

## **Learning at the coalface: staff and student perceptions of research informed teaching**

Helen Puntha, Nottingham Trent University, UK

**Contact details:** Tel: 0115 8488128

Email: [Helen.puntha@ntu.ac.uk](mailto:Helen.puntha@ntu.ac.uk)

Paper presented at the Research Informed Teaching Conference: delivering participation engagement and enquiry, Staffordshire University, 14<sup>th</sup> July 2010.

### **Abstract**

*This paper explores staff and student perceptions of the value of research informed teaching. Presented findings are taken from a study conducted with 56 staff and over 900 students at a UK University. The mixed methods study was comprised of an audit of teaching-research links within the curriculum, interviews with academic staff and a student survey. Findings indicate a widely-held belief in the affirmative symbiosis of teaching and research and a belief that both staff and student engagement in research can have a positive impact upon student learning.*

**Keywords:** student motivations to study, student awareness of research activity, student perceptions of research, student experiences of research, teaching-research links

### **Background**

Nottingham Trent University (hereafter referred to as NTU) dates from 1843 when the Nottingham Government School of Design was opened. The institution was granted university status in 1992. There are approximately 25,000 students enrolled at the institution including around 20,000 undergraduates (Nottingham Trent University 2009). The Research Assessment Exercise (RAE) 2008 results for NTU revealed a high quality of research at the institution, with 74% of activity submitted achieving international status and eight per cent classed as world-leading (Nottingham Trent University 2008). NTU scored highly on the recent National Student Survey in 2010 with an overall satisfaction rating of 79% (Unistats 2010).

The section in which NTU scored highest was course teaching with the survey indicating that academic staff members were enthusiastic and good at explaining things, that the courses were intellectually stimulating and that staff members made their subjects interesting to students. NTU achieved the highest rating of 'broad confidence' in its 2008 QAA Institutional audit (Quality Assurance Agency for Higher Education 2009). The audit highlighted research informed teaching as an area of good practice, citing 'the University's commitment to research informed teaching and the approach taken to ensure that the curricula are informed by research' (Quality Assurance Agency for

Higher Education 2009, p4). 'Research informed teaching' here refers to students' knowledge of and engagement with research, a subject of significance for the institution and for the Higher Education sector as a whole.

A Working Party for Research Informed Teaching was established in 2006 to promote and foster links between teaching and research across the institution. The group has introduced various beacon projects such as a research leave scheme, an undergraduate research scheme (SPUR – Scholarship Projects for Undergraduate Researchers) and a research mentor scheme (SPUR to Success) using funding from the HEFCE Teaching Quality Enhancement Fund (TQEF) for teaching enhanced by research. The group uses the following well-known typology developed by Griffiths (2004) and redeveloped by Jenkins and Healey (2005) to provide a focus and standards benchmark for beacon projects and related research:

**Research-led teaching:** Curriculum structured around subject content that is directly based on the specialist research interests of teaching staff

**Research-oriented teaching:** Curriculum focuses as much on how learning is produced as well as the subject content achieved. It places emphasis on skills of enquiry

**Research-based teaching:** Curriculum is largely designed around enquiry-based activities and staff processes of enquiry are integrated with student learning activities.

**Research-informed teaching:** Teaching that draws consciously on systematic enquiry into the teaching and learning process itself.

Findings relating to the fourth category '*research informed teaching*' are not discussed within this paper, which focuses instead on the remaining three relationships which relate more directly to student learning experiences.

## Introduction

*"...in 50 years you're going to start doing some thinking of your own and you're going to come up with the fact that ... you dropped 150 grand on an education you could have got for \$1.50 in lay charges at the public library"*  
- Janitor (and undiscovered mathematical genius) at Massachusetts Institute of Technology (MIT) to MIT student

*"Yeah but I will have a degree and you'll be serving my kids fries at a drive-thru on our way to a skiing trip"*  
- MIT student to MIT janitor

*"Maybe but at least I won't be unoriginal"*  
-MIT janitor to MIT student

(Good Will Hunting, Miramax Films 1997)

*Never the twain shall meet?*

The role of research in universities and the relationship of research to teaching has been a focal point of debate both historically and in more recent times. Hattie and Marsh (1996) concluded on the basis of their meta-analysis of 58 studies, that there was no relationship between teaching and research but that, 'universities need to set as a mission goal the improvement of the nexus between research and teaching....the aim is to increase the circumstances in which teaching and research have occasion to meet.' (Hattie and Marsh 1996, p533). Two leading experts in the field of research informed teaching Healey and Jenkins, have argued that, 'one of the most effective ways to do this is to engage our students in research and inquiry' (Healey and Jenkins 2009, p6).

The excerpt from 'Good Will Hunting' to some extent captures the spirit of debate on the subject. The janitor argues that an education where a student is a consumer but not producer of knowledge is of no greater value than the education that could be gained from studying independently at a library. The student counters this accusation by stating that despite the truth or otherwise of the janitor's argument the receiving of a degree is an end in itself; in addition the student suggests that the obtaining of a degree will guarantee a greater income than the (assumed to be less educated) janitor can expect.

*Research and Employability*

In contrast to the view expressed by the student in the excerpt, Jenkins, Healey and Zetter (2007) have argued that students who are involved in the production of knowledge at university through engagement with research, will gain a distinct advantage in terms of employability over those students who do not engage in research because of the disciplinary and transferable skills, knowledge and experience fostered through the research process, 'teaching students to be enquiring or research-based in their approach is not just a throwback to quaint notions of enlightenment or liberal education but central to the hard-nosed skills required of the future graduate workforce' (Nick Hammond, then Senior Adviser to the Higher Education Academy, quoted in Jenkins, Healey and Zetter: 2007, p3).

