationships are positive: research may have a positive influence on teaching, and vice versa. The

fourth is an independent relationship, where teaching and research are separate or neutral. Finally, there may be negative relationships between the two: research may have a negative influence on teaching, and vice versa. All six relationships will be discussed in detail in later sections of this Annex.

- 4.5 In each of these six relationships, values and volumes may be in tension with each other (we return to this point in some detail below).

## **5 Concepts**

- 5.1 The terms ‘research’, ‘teaching’, ‘other’ and ‘scholarship’ are used in different ways by academics from different subject areas. There may also be institutional influences on the ways in which these terms are used that need to be taken into account.

- 5.2 Definitions of research, teaching, other activities and scholarship are discussed in some detail in the Overview report, and the terms as used in this Annex follow the definitions established there. We were aware of the need to investigate with the respondents their own conceptions of these terms, and we have tried to be sensitive to the disciplinary and institutional differences that may have an impact on how these terms are used.

- 5.3 Scholarship. A more general point, however, is that ‘scholarship’ was the least used but seemingly most contested term. It was used more frequently to describe academic activity in low research institutions than in high research institutions.

- 5.4 For example, one business studies head of department in a high research institution said he interpreted scholarship as ‘keeping up to date with all the literature without actually being involved in the research activity’. In contrast, a business studies head of department in a low research institution argued that scholarship was ‘more than keeping up with the literature’, and in some cases verges on being ‘research’. The respondents in a Group E institution argued that they were ‘scholars’ rather than ‘teachers’, which was not a distinction made by respondents from high research institutions.

- 5.5 The term ‘scholarship’ seemed to have a higher status in the low research institutions, as it was used to describe the activities of staff who were not submitted in the RAE.

## **6 Volumes**

- 6.1 The distribution of research, teaching and other activities varied enormously between individuals even in one department. For example, in a Group D institution, staff teaching loads ranged from 150 to 450 contact hours per year in one department.

- 6.2 We asked heads of departments to estimate the proportion of time their staff spent on teaching and research. Many argued that they aim to achieve a general balance between teaching and research in terms of staff time across the department, and suggested that a 50:50 balance is ideal. A few sought to achieve a 30:30:30 split

between teaching, research and administration. However, most respondents agreed that there were many variables which could disrupt any such balance. The majority of all respondents claimed that proportionally the amount of time spent on teaching was usually greater, especially during term time.

6.3 Staff time is a major resource, yet the management of this resource is contentious for several reasons:

- There is a tradition of ‘collegial’ management styles in many institutions, which makes problematic any effort to effect a strict control over staff hours. Even in institutions with low and emerging research activities, staff teaching loads may be only loosely managed.
- Many institutions devolve the management of resources to departmental level, and heads of departments may be reluctant to enforce strict control over their own colleagues’ workloads.
- *Long hours.* The majority of respondents said they regularly work more than 40 hours per week (most said somewhere between 60 and 80 hours per week). These heavy workloads can create difficulties for heads of departments in terms of management.
- *Managing teaching time.* Teaching is an activity which lends itself more readily to management systems than research, as ‘contact hours’ with students are traditionally a basis from which to establish workloads. However, even this relatively basic management tool could lead to disagreement. In a chemistry department of a Group B institution, for example, the staff were finding it difficult to agree how many hours should be allocated to research students, as those staff with a large number of students were able to rely on the student group to supervise each other to a certain extent, whereas those staff with a small number of students were spending proportionally more time on individual supervision. Therefore, those staff with a large student group were allocated more contact hours for what was perceived by some staff to be less work.
- There were a range of academic activities which were claimed to be non-quantifiable and/or non-manageable, for example: the pastoral care of students; external, reputation-enhancing activities such as conference attendance which blur the boundaries between work and pleasure; and time spent on other professional activities such as journal editing and external examining. As one head of department commented in relation to this issue: ‘people, particularly academics, can’t be put into boxes’. A chemistry professor made a similar comment when he said:

*There has been an attempt, I think, to try to quantify what is research and what is teaching without thinking about this grey area that lies between the two.*

- It was often claimed that ‘contact hours’ do not adequately reflect the daily claims on staff time posed by students to conscientious teachers. There were many examples given of the ways in which students made claims on

academics' time which could not adequately be reflected in workload calculations. Many respondents explained that although they had official 'office hours', they also had an unofficial 'open door' policy which meant they never turned away a student who asked for help.

#### *Managing staff workloads*

- 6.4 *The variety of management systems.* The ways in which staff time was managed was not specific to subjects or institutions, but depended partly on the culture of departments and individual heads of departments. In one Group C engineering department, for example, the head of department had implemented a system in which each activity was assigned a set number of hours. In other engineering departments, it was only contact hours for teaching that were counted.
- 6.5 *Collegial systems.* The head of a Group A chemistry department said they used 'reasonably efficient informal processes' which worked on the basis of negotiation and 'horse-trading'. In other words, he had a general idea of how specific duties were allocated, and these were negotiated when staff complained about 'injustices' through unfair allocations. In the same institution, the head of the history department went even further by explaining that his 'collegial', or loose style of management, was necessary to maintain excellence:

*But no, we don't clockwatch, and say, okay, you've got to work 20 hours a week on your teaching and 10 hours a week on 'enabling' (admin) and 10 hours a week on research. If we did, we wouldn't be a 5\*A department, we wouldn't be an excellent teaching department. What good would that be? People actually start begrudging the time on those activities. So they are not recorded – they just get it done.*

The justification for this claim was perhaps made by the above head of department who tightly managed his Group C engineering department, when he explained that he would be unlikely to find enough volunteers from his academic staff to speak with us at a lunchtime meeting. As all of the staff activities were counted in hours, some of the staff refused to work through their lunch break.

- 6.6 Although staff time can be either tightly or loosely managed, in most cases it was the time spent on teaching which was counted and rationalised. One of the most explicit examples of a tight method of management was a Group E institution which implemented a system whereby each member of staff was assigned 18 teaching hours per week which were remitted when research opportunities arose.
- 6.7 *Career trajectories.* There were subject variations in terms of teaching and research loads reflected in the typical career trajectories of staff. In several of the chemistry and engineering departments we visited, we were told that junior members of staff were given relatively light teaching loads in order to enable them to establish their research base (usually through recruitment of a group of research and postdoctoral students). The research group then worked daily on conducting the research, and the academic member of staff was expected to carry a heavier teaching load as the group took over the bulk of the work. In other subject areas, such as history, the career trajectory could

be in the opposite direction: the more senior, research-active staff members could informally begin to buy themselves out of teaching responsibilities when they obtained research funding.

- 6.8 In most cases, research was noted to some extent as a 'driver' of staff time, even though it was the contact hours for teaching which formed the basis of management systems. The following comments illustrated a typical system:

*It's very variable. A young member of staff coming through would be doing mainly teaching and research and very little admin. But somebody who's a lot more experienced and knows the system would probably have an equal load in all three and then, based on their research activity, if they're not research-active their teaching and admin goes up, if they are research-active then teaching and admin go down. So the driver is the research activity, because we look at the research activity. If someone said to me, what is the typical number of hours a week a member of staff has in teaching, it probably varies from between 12 and 15 hours contact time.*  
(Head of a Group B chemistry department)

- 6.9 *Variations in research time.* In several departments at different institutions, staff were given one day per week as 'research days' free from teaching. At a Group E institution the business studies staff were deducted two teaching hours per week if they were registered for a doctorate.
- 6.10 These variations occurred within institutions: for example, in a Group C institution, the history department staff worked to a four year cycle with one sabbatical each cycle, while the chemistry department offered one sabbatical every seven years. In a Group D history department, the staff were given one sabbatical semester every eight semesters, whereas in other departments of the same institution the staff were not guaranteed any sabbatical time.
- 6.11 It was frequently pointed out that teaching was timetabled and 'must be done' at certain times, which meant it was perceived to be driving staff time.

#### *Summary*

Staff time is a major resource in higher education, and many academics work over 40 hours each week. In terms of managing this resource, the evidence suggests that:

- teaching is more quantifiable than research, and is more likely to be managed and driven by the high value of research
- although there were examples of different management systems in different departments, from weak to tightly managed systems, there was only one example of an *institutional* strategy for managing staff workloads.

## 7 Values

7.1 Academic life cannot be fully understood without an appreciation of the value-orientations of academic staff. The values of academics may be influenced by subject or disciplinary cultures, departmental cultures, or institutional cultures.

7.2 At institutional level, there may be practices that reflect the comparative values accorded to teaching and research. In the low research institutions, where the majority of staff time was traditionally dedicated to teaching, research (or, more precisely, the number of RAE publications produced) was perceived by most academic respondents to have more value in terms of career advancement than teaching. In the high research institutions, it might be expected that academics place a high value on research, and the following comments from a chemist in a Group B institution were typical:

*I would say we give reasonably high priority to the research because we are a research-led department and we give that more priority, and I'm not ashamed of that at all. That is absolutely crucial and if we didn't do that I wouldn't be here, because I'm not here just to teach. If I was forced to do that I would go to industry, get more money and do what I wanted to do, I just couldn't, wouldn't be here. Research is important. . . It doesn't mean I don't like teaching – I love teaching – but the research is key to making the teaching worthwhile.*

7.3 *Promotion policies.* In all of the institutions we visited, teaching was now taken into account in promotion policies. One head of a Group A history department said:

*And the teaching aspects of promotion criteria, if I can put it like that, is that the college has begun to emphasise over the last few years, broadly speaking when someone's promotion prospects are being considered, they are considered under three headings: teaching, research and 'enabling' (service or administrative duties), and realistically you've got to be at least at a satisfactory level at all three to have a chance of the promotion actually going through.*

7.4 However, most respondents felt that research (again, largely meaning publications) still had more value, and it would be unlikely for staff to be promoted on the basis of excellent teaching and administration alone. An exception to this was found in a few low research institutions, where staff had been promoted through the 'administrative route': for example, in two departments we were told that staff who sat on numerous committees had been promoted to professorships through their service.

### *Value orientations of academic staff*

7.5 The traditions and histories of institutions can be reflected in the value-orientations of academic staff. In two Group D institutions, which were historically teaching-intensive institutions with low research, some staff had started their careers as non-research-active teachers. A few respondents explained that their job satisfaction came from teaching

‘disadvantaged, non-traditional’ students, and they were resistant to pressures to reduce the time spent on pastoral support of students.

- 7.6 Departmental practices are also an indication of the comparative values placed on teaching and research. For instance, in some departments staff can formally buy themselves out of teaching if they have secured research funding.
- 7.7 It was evident that a professional attitude towards teaching was valued and expected in all departments. It was frequently explained that if academic staff take time away from teaching in order to conduct research or attend conferences, their workloads were generally shifted in the short-term between staff, and the rest was made up by the returning member of staff (in other words, it was usually claimed that teaching did not suffer when staff were research-active).

*Disciplinary cultures*

- 7.8 Disciplinary cultures are also a factor in understanding the value-orientations of academic staff (Becher 1989). In general, most respondents agreed that it was the ‘love of their subject’ which motivated them to work long hours. One respondent in a Group D engineering department, with an emerging research culture, felt it was the ‘duty’ of all academics to contribute to the advancement of their subject.
- 7.9 More specifically, there are different value-orientations in disciplinary cultures, and some activities may be highly valued in one discipline but not in another. For example, in some subject areas involvement in a professional association may be more valuable to an academic career than publishing a journal article.

*Summary*

In the broadest terms, it is possible to say that research is highly valued by the academic community. The high value accorded to research was in evidence in institutional and departmental policies, practices and strategies. However, the value-orientations of academics vary, and can be related to institutional, departmental and disciplinary cultures. There may be a tension between the values of staff and the departmental or institutional culture.

## 8 Volumes and values

- 8.1 The contemporary higher education system cannot be understood without an appreciation of the changes which have taken place over the past few decades. There may be a tension between volumes and values as they have shifted over time, and it is pertinent to analyse both the distinction between them and their relationship to each other.
- 8.2 *Increasing administration.* The majority of respondents argued that academic work had increased in volume over the past few decades. In particular, most respondents suggested that administrative loads had risen. This was seen to be due to two related factors: increased student:staff ratios (SSRs), and the ‘paper trail’ required by evaluation systems such as subject reviews. As an example, the academic staff in a Group C history department explained that their SSR had doubled over the past 10 years, which is not uncommon for many academics. Not only did this increase the volume of activities associated with students, such as time spent on admissions procedures, but it was also exacerbated by new accountability demands and the requirements of the TQA, such as double-marking.
- 8.3 In some departments, there had been a reduction in the numbers of staff, which resulted in heavier workloads in general. For example, a chemistry professor in a Group B institution said:
- To give you a figure, something like 20 years ago, in a chemistry department this size we had about 70 members of technical staff. Now we’re down to somewhere about 18. And that means that even though we get gifts of apparatus we have difficulties in propping it up.*
- 8.4 Although the SSR had risen substantially in many departments we visited, the number of contact hours for teaching had not necessarily increased as well. In a few cases, in fact, teaching loads were reduced for all staff. This was particularly in evidence in low research institutions, which had implemented strategies for rationalising teaching loads in order to foster a research culture. One Group D institution had a long-term strategy to reduce by one-half the average 426 contact hours per year that their staff were working.
- 8.5 The rise in the amount of hours that academics work was perceived by many respondents as having a number of detrimental consequences.
- 8.6 *Staff morale.* Furthermore, the diminishing morale of academic staff was discussed in most departments. New demands of accountability were seen by many respondents to be ‘deprofessionalising’, ‘inefficient’ and a reflection of a lack of ‘trust’. One head of a Group B history department suggested that, in terms of morale and professional pride, ‘the cost of mistrust is high’.
- 8.7 In addition to these changes in volumes of teaching and research activities, the values accorded to both activities have also shifted. Most respondents in high research institutions acknowledged a greater emphasis on teaching. The TQA, new institutional and departmental policies on teaching and learning, greater student diversity, and the

general pressures of increased student numbers had all contributed to an increased awareness of teaching skills.