*Functional and idealistic approaches to research-informed teaching*

There is another context to student engagement in research namely that of research informed teaching as a tool for building inclusive academic communities (Brew 2006). Simons and Elen (2007) describe the two different contexts as approaches, a 'functional' approach ('research-teaching nexus' – the skills, employability school of thought) and an 'idealistic' approach ('education through research' – the academic community, pursuit of truth school of thought). Simons and Elen argue that mixed use of these leads to ambivalence and that nowadays attempts to foster a strong teaching-research

nexus might be based on the ideal of building a competency-based higher education system rather than on a purely Humboldtian idea of 'education through research' (Simons and Elen 2007).

Humboldt stated that

'the university, in contrast with school, should treat scholarship always in terms of not yet completely solved problems, whether or not in research or teaching, pure or applied, while school is concerned essentially with agreed and accepted knowledge' (Humboldt's 1810 memorandum for the new university of Berlin, cited in Elton 2008, p225).

More recently, Robertson (2007) has stated that it may be possible for some (university) students to graduate with little awareness of contested knowledge but that this would run contrary to the need to teach/learn 'for an unknown future' (Barnett 2004, quoted in Robertson 2007, p552) and that it would also be

'... at odds with the commonly expressed aspirations of universities to graduate independent, critical thinkers/actors and inquirers who can contribute to the well-being of society' (Robertson 2007, p552).

Robertson's words echo those of Cardinal John Henry Newman who stated

'if then a practical end must be assigned to a University course, I say it is that of training good members of society... It is the education which gives a man a clear, conscious view of their own opinions and judgements, a truth in developing them, an eloquence in expressing them, and a force in urging them. It teaches him to see things as they are, to go right to the point, to disentangle a skein of thought to detect what is sophistical and to discard what is irrelevant' (Newman 1852, p104).

### *A way forward*

To some then, the two approaches of research informed teaching seem inextricably linked rather than a source of ambivalence. Simons and Elen have a suggestion for how to proceed

'What we have in mind is a kind of educational reflection and research that takes into account the specific educational potential of academic enquiry, and the particular teaching potential of researchers. This could offer the idealistic approach a tool to stop a narrow 'pedagogisation' and prevent universities becoming like schools; not because schools are inferior to universities, but because they are different' (Simons and Elen 2007, p629).

### *The Student Experience*

The previous two sections outlined the theoretical underpinnings of research-informed teaching. In terms of how research-informed teaching is experienced at a practical level, the greatest volume of research undertaken has sought to pertain staff views and experiences of research-informed teaching (Brew 2006, Robertson 2007).

More recently research has been undertaken into student awareness of staff research and the impact of this on student learning. Trigwell (2006) researched student learning in a range of courses with different RAE ratings and found a link between a research active environment and a deep approach to learning which was independent of discipline and RAE rating. Turner, Wuertherick and Healey (2008) using a questionnaire developed by Healey, Jordan and Short (2002) conducted a comparison of final year students' perceptions of research and its impact on learning environments at three international institutions of varying research intensity.

The only significant difference found between institutions was that, 'students from research-intensive institutions reported significantly more positive and negative impacts of research on their learning' (Turner, Wuertherick and Healey 2008, p12). Regardless of the research intensity of their institution students from all three institutions considered learning through conducting their own research (research-based teaching) to be the most effective way of learning with regard to research. According to Healey et al (2010) certain studies have suggested that students might become more instrumentalist in their approach as a result of their fee-paying status and that this might lead to students rejecting those aspects of curriculum which they find more academically challenging – generally those which are research-based, such as dissertations.

### *Institutional Strategies*

JM Consulting, who undertook research as part of the 2000 Review of Research, stated of teaching-research relationships, 'it is perhaps surprising how relatively few institutions have specific policies in place to either monitor, or to develop and maximise these beneficial synergies' (J M Consulting, p16). Oxford Brookes is an example of an institution which introduced a requirement for teaching and research to be linked in the formal curriculum and wider student experience. Huggins and colleagues at Oxford Brookes (Huggins et al 2005) analysed 96 programme specifications following the introduction of the requirement to discern the range of approaches to teaching-research links across the university. The institution used the findings to disseminate examples of good practice across the university and to identify where links were still fairly nominal so that these areas could be supported.

## **Methods**

NTU designed a research study against a backdrop of various debated theoretical underpinnings of research-informed teaching as well as a growing body of research evidence relating to how staff and students experience relationships between teaching and research. The aims of the study were to decipher the nature and prevalence of relationships between teaching and research at the institution and to explore staff and student perceptions of these relationships with a view to informing future research and teaching strategy.

The research was conducted using a mixed methods approach, an approach which Bryman (1988) has argued unites the benefits of the individual methods whilst minimising their respective limitations. In this case it was anticipated that a mix of quantitative and qualitative methods would afford the most illuminating exploration of the teaching-research nexus as it would ensure that both the nature and prevalence of teaching-research links could be ascertained as well as providing the opportunity to explore staff and student perceptions and experiences of those links.

### ***Audit Survey***

An audit of teaching-research links was conducted using a closed survey which asked respondents to state whether each of eighty-five given teaching-research link examples existed within their academic schools. Link examples related to various areas of teaching and research activity including student research skills and practice, staff research skills and practice, opportunities for dissemination of research findings, strategies and policies relating to research and existing resources to support teaching-research links. Link examples were devised on the basis of a review of research literature relating to the nature and cultivation of teaching-research links. A number of link examples were taken directly or adapted from research by Huggins et al (2005). Several links lent themselves to categorisation using the afore-mentioned typology of teaching-research relationships so that the nature as well as prevalence of links could be determined, for example 'modules contain case studies based on staff research' could be categorised as research-led teaching, 'research is practised by students in project/dissertation/independent study/synoptic modules' could be defined as research-based teaching.