- 8.8 *Pedagogical research.* A related point is that there seemed to be an increasing acceptance of the value of research into pedagogy itself. At one Group C institution, for example, the respondents noted that they can now receive ‘soft’ money to conduct research on teaching. At a Group D institution, some staff with low research activities in the engineering department were encouraged to contribute to the RAE through pedagogical research.
- 8.9 *Teaching and learning strategies.* The HEFCE requirement for all institutions to implement teaching and learning strategies did not yet seem to be a strong driver at departmental level, perhaps because they were mostly being drafted at the time of the fieldwork. An indirect result was that a few departments had initiated debates and circulated discussion papers on teaching and learning, and/or scholarship.
- 8.10 Research, on the other hand, has traditionally been highly valued in terms of academic careers. There was evidence that in low research institutions staff were actively encouraged to value research more highly. Most respondents in historically teaching-intensive institutions were aware of both the status and funding accrued from a high RAE score, and felt under pressure to achieve a high research output.

*Summary*

The volumes and values of teaching and research have shifted over time. These changes were in evidence at institutional and departmental levels, and at the level of individual academics. The changes which made most of an impact on the institutions in this study were in two directions:

- There were strategies in the low research institutions to reduce the volumes of teaching time in order to foster research activity, and to encourage a greater value on research.
- The strategies in high research institutions are now encouraging a higher value-orientation towards teaching.

## 9 Impact of the TQA and Subject Review

- 9.1 As Subject Review is not (in England) linked directly to funding, it is viewed differently from the RAE. However, the majority of heads of departments claimed they took the Subject Review very seriously. There were a number of criticisms of the Subject Review process, which have been widely debated within the higher education community and do not need to be reiterated here. The impact of the Subject Review on the relationship between teaching and research is more relevant but difficult to assess.
- 9.2 Several respondents argued that the Subject Review is not a cost-efficient system, suggesting that the amount of documentation required to meet the demands of assessors uses resources that could be used to improve teaching more directly (by buying more books, for example). The amount of staff time involved in Subject Review exercises was seen as taking time away from other activities.
- 9.3 Although Subject Review was widely criticised by respondents, it was acknowledged that certain aspects of the exercise had led to improvements. In the research-intensive departments visited, many respondents felt the requirements to produce syllabi, student evaluation forms and other course materials had probably been of benefit to the students.
- 9.4 *Changing pedagogical practices.* A few heads of departments claimed that the Subject Review had little impact on their department, yet in other departments it had resulted in numerous changes. Not only did many staff become engaged in the work necessary for a Subject Review, but some academics also substantially altered their administrative and pedagogical practices. For example, the staff in one Group C history department had traditionally taught by 'tutorials' for which they infrequently and rather informally produced course materials, but had felt impelled after a Subject Review to formalise their documentation.
- 9.5 One head of a Group B business studies department attributed substantial changes to the Subject Review, including the hiring of a new member of staff. He said:
- We're using this TQA as a vehicle to try to actually improve the quality of the teaching. So we hired an educator at a senior academically related scale and she is managing the staff, from the aspect of the TQA. One of the remits that we've set for ourselves is to articulate what it means to be a research-led. I think we are going to change the word research-led or research-informed institution to reflect something about teaching.*
- 9.6 The fact that the contribution of research to teaching is only a small component of the Subject Review exercise was criticised by a number of respondents. Encouraging a synergistic relationship between teaching and research was not perceived to be the function of the Subject Review process.

*A statistical analysis of RAE and TQA scores*

- 9.7 A statistical analysis examined correlations between RAE and TQA scores. This had to be very limited because of the number of areas where recent TQA scores were reasonably accessible, and because the number that map on to RAE subjects was rather limited. There was also the problem that the variability of TQA scores was very slight, so there was little scope for a statistical relationship to appear. However, we did manage to extract data for sociology, and electrical and electronic engineering.
- 9.8 ??In electrical and electronic engineering there was a good correlation between the two scores and regression coefficient that suggested a 1% higher RAE score was associated with a 0.7% higher total TQA score.??NEED TO ADD COMMA SOMEWHERE IN THIS SENTENCE TO CLARIFY MEANING In sociology the correlation was much lower and the 1% higher RAE was associated with only 0.4% higher TQA score.
- 9.9 We also examined the hypothesis that the positive relationship makes itself felt through the learning resources variable in the TQA ratings, but were unable to detect any relationship. The lack of variability of TQA ratings in a 1-4 scale was a serious problem.
- 9.10 We examined whether size of department made any difference to these results and found that in general it did not, though there is evidence of a small but significant positive relationship between the RAE score multiplied by the volume measure and TQA learning resources score in sociology. In other words, a large high research quality sociology department may be slightly more effective in providing learning resources to students. But we were unable to detect such a relationship in electronic engineering.
- 9.11 This type of analysis would be possible to take further if detailed access to recent QAA TQA ratings is made easier. There may be a case for preparing a full-scale study of this type as soon as the results of the 2001 RAE are known and the present round of TQA reports is complete.

*Summary*

Assessments of quality are becoming increasingly important to higher education institutions. The impact of Subject Review and the RAE reveal the dynamic nature of value orientations. Value orientations are reflected in and influenced through management systems, hiring and promotion policies, teaching strategies, and the allocation of resources. The motivation to change practices as a result of assessment exercises varied across institutions and departments. Where the value orientations of academic staff diverged from the institutional steer, changes were only gradually taking place.

## 10 Relationships between research and teaching

10.1 There are six possible relationships between research and teaching:

(i) <b>Integrated:</b> R & T are not distinct, considerable overlap (if not identical)	
(ii) <b>Positive:</b> R has positive influence on T	(iii) <b>Positive:</b> T has positive influence on R
(iv) <b>Independent:</b> R & T independent of each other (neutral relationship)	
(v) <b>Negative:</b> R has negative impact on T	(vi) <b>Negative:</b> T has negative impact on R

### (i) *Integrated*

10.1.1 The first is a highly integrated relationship with considerable overlap. The majority of respondents argued that teaching and research were highly integrated ('synergy actually isn't strong enough as a word'). There were many examples illustrating how the overlap between teaching and research varies between subject areas and institutions.

10.1.2 *Research student supervision.* A certain level of research student supervision illustrated the integration of teaching and research in some subject areas. As research students progress in their research, the supervisory relationship changes and the boundaries between research and teaching become blurred.

10.1.3 In history, for example, one respondent explained that at a certain point, the *research student became more knowledgeable about his/her topic than the supervisor, and could even 'teach' the supervisor. Whether or not this happens to the same extent in the sciences is questionable, given that the students conduct research largely designed by their supervisor. There are doubtless epistemological structures and disciplinary cultures at work here.*

10.1.4 In the low research institutions, examples were given of scholarly activities that illustrated the integration of teaching and research. These included attending conferences, acting as an external examiner, reviewing books and refereeing journal articles. These activities were claimed to be neither clearly teaching nor research, but rather scholarly activities which can inform both.