The survey was emailed in February 2007 to 197 staff members including Associate Deans for Research, Division Heads, Programme Leaders, Academic Team Leaders, Lecturers, Senior Lecturers, Research Coordinators and School Quality Managers. The sample of staff was selected following guidance from school Learning and Teaching Coordinators as to which staff members were likely to be the most informed members of their respective schools with regard to knowledge of teaching-research linkages. Fifty-six completed surveys were returned constituting a response rate of 31%. Survey respondents were asked if they would be willing to take part in a follow-up interview.

## ***Interviews***

Semi-structured interviews were conducted with 20 participants identified in the survey. Participants came from across the institution with eight of the nine academic schools represented. Participants included lecturers, research coordinators, school quality managers, academic team leaders, programme leaders and division heads. Some participants had more than one role, for example two participants held the dual roles of research coordinator and lecturer.

The aim of the interviews which took place between May and June 2007 was to gain further information regarding the school and course contexts with regard to teaching-research relationships. Interviews lasted between thirty minutes and one hour and covered the topics of student awareness of and participation in research, staff views of their own role and practice with regard to teaching and research, school and institutional cultures and barriers and enablers of research-informed teaching. Participants were given the option of anonymity. Interviews were transcribed, transcripts were verified by interviewees and then the transcripts were analysed for emergent themes and compared with data from the surveys for congruence for example to explore whether staff and student perceptions of the impact of research on the student learning experience were comparable.

## ***Student Survey***

A student survey was designed with the aim of exploring student motivations for studying, experiences and perceptions of different teaching-research links and awareness and views of staff research. As it was intended that the survey would partly inform institutional strategic direction with regard to research informed teaching it was decided that the survey would be sent to all students in order to elicit responses from students from the widest range of disciplines and levels of study possible.

The survey was constructed using an online surveybuilder ([www.surveymonkey.com](http://www.surveymonkey.com)) and was sent via an email link to all enrolled NTU students in November 2008. Nine hundred and thirteen students completed the survey, constituting nearly 4% of the overall student population of 23,008 at the time of the survey. The survey consisted of a range of closed questions and Likert scales with space provided following each question for respondents to make further comments. The questions came from the Healey, Jordan and Short questionnaire (2002) and research by Trigwell (2006) as well as further questions developed by the research officer and members of the aforementioned working party. A prize draw incentive was given in the form of 4 sets of £25 Blackwell Bookshop tokens. The findings reported here are based on data gathered from undergraduate respondents the majority of whom were female (69%). Forty-one per cent of respondents were 1st yr students, 25% were 2nd years and 34% were in their 3rd year or above.

A weakness of the study despite triangulation of methods is that due to the limited distribution of the staff survey and limited response rates to both the staff and student surveys the data gleaned cannot necessarily be generalised to the wider NTU population. The fact that all participants were self-selected may have affected the resultant findings. Data gleaned from the interviews in particular, as with all qualitative data, cannot be directly generalised. Care has been taken to report findings to reflect these limitations.

## Findings

The presented findings focus on the student survey cross-referenced with findings from the staff audit survey and interviews. The presentation of findings like the survey itself begins with a consideration of why students choose to attend university in the first instance. The proceeding sections then depict the incidence, nature and benefits of teaching-research links at NTU, and finally contemplate the impact of research environments on student learning and the level of student awareness of staff and other research.

### *Student motivations to study*

The survey included questions relating to student's prior knowledge of certain aspects of the institution before they attended, such as employability, teaching and research. Students were then asked for their views on the same aspects once in attendance at NTU. Over 80% of students had heard about the employability reputation of the university prior to attending, compared with 53% who had heard of the research reputation and 65% the teaching reputation. Once in attendance 80% rated course teaching as good or very good, 71% rated research within their course as good or very good, 70% rated research at NTU generally as good or very good. The following were motivating factors for students to attend:

**Table 1: Students' reported motivations for attending university**

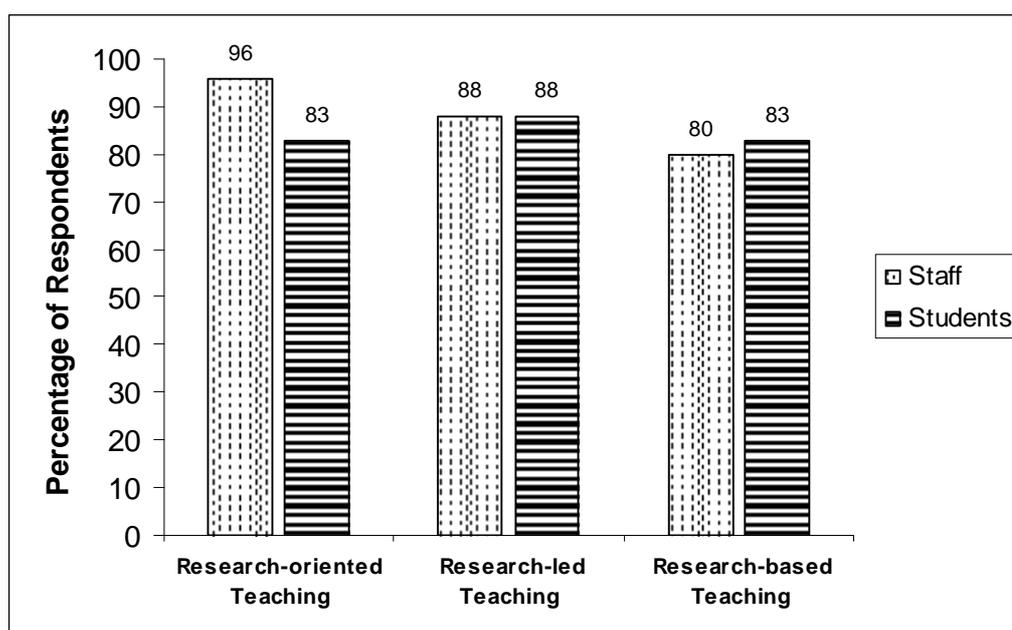
Motivation	Response (%)
Improving my employability	88%
Acquiring new knowledge	82%
Expanding my social life	51%
Opportunity to acquire new interests	40%
It was expected of me	29%
Being able to contribute to knowledge in my study area	27%
Conducting my own research	23%
Learning about how to do research	19%
Learning about other people's research	14%

It is perhaps not surprising that improving employability was the most cited motivation given that NTU is a 'top three' university in England and Wales for employability and this is well-publicised with 95% of students in full time employment or study within six months of graduating (Nottingham Trent 2010). Employability as a motivating factor for attendance was closely followed by 'acquiring new knowledge'.

It would seem that students did not necessarily associate acquiring new knowledge with conducting their own research or even learning about other people's research as these were much less cited, 23% and 14% respectively, affording an interesting insight into how students conceive (or do not conceive) of how knowledge is created. It is acknowledged that the use of the word 'acquire' within a response category may have influenced this response since 'acquire' perhaps suggests passivity rather than activity.

### ***Incidence of Teaching-research links***

**Chart 1: Staff and student reported teaching-research relationships within NTU courses**



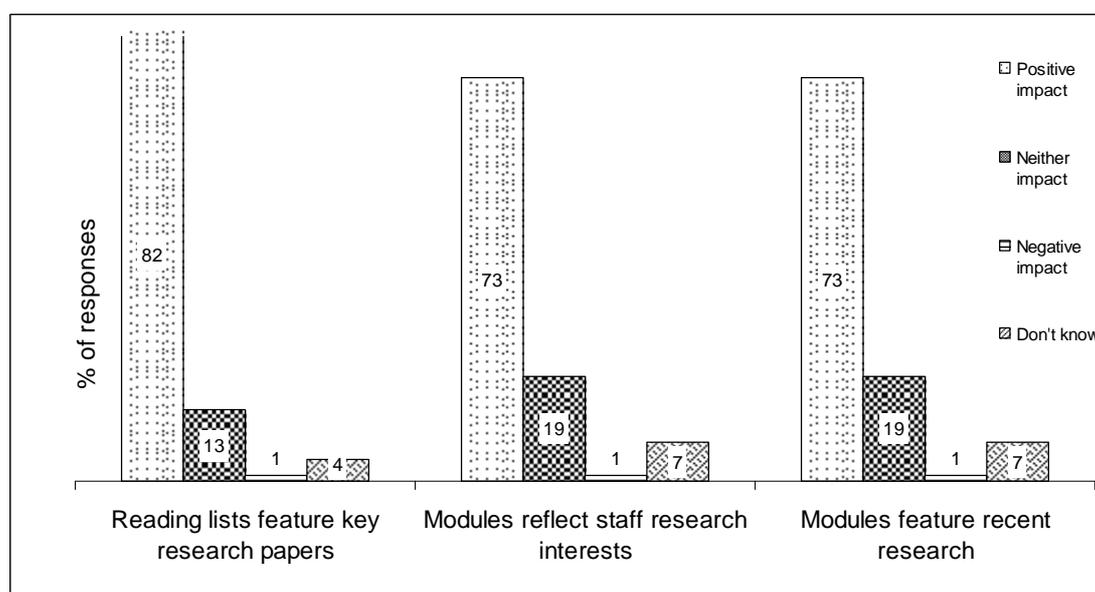
Research skills are not always named specifically as such by teaching staff. One lecturer explained that this is because the idea of research can be intimidating to some students particularly at level one, "We don't want to scare the students". This perception of research as being intimidating to students allies with the afore-mentioned finding that students may not have a well-developed conception of how knowledge is created particularly at entry level. The fact that *research-oriented teaching* was cited by a lesser percentage of students than staff as can be seen on the chart perhaps illustrates the effect of this practice the result of which might be that students do not always

recognise when they are gaining research skills. On the whole the findings from the staff and student surveys are consistent suggesting good student awareness of research informed teaching within their disciplines.

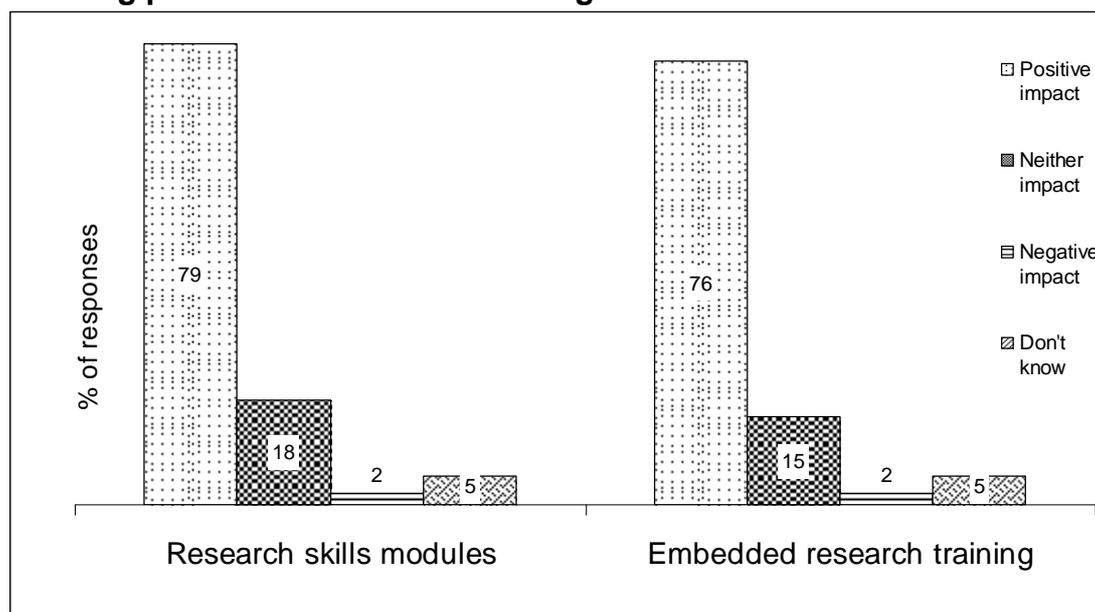
### ***Nature and benefits of teaching-research links***