- 10.1.5 Some activities can be classified as either teaching or research. For example, in one department research student supervision was calculated within staff teaching loads, and in another it was deducted from teaching loads as a research activity.
- 10.1.6 One head of department in a Group A chemistry department argued that ‘research is a teaching activity’, in that they were all part of the same process.
- 10.1.7 In the sciences, it was commonly claimed that teaching and research were integrated at the undergraduate level in the final years. One chemist in a Group B institution explained how students worked on ‘real’ research projects being conducted by a research group in the department:

*[The staff] want to interest undergraduate students in their areas and they put a lot of effort into that teaching and give them good research facilities, so an undergraduate in the 3rd or 4th year in physical chemistry will often be using equipment that costs millions and is paid for by EPSRC grants and will be working with a postdoctoral student. I would say that is typical in institutions such as this. How do you accommodate a project student? You can't give them a piece of equipment worth a lot of money just for a project, so you naturally involve them in the work that is going on in the core of the research, and give them an idea of what research is like, you push in certain areas, we supervise them in a different way. They do literature searches and write up their work and everything, and do experiments that they would be doing within the research group. So there is the connection.*

- 10.1.8 *Good researchers as good teachers.* In the high research institutions in this study, it was often suggested that academics of ‘high calibre’ were mainly hired for their research reputation in the belief that ‘good researchers’ were inherently ‘good teachers’. There seemed to be an assumption in departments with high research profiles that teaching and research were integrated to the extent that academics who had a good research reputation would probably be good lecturers because they were ‘enthusiastic’ and had expertise in their subject.
- 10.1.9 However, no independent evidence of such individuals being ‘really rather good teachers’ was offered. This belief, accordingly, should be seen as a ‘value belief’, deserving of further investigation. However, it is clearly the case that this is a belief that the UK shares with many other countries, so to that extent it is not RAE-dependent.
- 10.1.10 The students we interviewed did not explicitly argue that they respected research-active staff more, but a number of comments they made indicated an implicit argument along these lines. For example, a final year undergraduate (Group D) engineering student suggested that non-research-active staff teach students to pass exams, whereas research-active staff teach students the subject. This latter point indicates further research with students would be desirable in order to identify possible relationships between research activity and pedagogical approaches. Such differences in pedagogies may turn out to be functional, given the differences in cultural and intellectual capital brought by different cohorts of students across the sector (Bourdieu 1984).

- 10.1.11 Interactions between teaching and research can be managed either directly or indirectly. The synergies between the two were assumed by some respondents in high research institutions to be a result of appointing high calibre staff. In low research institutions, there may be more of an explicit attempt to promote synergies by, for example, including ‘scholarship’ as an aspect of research. In other words, academics who were teaching-oriented could be encouraged to engage in some form of scholarship which would inform both their teaching and research (writing a book review was one example cited in a Group E institution).
- 10.1.12 There may also be disciplinary differences in the perceptions of the overlapping relationship between teaching and research (Brew 1999). Those academics in subjects which bring an empiricist, positivist approach to their research may be less likely to perceive synergies, because knowledge is ‘fixed’ and ‘out there to be discovered’ rather than continually evolving through enquiry. Again, the underlying epistemological structures of disciplines may be played out through the relationships between research and teaching.
- 10.1.13 Although a synergistic relationship between teaching and research was frequently claimed to be ideal, this synergy was rarely promoted in teaching and learning strategies, nor in other institutional and departmental management strategies.

*(ii) Research has a positive influence on teaching*

- 10.2.1 The second level of relationships is that of positive interactions between teaching and research activities.
- 10.2.2 The most common assumption from research-active respondents was that research enhances teaching. We were provided with suggestions of how research has a positive influence on teaching, such as:
- research-active academics are at the ‘cutting-edge’ of their fields, and therefore have more ‘authority’ to teach their subject (‘students love seeing their lecturers’ books on the library shelves’)
  - academics gain enthusiasm from being research-active, which ‘rubs off’ on the students
  - research-active academics teach more relevant, up-to-date material
  - research-active academics teach from their immediate research experience rather than reproducing second-hand knowledge from textbooks.
- 10.2.3 The positive influence that research has on teaching varies between subject area and between undergraduate and postgraduate levels. We explored a hypothesis that in the humanities subjects, the relationship between teaching and research has a more direct and positive impact at undergraduate level, whereas in the sciences there is a more direct impact at postgraduate levels (see chapter 4 of the main report). In history, the students become independent researchers as they progress

through to postgraduate level, while in chemistry, the doctoral students are more likely to be dependent on their supervisors' research.

10.2.4 Underlying such differences are again different epistemological structures (the tightly textured character of the sciences compared with the open-textured character of the humanities), and differences in knowledge production (sciences favouring teamwork, and the humanities favouring individuals' intellectual labour).

10.2.5 These differences were evident in a few examples:

- In one Group C history department, the research-active respondents described how they often teach their specialist research expertise in second and third year undergraduate option courses. In interviews with two research students in the department, they explained that their research topic was quite different from their supervisor's research.
- In another Group C history department, the staff were currently undertaking a major review of their undergraduate curriculum in order to better integrate the research interests of their staff, yet they did not have a formal research training programme for their research students (so curricular developments were not necessary at doctoral level).
- In the sciences, research enhances teaching at undergraduate levels in the first and second years mainly by providing 'examples' to explain concepts. In the third year and beyond, research becomes more directly related to teaching. In the chemistry and engineering departments we visited, many of the research students were conducting research projects designed by their supervisors (in several cases, the supervisors had applied for funding for specific projects and the students competed for these studentships).

10.2.6 There was further evidence of subject variations in the 'closeness' of the research area of supervisors and their students. Some fields of research in the sciences are very narrow and specialised, whereas subject areas in the humanities can have fuzzy boundaries.

10.2.7 The importance of the 'match' between supervisors and students in terms of research specialism varies, and therefore the volumes of research activities of supervisors can be more or less important to the students. For instance, in chemistry and engineering, the students form research 'groups' around a particular project and supervisor. It is important to the student group that their supervisor actively promotes and publishes their research. In history, on the other hand, students and supervisors can even be in different departments (classics or modern languages, for example), and therefore the research activities of their supervisors are much less important or may even be unimportant to their own research.

10.2.8 *Students' perspectives.* The idea that teaching is enhanced by research was also explored with students. In one focus group with undergraduate students in a Group E engineering department, they argued quite passionately that lecturers who conduct research (in the broadest sense of the term) were better teachers. The material 'sticks in the mind' better and seems more relevant and less abstract when

it is explained using examples from research projects. However, they also suggested that involvement with industry produced the same, beneficial effects.

10.2.9 *Resources.* There may be a cross-subsidy of resources which enables research to enhance teaching (see Annex C for further evidence on resources). In the chemistry departments we visited, the heads of departments explained that their research funds often enabled them to buy equipment which was eventually used for teaching purposes.

(iii) *Teaching has a positive influence on research*

10.3.1 Research does benefit from teaching, even if it is not as strongly expressed in these terms. Several examples were suggested:

- Research benefits from teaching because it forces lecturers to articulate their research and to have their ideas challenged. For example, one business studies lecturer in a Group B institution was asked whether students had ever stimulated his research, and he said:

*I can point to a paper I wrote, for example, that started as a direct result of an argument I had in the course of teaching MBA students. It was a debate. They picked me up on a point and we discussed it and debated it, but as the debate wore on it became clear there was a real issue there to be looked at. . . I think I came up with the idea but certainly what actually caused it to occur was the debate. I might never have followed up that line.*

- Teaching in less familiar areas on undergraduate courses may lead to new ideas for research.
- In some subject areas in the sciences, we were told that research student projects are the ‘backbone’ of the research carried out in the departments, and to a lesser extent undergraduate projects in the final year.
- Students’ ideas may stimulate a new research direction. In several chemistry and engineering departments, the respondents were proud of the fact that their final year undergraduate students have at times provided ideas for research, and have even been included as co-authors of publications (this was not mentioned in history departments).