The survey gave examples of various teaching-research links and asked whether such links benefited learning. Responses are categorised by the Jenkins and Healey typology (Jenkins and Healey 2005):

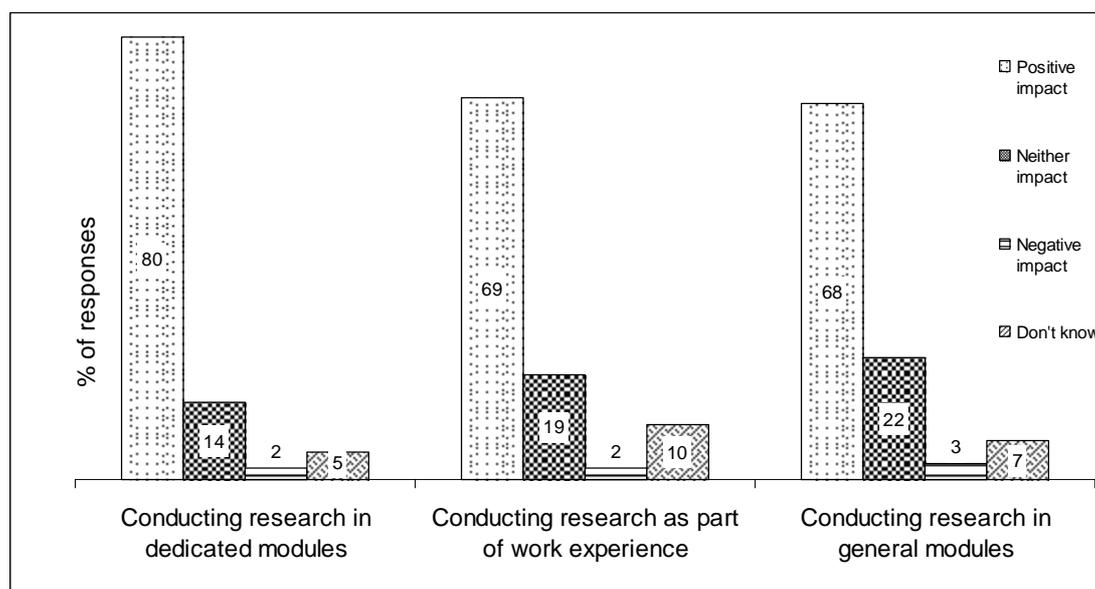
**Chart 2: Student perceptions of the impact of selected research-led teaching practices on student learning**



**Chart 3. Student perceptions of the impact of selected research-oriented teaching practices on student learning**



**Chart 4. Student perceptions of the impact of selected research-based teaching practices on student learning**



As can be seen from the charts each link was felt to be beneficial to student learning by a majority of students. The links felt to be beneficial to learning by the largest majority of students were reading lists containing key research papers (82%) and conducting research in dedicated modules (80%). The latter finding is congruent with the finding of Turner, Wuertherick and Healey (2008) who found that students felt that learning through doing their own research was the most effective form of learning with regard to research however the links felt to be beneficial by the least number of students were conducting research as part of a work placement (69%) or in non-dedicated

modules (68%). This suggests that students perceive that the value of conducting their own research will vary according to the context in which the learning takes place with a higher proportion of students perceiving positive impact from dedicated modules rather than research in other contexts.