*Summary*

Although there were many indications of research having a positive impact on teaching, this was not always a direct and straightforward relationship. In particular, there may be disciplinary differences between the extent of the interaction between teaching and research. At the undergraduate level, the relationship is more direct in the humanities than in the sciences, and at postgraduate levels the relationship is more direct in the sciences than in the humanities. Teaching can also have a positive impact on research, although this was evident to a lesser extent.

*(iv) Research and teaching independent of each other*

- 10.4.1 We asked respondents to consider the amount of time they spent on average on either teaching or research, and discussed various models showing different volumes of teaching and research. Although these models frequently provoked resistance to the notion that teaching and research can be compartmentalised, most respondents recognised that a large proportion of their time may be spent on activities which are either clearly research or teaching. For example, they may spend a large number of hours one day lecturing, and most of another day writing a research proposal.
- 10.4.2 Teaching and research may be independent, separate activities with little impact on each other. For example, in science departments there may be ‘research parks’ or spin-off businesses staffed by researchers who do not teach. We found some examples of these separate research activities in the high research case study institutions (a satellite business and a chemistry laboratory funded by industry). Obviously, there may be indirect benefits on teaching (if the research reputation of the department is enhanced through this research, for example, better links with industry might result in sponsorship of students). By and large, however, these research activities are conducted as separate activities from teaching.
- 10.4.3 Distinct and antagonistic relationships between teaching and research are sometimes the result of competition over resources - where one or the other is underfunded - or where time constraints are perceived to have an impact on the quality of either activity.

*Boundaries between research and teaching*

- 10.4.4 The boundaries between teaching and research blur when the ‘processes’ of each activity are considered. For example, a lecturer who uses an example from her research to illustrate a concept is not at that point conducting research, but is teaching. On the other hand, if she were engaged in a *process of enquiry* about that concept with her students, the activity might verge on research. A business studies lecturer in a Group B institution made a typical comment which illustrated this difference:

*It's very hard to define – now I'm doing research, now I'm doing teaching. Surely when you're lecturing you're 100% teaching, yes, teaching is all of it. But the thing is it's all part of the same process, so you do research in some new area and you learn about it and become an expert on it, then you decide you're going to teach it.*

- 10.4.5 It was often suggested that fostering a research culture in a department would enable all staff to find synergies between their teaching and research. There is perhaps a 'value-added' aspect to consider here and in the above example, in the sense that a certain level of research is expected to enhance all the activities of the department. Yet the extent to which this happened was questionable, particularly when some staff had heavy teaching loads and little time to develop their research.
- 10.4.6 For example, the Head of Research Strategy in one Group D business studies department said his goal was for 20% of staff to be research-active (which he tried to achieve by offering research-active staff members a contract that guaranteed them time to conduct research). The research 'base' generated by the activities of this group of staff was intended to stimulate the research culture of the entire department.
- 10.4.7 In a focus group with a few members of academic staff in this department, it was claimed that some of the academics not included in this 20% research group were given heavy teaching loads on undergraduate courses with little opportunity to develop links between their research and teaching. One member of staff was fairly aggrieved that his teaching and research were distinct activities because he was expected to teach first year accounting courses, even though his research was in a different field.
- 10.4.8 The assumption that a research culture would permeate the department through the activities of a few members of staff was in fact creating a boundary between teaching and research for some academics.

*Summary*

Teaching and research may be distinct and separate activities. The boundaries between the two are blurred when they are perceived to be part of the same process and where they may be mutually enhancing. It is often assumed that fostering a research culture in a department will enhance the teaching and research activities across the entire department. However, the evidence suggested that these strategies can be counter-productive, and for some staff their research and teaching were compartmentalised.

(v) *Research has a negative influence on teaching*

- 10.5.1 The value-orientations of academics may have an impact on teaching and research which results in a negative relationship between the two. Issues arose in discussion with staff groups that point to potentially negative relationships between teaching and research, largely because research has a higher value:
- If academics are research-oriented, they may value teaching which is related to their research more than other areas of teaching. The curriculum could potentially be driven by research interests of staff, thereby resulting in an unbalanced curriculum. This was generally disputed by most respondents, although a few admitted it was a 'difficulty' they tried to manage.
  - In some institutions, research may be more highly valued and rewarded than teaching. Academics may therefore be less inclined to spend time on curricular developments or pedagogical strategies if they have little time to spend on it.
- 10.5.2 Research-active staff may spend less time with students, and a few research students complained of inaccessible supervisors who were 'too busy' with their own research (although it was suggested by the same students that this was largely a question of individuals' dispositions and not a product of the system itself: some 'busy' academics always found time for their students).
- 10.5.3 Research-active respondents may be intrinsically motivated to spend long hours conducting their research because they 'love their subject'. In low research departments, the high volumes of teaching activities can lead to tensions when teaching-oriented staff are not intrinsically motivated to conduct research. The extrinsic rewards for conducting research (RAE funds) may not be sufficient to motivate individual academics who are not research-active.
- 10.5.4 For example, in one Group E engineering department, a research-active member of staff said he wanted to spend less time teaching and more time on his research. A colleague of his was highly teaching-oriented, and said he was content to engage in teaching activities from 9 a.m. to 5 p.m. every day and resisted spending extra time on research. There were tensions in the department because of the pressures on the staff to value both teaching and research, while undertaking a high volume of teaching.
- 10.5.6 There may be a negative relationship between teaching and research when institutions with low research activities lose good teachers to other institutions. Junior staff who manage to establish themselves as researchers may be more marketable and able to find 'better' jobs at higher status institutions. Respondents from low research institutions argued they have difficulties in retaining high-calibre staff who are good at both teaching and research. However we note the PREST study that showed there was no particular pattern in the movement of staff from particular institutions.

*(vi) Teaching has a negative influence on research*

- 10.6.1 It was rarely suggested that teaching could have a negative impact on research, largely because nearly all academics are teaching-oriented to some extent. Presumably most respondents did not wish to imply that they begrudged teaching because they would rather do research.
- 10.6.2 Only a few respondents implied that ‘teaching is the price to be paid’ for being able to conduct research in the relatively autonomous environment of the higher education system. The head of a Group B history department suggested that in the current climate, it is the quality of academics’ private lives which is the ‘price to be paid’, as research is often conducted in the evenings and on the weekends.
- 10.6.3 An unexpected change in the volumes of activities can result in negative relationships between teaching and research. In one Group D chemistry department, the head explained how a particular research interest of staff led to the development of a distance-learning course. The course became so popular that staff no longer had time to conduct their research as they had to cope with large numbers of students. The head of department implied that the staff’s research had suffered as a result of heavier teaching loads.