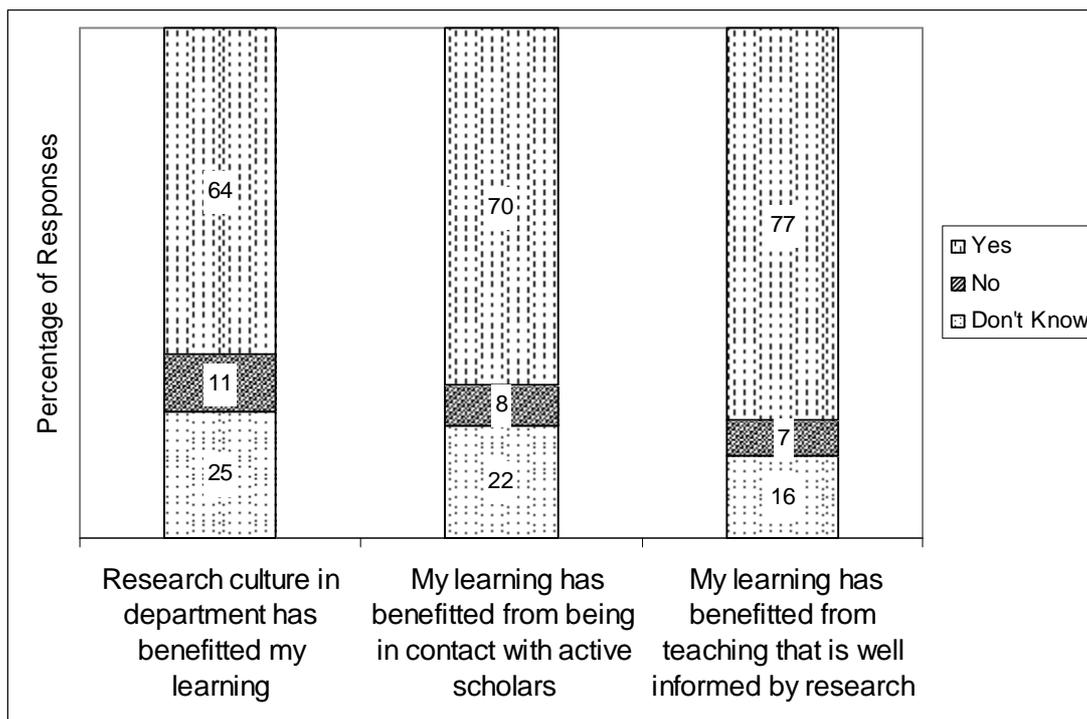
Some reasons given by survey respondents as to why teaching-research links would be beneficial to learning were that such links would provide an intellectual challenge, “all aspects that promote student involvement that takes away the comfort zone of sitting in lectures and copying notes from the slides should stimulate learning” and would promote independent learning, “(research) takes you out of the classroom to do independent work and rely on yourself”. Some students also expressed the idea that engaging in research would necessitate interaction with others, “active involvement in research means you can learn from your own participation, from your peers and from experienced researchers like lecturers”.

Only small percentages of students felt that any of the links would negatively affect learning (two per cent on average) though a larger percentage (17% on average) felt that links would have neither a positive nor a negative impact on learning. A couple of comments from students suggested a feeling that research was not relevant to their course, “I study law and it isn't our goal to research new things, we should first have a proper grounding in the already available information” or their career plans, “...research in itself does not often form a big part of one's working life”. Some students felt that research was not immediately beneficial but might prove so later, “when I am further down the line, my research findings will help, but they are not relevant in the early stages of my new career; there are higher priorities”. Six per cent on average of students did not know whether each link would have a positive or negative impact on learning.

### ***Research Environments and impact on learning***

The following chart shows student perceptions of the benefit of learning in a research environment:

#### **Chart 5. Student perceptions of the benefit of learning in a research environment**



As can be seen from the chart, the closer the research activity to the student's immediate learning environment the greater their awareness of it and also the higher the percentage of students citing that their learning has benefited as a result.

## **Student awareness of research**

**Table 2. Student awareness of various research-related activities**

Research seminars	69%
Books, articles or other staff research output	78%
Notice boards displaying research opportunities	62%
Research posters / displays	58%
Existence of research units	47%
Areas with national / international reputations	39%

Using categories from Healey, Jordan and Short (2002) the survey asked students to detail their awareness of research. The afore-mentioned research by Turner, Wuetherick and Healey (2008) used the same categories and compared responses from three institutions, a Canadian research-intensive, a UK research-intensive and a UK less-research intensive institution. Responses from the NTU survey generally lie between the UK less research intensive and UK research intensive institutions although student awareness of research units and areas of national/international research reputation was higher than the UK research intensive, perhaps in part explained by the fact that the NTU survey was undertaken just a month before the RAE announcements 2008. This suggests greater than average student awareness at the institution given that NTU would most accurately likely be categorised as 'UK less research intensive' if included directly in a comparable study.

## **Student awareness of staff research**

A majority of 69% of respondents believe that at least some of the staff members who teach them carry out their own research. Of the 69% who believed teaching staff were researching 89% stated that some staff members use their research within their teaching and 11% stated that all staff members use their research within their teaching. Five per cent of students believe that the staff members who teach them do not carry out their own research. The most pertinent finding for NTU was that a quarter of students *did not know* whether any of the staff members who teach them carry out their own research, suggesting an opportunity for staff to be more explicit about their research interests and activities with their students.

## **Student perceptions of staff research**

During interviews several staff expressed the view that students were likely to perceive staff research in a negative light. The survey responses from students however suggest a more positive student view of staff research as only low percentages reported each given negative effect of staff research:

**Table 3. Student-reported negative impacts of staff who teach them being involved in research**

Lack of interest in teaching and facilitating my learning	7%
Lack of availability	9%
Inability of staff to explain material	10%
Lack of interest in my academic welfare	5%
Research interests distort what they teach	6%

\*statements from Healey, Jordan and Short (2002)

As can be seen from the table fairly low percentages of students cited negative impacts to learning. This held true even when data was compared with the institutions from the Turner Wuetherick and Healey study. A few students elaborated on their responses with comments relating to staff's teaching capabilities, "...some aspects taught to us by staff carrying out research were irrelevant to our own work", "(staff) are very knowledgeable but cannot put this across" and staff priorities, "...everyone is passing through and doing their own thing ... at the end of the day they (staff) are researchers not teachers and there is a distinct difference".

Percentages of students reporting positive effects of staff research were much higher:

**Table 4. Student-reported positive impacts of staff who teach them being involved in research**

Increased understanding	68%
Stimulated interest and enthusiasm	56%
Increased awareness of methodological issues	41%
Development of research skills	43%
Motivation to pursue PG study	26%

\*statements from Healey, Jordan and Short (2002)

Development of research skills was notably high when compared with the institutions from Turner, Wuetherick and Healey suggesting *research-oriented* teaching to be a particular strength at NTU.