*Summary*

Most respondents argued that ideally their research and teaching should be synergistic, but the evidence suggested that this does not always happen in practice. Negative relationships between teaching and research are usually the result of a competition for resources. Certain pressures on academic life, such as heavy teaching loads, can make it difficult for staff to develop synergies between their teaching and research.

**11 Widening academic identities**

- 11.1 The extent to which staff are engaged in ‘other’ activities varied between subject areas and institutions. In only a few departments, the head of department claimed that ‘other’ activities were non-existent. Most departments were engaged in some type of ‘other’ activities, but the definition of ‘other’ activities varies.
- 11.2 Almost all of the historians we interviewed suggested that reviewing monographs and similar activities are the main ‘other’ activities competing for their time, for which they may be paid a small fee. One head in a Group A history department said:

*We’ve got to be excellent in both teaching and research. Those are our goals. I think they are the history department’s goals as well. Consultancy is really not something that we do in our discipline . . . occasionally a*

*publisher might send you a manuscript or book to have a look at, but that is not really a significant activity.*

It was argued that the time to undertake these activities, and the benefits derived from them, are diminishing. These types of 'other' activities, it was suggested, were traditionally an important contribution to the collegial and scholarly community of historians, which have less value in the present system.

- 11.3 In contrast, 'other' activities were defined by engineers as undertaking projects or consultancies for industry. In a high research institution, the engineers claimed that these 'other' activities were a justifiable supplement to their salaries, which were lower than what would be earned in industry. At a Group C institution, the head of the engineering department argued that consultancies formed important links with industry, which eventually benefited both teaching and research.
- 11.4 The amount of other activities undertaken in business studies departments was not as high as one might expect given the nature of the subject. However, one business studies department had recently secured HEROBC funds (which was some compensation for a previously low RAE score).
- 11.5 One head in a Group D chemistry department was encouraging staff to undertake lucrative 'other' activities in order to ease the departmental debt.
- 11.6 In spite of these variations in the definitions of 'other', almost every respondent argued that 'other' should include administration. It was suggested that the amount of administration has increased enormously because of greater student numbers and new demands made by evaluation systems. The suggestion that all administration is either related to teaching or research was not accepted by most respondents.
- 11.7 The evidence from the interviews and focus groups suggests that in some departments, 'other' activities are beneficial to teaching and research. Links with industry can be important in the sciences, for attracting funds and advising on the curriculum. Business studies staff also argued that they need to keep up-to-date with the corporate world in order to continually develop relevant curricula.
- 11.8 However, there were some instances of a negative relationship between 'other' activities and teaching and research. In some departments, particularly those with financial pressures, 'other' activities add to the pressures on staff time. Many departments did not have a system for managing, or guidelines for conducting, 'other' activities. This resulted in scepticism from one head, where he thought some of his staff might be 'moonlighting'.
- 11.9 Although it was widely acknowledged that there are 'other' activities to a greater or lesser extent which academics undertake across the subject areas, the proportion of time spent on 'other' activities is small in comparison with teaching and research. In a few cases, 'other' activities were claimed to be virtually non-existent.

*Summary*

There are a wide range of 'other' activities which academics engage in across the different subject areas and institutions. In general these activities are undertaken on an *ad hoc* basis and are often not managed by the heads of department. In a few cases, 'other' activities are necessary for external income, but in other departments there are little to no 'other' activities being conducted. Across the sector, the evidence suggests that as of yet, 'other' activities are not a significant aspect of staff time.

## 12 Research training

### *Research students and their research*

- 12.1 Many of the comments we heard about the close relationships between research and teaching in departments appears on closer examination to be mainly concerned with postgraduate programmes and to a lesser extent with students in the final year of undergraduate courses.
- 12.2 Research students make an important contribution to the research output of many departments. Not only can they be 'counted' within RAE submissions, but they may also make substantial contributions to the research culture of the department.
- 12.3 Differences between subjects are nowhere more apparent than in research training. Of the subjects we examined in depth, research training is a long-standing integral part of departmental activity in chemistry and electronic engineering whereas in history research students in any significant numbers are a much more recent phenomenon.

*Probably the single most important change that has taken place in this department over the last decade is the explosion in the number of masters students and research students that we've got in the department.*

(History Group A University)

- 12.4 In subjects such as chemistry, research students often become part of a research 'team', and publish papers jointly with their colleagues and supervisors. Research students were described as the 'backbone' of the research output of one Group E chemistry department. In two business studies departments, several of the research students had applied for studentships attached to particular projects, which were expected to increase the research output of the departments.
- 12.5 The history departments we visited were less reliant on their research students in terms of their research output, but claimed that the students contributed to the general research culture of the department. The links between research students and the work of their department is much less close.

- 12.6 Research training occurs at three levels: undergraduate, postgraduate, post-doctoral. Of these the second is by far the most important but they are, to some extent, integrated and any consideration of research training in universities and colleges needs to take some account of all three.

### **13 Research training at undergraduate level**

- 13.1 Research training at undergraduate level is a complicated issue. One criticism in the past of many conventional first degree courses has been that they are more concerned to prepare students for research than for life outside the university. This is no longer true of the great majority of higher education courses. However, as evidence of the interactions between research and teaching in first degree courses we were frequently told of cases where third and fourth year student projects made a significant contribution to departmental research, both as publishable articles in themselves, and in providing material for academic staff to develop further.
- 13.2 In fact, when pressed most respondents agreed that the number of undergraduate papers actually published in the research literature is very limited, but they emphasised the importance of the work both as research training and as a contribution to the research of the department.
- 13.3 History was slightly different in that, while research of members of staff were closely integrated with undergraduate programmes, student involvement in research was not so frequent. In business studies there was rather more concern with professional accreditation requirements, though this does not necessarily preclude a research-inspired approach to professional issues.

### **14 Research training and postgraduate courses**

- 14.1 Most research training takes place on postgraduate programmes. These take two main forms – taught courses and research degree programmes.
- 14.2 We heard little about taught postgraduate courses, and many of them are seen primarily as professional development courses. However, this does not preclude the near-universal requirement for Masters degrees to include a research based ??or??DO YOU MEAN ON? scholarly dissertation and some knowledge of the research literature. Conversely, most research degree programmes now include a significant taught component. Another recent development is the rapid growth of professional doctorates, which attempt to span both professional development needs and research training.
- 14.3 Nearly all the research students chosen by departments to take part in our interviews were full-time students. This is understandable: full-time students are much more likely to be on the premises and are likely to be much more closely involved in the works of the department than the part-timers. However, almost exactly one-half of research students are part-time and there are big subject differences. Two-thirds of

research students in physical sciences are full-time compared with less than a quarter in education and a little over a third in business studies. Often part-time study means that the students are working as ??researchs??RESEARCHERS?, research assistants, technicians or even as lecturers while registered for a research degree.

14.4 Most research students interviewed had been given the opportunity to teach. However, few had received specific training (at most a one-day staff development course). Students frequently said they were motivated to teach for the experience and extra money. In teaching-intensive institutions, the contributions to teaching from research students had indirect benefits on the research output of the department, as they enabled academic staff to ‘free up’ teaching time in order to conduct research.

14.5 We also came across examples of the use of research students to work in laboratories, assist with IT courses for staff and undergraduates, and conduct tutorials. Most of this work seems to be done on an *ad hoc* basis and may be more or less voluntary. More systematic management of this contribution from research students was frequently mentioned by the students as desirable.

14.6 Full-time research students in physical science departments are invariably seen as members of the department. Their contribution to the research output of the department was often emphasised:

*Research students are very important to the research output of the department - they are the ‘hands’ that do the work.*

(Chemistry Group D institution)

*Research students . . . are the lifeblood of the department.*

(Chemistry Group B institution)

14.7 This direct involvement in real research was often seen as a very important aspect of research training.

*They’re getting the training in research and they are delivering the goods, they’re delivering outputs, the staff are involved in supervisory context.*

(Chemistry Group D institution)

14.8 Such integration is much less likely to happen in history.

*We don’t use research students on projects in the same way that perhaps the scientists do. We are not actually allowed to, in fact, at the moment. I think the ESRC is now just beginning to change its rules. So research students don’t in fact count as research assistants to established teachers and researchers and work on the same kind of big projects.*

(History Group A institution)

14.9 Most, though not all, institutions now supplement this apprenticeship model of research training with more formal research training. For the most part the main driver is the demands of the Research Councils for evidence of this as a condition of giving departments quota status for research studentships. It was noticeable that these programmes were much more likely to be present in the high research institutions.

One reason is undoubtedly economies of scale. Certain threshold numbers are necessary to make it worthwhile putting on special courses.

- 14.10 We were able to identify four categories of research training provision, and these were closely linked to the number of full-time students.
- 14.11 In the first category, the departments have very small numbers of research students, and their research is closely linked to individual supervisors and their departments. Their training is mostly on the job, working on particular research projects. These overlap with category two, departments where there is no specific training provision for research students, but they are encouraged to attend research components of Masters and undergraduate courses.

*We do not have a formal training programme of our students, but they are encouraged to sit-in on research classes on the 4th year of the MPhys degree.*  
(Chemistry Group D institution)

- 14.12 The third type of research training programme occurs where courses for research students are run on a faculty-wide or institution-wide basis. Sometimes this is part of an MRes degree.

*We obviously recognise the outside pressures that there should be some formal training packages for new research students, unless they have done a Masters degree which involves research methods training . . . . So we are trying to be serious about this and provide a decent experience, and we have two training packages that the new research student has to do in their first year.* (Chemistry Group D institution)

- 14.13 Not all research students were happy with such arrangements. In one Group E institution research students in engineering were very critical of their research training, mainly because one compulsory element in the first year is undertaken with all research students in the institution. The research students were forced to learn about 'irrelevant' subjects such as social science research and write assessments on it.
- 14.14 Finally this overlaps with the large postgraduate institutions where departments have their own tailor-made research training programmes. We found no cases where the department did its own research training in its entirety but in both a large history department and a large chemistry department most training was within the department, and generic research training for students elsewhere was very limited.
- 14.15 All the departments we visited claimed to be making strenuous efforts to support their research students and encourage them to complete within three to four years – in the case of full-time students. The main driver is undoubtedly the perceived need to be in good standing with the relevant Research Councils.
- 14.16 There are substantial differences between subjects in the extent of contact between research students and their supervisors. In laboratory subjects it is common for full-time students to have some contact with their supervisors every day, whereas in non-laboratory subjects contact is normally much less frequent. This is partly because in the laboratory subjects it is normal for research students to be recruited to work on a departmental project, whereas in the non-laboratory subjects students normally embark

on an individual research project which may or may not be very close to specific pieces of research being done by staff in their department.

- 14.17 The main formal procedure to stimulate progress is the upgrading from MPhil to PhD registration. All the departments had a similar basic procedure. Students make an application for upgrading when they are between one-third and two-thirds of the way through their thesis. If successful they are assured that there is a reasonable chance of successful completion of a PhD and in relatively rare cases advised to discontinue their research or to aim at an MPhil degree. The details vary. In some cases it is clearly a formality; in others students are tested rigorously. In one Group A history department, we were told that:

*One of the parts of that process is that they've got to give a 20 minute presentation to the assembled multitude about their research topic and this is usually the very first occasion on which they have spoken to a public audience about what their research is. And it gives them very good practice at public communication. The other part of the upgrade process is rather more conventional - they've got to write a chapter, or at least a significant piece of written work, which is looked at by four colleagues and then the colleagues give the candidate a mini-viva..*

- 14.18 Overall research degree supervision is, in most cases, a very time consuming activity. For the most part staff are willing to do this because the work of their research students is usually close to the real academic interests of their supervisors. It was apparent that supervision of research students is high on the value scale of a large number of academic staff. It both supplements and substitutes for their own research in many cases.
- 14.19 Attracting research students is very important to many departments. Status and the reputation of a department may be more of an explicit factor in the choice for overseas students than home students. One overseas research student in a business studies department made her decision from 'league tables' and chose the highest ranking department.
- 14.20 Most of the home students interviewed had simply applied for studentships: they went where funding was available. We became aware of two prominent routes of full-time research student funding. One was Research Council studentships. Their effect on the research training culture of some departments has already been noted. The other is studentships funded by the university. This seems to be more widespread in the low research institutions, and is one of the strategies being adopted to help build up research capacity. RAE funds were sometimes used for this purpose.
- 14.21 Funding and the likely longer term benefits of a higher degree or a research career is obviously an issue in some subjects. We were often told that work outside the university was usually much more attractive for the most able graduates.

*When you look at the salaries that people can gain in industry, they're not going to spend three years being a full-time research student. . . you got a good job as a result of it, now the results of economists being able to go*

*into the City in far larger numbers than they used to means that it's not as beneficial to have a PhD in economics as it once was .*

(Business Studies Group 4 institution)

- 14.22 Such problems were not confined to economics. In an engineering department in a Group E institution, a group of part-time undergraduate students were asked whether they would consider doing a higher degree. They said no, as they were already working (in industry and the Ministry of Defence) and a higher degree would not add value in terms of their careers. They also said they would not consider careers in academia as they have already started their careers and would not want to take a pay cut or start over again – although they felt the benefit of an academic career would be greater freedom in conducting research.

## 15 Postdoctorals

- 15.1 'Postdoctoral' is a term that belongs entirely to science and engineering departments. People doing similar jobs in social sciences or humanities are likely to be called research officers or research assistants. It is sensible, therefore, to treat the issue of postdoctorals along with young researchers more generally, and several of the comments in this section originated in the New Researchers' Seminars (see Annex E).
- 15.2 For many young researchers there is an uneasy limbo between successful completion of a research degree and their academic careers. Whether they are postdoctorals in the sciences or research assistants elsewhere, they are all dependent on short-term contracts and often haphazard employment conditions.
- 15.3 The absence of career development strategies for young researchers was often commented on in the seminars. The uncertainties of a succession of short term, and often part-time, contracts were felt to be stressful and sometimes damaging to serious work. Many new researchers felt that current demands to undertake heavy teaching loads meant little time to develop research at the stage in their careers when they were likely to be most productive. There were several suggestions about how this gap between PhD and established posts might be bridged more effectively.
- 15.4 Research Fellowships, such as those offered by the Wellcome Trust, were seen as positive initiatives which enable young researchers to establish their research portfolio in the early stages of their career. It was suggested that some HEFCE money might be earmarked for young researchers to give them the opportunity of proving themselves. A national HEFCE-funded 'starter package' was mooted.
- 15.5 Training needs that go beyond learning to be an individual researcher were also referred to. Very few of the young researchers believed they had had any formal research training after their research degree. It was suggested that there could be more formal opportunities to learn how to submit convincing research bids and to manage projects.
- 15.6 It was apparent from the seminars and from our interviews that there is widely believed to be a general problem of recruiting and developing the next generation of

research-active academic staff, though the picture varies between subjects and disciplines.