During interviews staff had outlined various benefits for themselves of discussing their research with students and/or involving students directly in their research. Some staff noted that sometimes teaching informed research as well as vice versa. Benefits cited included opportunities to review research mechanisms and realise shortfalls in own knowledge, opportunities for two-way dialogue with students on research processes and findings, opportunities for staff-student research collaboration which might lead to better quality research, “when students are working in your area it becomes a fluid two-way process”, opportunities to practice and review dissemination styles, identification of possible future areas for research. All these benefits are congruent with Brew’s notion of research-informed teaching as a tool for building inclusive academic communities (Brew 2006).

Staff felt that there would be multiple benefits for students of staff involving students in their research, both as co-researchers and also as ‘critical friends’ in a ‘*research-tutored*’ sense (Healey and Jenkins 2009), i.e. through discussing research with students rather than involving them directly as co-researchers. One staff member commented, “they (students) always see the use of taking part in research when there are clear benefits for staff, students and interested audiences”. Suggested benefits from such involvement were increased interest in and motivation for learning, better clarification of abstract ideas and increased staff credibility, “if they (students) can see you are on top of the game they respond to that”. In addition some felt that such involvement would enable a smoother transition from knowledge-based to practice-based studies as well as increasing awareness of research and on a practical level where staff discuss or present findings, appreciation of academic presentation. Others suggested that including students in staff research would result in improved subject health as it would most likely lead to increased credibility, relevance and contemporariness of study programmes, ‘staff members’ involvement in research means that students (who co-research) get to learn on the shop-floor. We are at the coal face”. In addition involving students in staff research was considered to be a useful tool to realise shortfalls in students’ research skills and knowledge.

A number of student respondents commented on the impact of staff research on student learning, generally citing similar benefits to those suggested by staff themselves including increased interest in and motivation to learn, “seeing the lecturers talk enthusiastically about their areas of research interest motivates me to learn more and to develop my understanding of areas I myself find interesting”, better clarification of abstract ideas, “relating the course material to actual data enforces it so much more” and an enhanced sense of being part of an academic community, “... it makes me as a student feel that I am at the very source of information that has sometimes not even been published yet, so in many ways I get to know some things ahead of others in my field”.

Related to this it was felt that learning about staff research enabled students to appreciate lecturers' expertise, "realizing the teacher as a role model through their knowledge for their subject" and credentials, "they (staff) know exactly what they are talking about, and can therefore have valid opinions on a topic". Some students articulated a general sense of the value of learning about lecturers' research, "the more involved and familiar a student makes them self within other research projects can only have a positive effect upon their own research project". Other students felt that students should even have a more active role in staff research, "I think there should be more opportunity for students to get involved in lecturers' research if they are interested in that particular subject".

## Conclusions

In conclusion, it should be acknowledged again that although a significant number of students responded to the NTU survey these were self-selected and constituted only 4% of the overall student population. As such caution needs to be exercised in drawing any wider conclusions from the responses given. What can be said is that the staff and students who participated in the research viewed a strong teaching-research nexus as largely beneficial to learning and to staff and students' sense of scholarly identity. Opportunities for students to learn about other people's research, to learn research skills and to learn through doing their own research were all viewed positively when communicated appropriately and when perceived as relevant to the students' course of study. Opportunities for students to learn about staff research particularly in the role of co-researchers were perceived as especially valuable.

The NTU findings to some extent support Healey's assertion (Healey et al 2010) that students may be becoming more instrumentalist in their approach to higher education, for example employability was the most cited motivation for attending university. Healey et al have suggested that students may increasingly reject more academically challenging aspects of the curricula such as dissertation modules however the NTU student respondents (albeit in a study predating the paper by Healey et al) perceived value in conducting their own research particularly in the context of dedicated modules such as dissertation modules.

Speculatively this suggests both a functional and ideological approach to research by the student respondents. This can perhaps be explained by their self-selection; they may be an interested minority among the student body. These are nonetheless positive findings in that it would appear that students perceive value in conducting research and that where links between research and employability can be forged then students are likely to view research even more positively. With these issues in mind and given that staff and students perceive both discipline-specific and generic benefits from a strong teaching-research nexus it would seem to make sense for teaching-research

links and their benefits to be made explicit to students from early on in their courses.

This would encourage an early understanding of the value and purposes of research for education, for working life and for local and global communities in terms of the over-arching aims of research to advance knowledge in order to alleviate suffering and build human relationships. The emphasis on enquiry skills and critical thinking offered by both research-informed teaching and the closely-related enquiry-based learning which Hutchings has defined as 'not so much research-led learning as research-like learning' (Hutchings, 2006) makes both attractive educational models in the face of the current global financial crisis. The crossover between these two models and sustainability education evokes, '... a transformative educational system which can contribute to society achieving sustainability' (Aubrey and McMorrow, 2010, p16).

On a practical level the emerging questions then for NTU as an institution mirror questions recently outlined by QAA Scotland for the sector more generally:

- How can students be encouraged to engage fully in their learning environments so that they (a) become aware of the research cultures in which they are immersed and (b) learn how to think and act explicitly in relation to these?
- How can academic staff be encouraged to (a) include students in their research activities at a variety of different levels in undergraduate and postgraduate taught programmes and (b) include students in such a way that authentic involvement and reciprocity are at the heart of the approaches? (Gunn, 2010)

### **Acknowledgements**

The invaluable contributions of NTU staff and student participants are acknowledged. The author would also like to acknowledge the vital contribution of Dr Lindsay Davies and Dr Chris Royle, both of Nottingham Trent University who co-designed the student survey also the Nottingham Trent University Working Party for Research Informed Teaching, in particular the Chairperson Professor Martyn Bennett, who provided guidance during the research process.