## **16 A statistical study of research-research training interactions**

- 16.1 As a separate study Gareth Williams has been supervising a research student, Iris Chiang, who has been investigating research students' perceptions of their research training experiences in two subjects, chemistry and education, and relating these to indicators of the research activities of departments including 1996 RAE scores. Questionnaires were sent to a large sample of full-time research students in these subjects, and responses were received from over 600 students in chemistry and over 500 in education.
- 16.2 The questionnaire asked a large number of questions about facilities available to the students, their research training programmes, the departmental atmosphere, and the students' involvement with the research activities of members of staff. As a first step a factor analysis identified three distinct factors which we have called 'friendliness of the department', 'facilities', and 'financial support'. 'Friendliness' includes variables such as 'awareness of a research culture', 'awareness of staff research', 'staff busy with their own research', as well as a number of issues concerned with social interactions among staff and students. 'Facilities' included the library, working space and computing facilities.
- 16.3 A stepwise multiple regression showed that full-time research students in chemistry were in general more satisfied than those in education, with both the atmosphere of 'friendliness' in their departments and the facilities available to them. In education there was a slight, but significant, positive relationship between the research rating and facilities available, while there was a significant negative relationship between the 'friendliness' factor and research rating. In chemistry the 'friendliness' factor was slightly positive in relation to RAE scores while the 'facilities' factor was significant and quite large.
- 16.4 These results can be taken as meaning that in education research excellence as shown by the RAE score really makes little difference to research students' perceptions of their training experiences, whereas in chemistry departmental research excellence is deemed as advantageous across the board by research students.
- 16.5 Another finding is that in both chemistry and education there was a negative relationship between RAE scores and students' perceptions of financial support from their university being available to them. In other words, those universities with relatively low RAE scores are more likely to be seen by their students to provide financial support for research students. This independent evidence provides some support for one of the findings of the interviews noted above.
- 16.6 This work is in progress and there are many interactions between variables that will influence a full interpretation of the results. For example, there are distinct gender differences, and since the majority of education postgraduate students are women and most chemists are men, there may be interactions here which need exploration. The

full results will be reported by Miss Chiang in her thesis. Unfortunately the limitations of postgraduate study mean it is limited to two subjects, but it is sufficient to suggest that a larger scale study along these lines would be likely to be productive. It is also significant that both staff and students in the departments that took part expressed a strong desire to be kept informed of the findings.

## **17 Conclusions**

- (i) Research has a higher value than teaching among academic staff across the sector.
- (ii) The values attributed to research and teaching have shifted over time.
- (iii) Some high research institutions are placing more value on teaching, and many low research institutions are encouraging staff to undertake more research.
- (iv) Teaching activities are more likely to be tightly managed than research activities, although the evidence suggests that research is the dominant cause of variations in workloads in most departments.
- (v) Respondents generally claimed to work more than 40 hours per week. The value of research output in terms of academic careers is a strong motivating factor to work in the evenings and weekends.
- (vi) The pressures on academic staff, it was frequently argued, are leading to low morale.
- (vii) Many respondents claimed that their teaching and research are synergistic. We found little evidence to suggest that synergies between research and teaching were managed or promoted at departmental or institutional level.
- (viii) There were some attempts to manage research and teaching workloads in departments, partly to allow more time for research. Some strategies may be having the unintended consequence of driving research and teaching apart for some staff.
- (ix) There are very few *institutional* strategies to manage staff workloads.
- (x) The positive impact that research can have on teaching varies between subject areas and levels of teaching. At the undergraduate level, the relationship between research and teaching is more direct in the humanities, and at postgraduate levels the relationship is more direct in the sciences.
- (xi) Teaching and research can also be independent of each other, and can even have a negative influence on each other.
- (xii) Staff work profiles and career trajectories vary considerably between individuals, between subjects and between institutions.
- (xiii) Research training is more likely to be an integral part of departmental research in the sciences.

- (xiv) There are major subject variations and different underlying epistemological structures which influence the research culture within institutions.
- (xv) 'Scholarship' is understood in different ways across the sector. Its status and meaning varies between low and high research institutions.
- (xvi) 'Other' activities are not yet playing a significant part in the value systems of most academic staff.

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## Appendix

- Group A - The research-led institutions (>50% R)  
 Group B - Research-intensive (R income 30-50%)  
 Group C - Pre-1992s, selective R (R income >20%)  
 Group D - Post-1992s, research-active (R income >10%)  
 Group E - Teaching-intensive (limited R income)  
 Group F - Specialist institutions
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### Group A

Chemistry department	13 December 1999	Deputy Head of Department Academic Staff - focus group
Electronic engineering	6 January 2000	Head of Department Academic Staff - focus group
History department	11 January 2000	Head of Department Academic Staff - focus group

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### Group B

School of management	10 December 1999	Head of School Academic Staff - large focus group Research Students - focus group
History department	28 January 2000	Head of Department Academic Staff - focus group
Chemistry department	27 January 2000	Head of Department Head of Research training Academic Staff - focus group Research Students - focus group

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### Group C

Engineering school	13 January 2000 25 February 2000	Dean of School Academic Staff- focus group Research students - focus group
History	19 January 2000	Head of Department Academic Staff - focus group Research Students - focus group
Chemistry	8 December 1999	Head of Chemistry Academic Staff - small group Research Students - small group

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### Group C

Electronic engineering	10 January 2000	Dean of School
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ACADEMIC ACTIVITY: ANNEX B

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	1 March 2000	Academic Staff - focus group Research Students - focus group
Management studies	24 January 2000	Dean of School Academic Staff - focus group Research Students - focus group
Chemistry		Dean of School

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**Group C**

History	4 February 2000	Head of Department Academic Staff - focus group
Chemistry	*	(*willing – but too busy to set aside time)

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**Group D**

School of engineering	1 March 2000	Head of Engineering Department Head of Engineering School Academic staff - various group meetings Undergraduate Students - focus group
Chemistry	17 December 1999	Head of Department Academic Staff - focus group Research Students - focus group
Business studies	17 March 2000	Head of Department Academic Staff – focus group

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**Group D**

History	21 February 2000	Head of Department Academic Staff - focus group
Chemistry	14 February 2000	Head of Chemistry Academic Staff - focus group
Business studies	21 February 2000	Head of Department Head of Quality and Research Academic Staff - focus group

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**Group E**

Business school	17 January 2000	Head of School Head of Research training Academic Staff - focus group Research students - focus group Research training co-ordinator
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ACADEMIC ACTIVITY: ANNEX B

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Engineering school	14 January 2000	Head of School Academic Staff - focus group Research students - focus group Undergraduate students - focus group
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