### **References**

Aubrey, A. & McMorrow, J. (2010) How could we model enquiry-based learning? Functional and values-based perspectives on student-centred education in: *Case Studies: CEEBL Supported Projects, 2008-10*, Centre for Excellence in Enquiry-based Learning (CEEBL), University of Manchester, pp4-20. Available at:

<http://www.campus.manchester.ac.uk/ceeb/projects/casestudies/97.pdf>  
[Accessed 15 May 2011]

Barnett, R. (2004) Learning for an unknown future. *Higher Education Research and Development*, 23(3), 247–260.

Brew, A. (2006) *Research and teaching: beyond the divide*. London: Palgrave Macmillan. .

Bryman, A. (1988) *Quantity and Quality in Social Research*. London: Unwin Hyman

Elton, L. (2008) Collegiality and Complexity: Humboldt's Relevance to British Universities Today. *Higher Education Quarterly*, 62(3), 224-236.

Griffiths, R. (2004) Knowledge production and the research-teaching nexus: the case of the built environment disciplines. *Studies in Higher Education*, 29(6), 709-726.

Gunn, V. (2010) What is topical/emergent in Research-Teaching linkages? Glasgow: QAA Scotland. Available at:  
<http://www.enhancementthemes.ac.uk/themes/21stCGraduates/outcomes.asp>  
[Accessed 22 September 2010]

Hattie, J. & Marsh, H.W. (1996) The relationship between research and teaching: a meta-analysis. *Review of Educational Research*, 66(4), 507-542.

Healey, M. & Jenkins, A. (2009) *Developing undergraduate research and inquiry*. York: Higher Education Academy.

Healey, M., Jordan, F., Pell, B. and Short, C. (2010) The research-teaching nexus: a case study of students' awareness, experiences and perceptions of research. *Innovations in Teaching International*, 47(2), 235-246.

Healey, M. Jordan, F. and Short, C. (2002) 'The student experience of teaching, research and consultancy' Questionnaire. Available at:  
<http://trnexus.edu.au/uploads/downloads/TR%20Questionnaire.pdf> [Accessed 10 July 2008]

Huggins, R., Jenkins, A., Colley, H., Price, M and Scurry, D. (2005) Realising teaching and research links in course redesign for delivery in semesters: mission statement rhetoric, mission impossible or mission accomplished? *Brookes eJournal of Learning and Teaching*, [online] Available at:  
[http://bejlt.brookes.ac.uk/vol1/volume1issue2/perspective/hugginsetal\\_05.pdf](http://bejlt.brookes.ac.uk/vol1/volume1issue2/perspective/hugginsetal_05.pdf)>  
[Accessed 24 March 2011]

Hutchings, W. (2007) *Enquiry-Based Learning: Definitions and Rationale*. Centre for Excellence in Enquiry-Based Learning, University of Manchester. Accessed online on 1<sup>st</sup> November 2010 at:  
[http://www.campus.manchester.ac.uk/ceeb/resources/papers/hutchings2007\\_defining\\_ebl.pdf](http://www.campus.manchester.ac.uk/ceeb/resources/papers/hutchings2007_defining_ebl.pdf)

Jenkins, A. and Healey, M. (2005) *Institutional strategies to link teaching and research*. York: The Higher Education Academy.

Jenkins, A., Healey, M. and Zetter, R. (2007) *Linking teaching and research in disciplines and departments*. York: The Higher Education Academy.

J. M. Consulting (2000) *Interactions between Research, Teaching, and Other Academic Activities: Report for HEFCE*. Bristol: Higher Education Consulting Group.

Newman, J.H. (1852) *The idea of a university*. London: Longmans Green.

Nottingham Trent University (2008) *Nottingham Trent University RAE 2008 results*. [online] Available at:  
<http://www.ntu.ac.uk/research/about/rae/index.html> [Accessed 15 May 2011]

Nottingham Trent University (2009) *Nottingham Trent University Annual Report 2009*. [online] Available at:  
[http://www.ntu.ac.uk/about\\_ntu/document\\_uploads/2009\\_annual\\_report.pdf](http://www.ntu.ac.uk/about_ntu/document_uploads/2009_annual_report.pdf) [Accessed 15 May 2011]

Nottingham Trent University (2010) *Nottingham Trent University Employability Information*. [online] Available at:  
<http://www.ntu.ac.uk/undergraduate/courses/employability/index.html> [Accessed 15 May 2011]

Quality Assurance Agency for Higher Education (2009) *Institutional Audit: Nottingham Trent University November 2008*. [online] Available at:  
<http://www.qaa.ac.uk/reviews/reports/institutional/NottsTrent09/RG411NottsTrent.pdf> [Accessed 15 May 2011]

Robertson, J. (2007) Beyond the 'research/teaching nexus': exploring the complexity of academic experience. *Studies in Higher Education*, 32(5), 541-556.

Simons, M. And Elen, J. (2007) The 'research-teaching nexus' and 'education through research': an exploration of ambivalences. *Studies in Higher Education*, 32(5), 617-631.

Trigwell, K. (2006). *Relations between research active teachers and student learning*. York: The Higher Education Academy.

Turner, N., Wuetherick, B., Healey, M. (2008) International Perspectives on Student Awareness, Experiences and Perceptions of Research: Implications for Academic Developers in Implementing Research-Based Teaching and Learning. *International Journal for Academic Development*, 13(3), 199-211.

Unistats (2010) *Nottingham Trent University National Student Satisfaction Survey Results*. [online] Available at:  
<http://unistats.direct.gov.uk/nStudentSurvey.do> [Accessed 15 May 2011]