

Research-led learning: the heart of a Russell Group university experience

Summary

- The culture of **enquiry-based, independent learning in a world-class research environment** is at the heart of the student experience in Russell Group universities. Russell Group universities are committed to delivering the **added value** of a research-informed learning experience, with all the resulting opportunities and benefits for students. We recognise the need to demonstrate how the benefits which flow from learning in a research-intensive environment are **excellent value for money** for students.
- Research-led learning actively engages students in their learning experience, encouraging them to pursue new knowledge and to develop the independence of thought, critical thinking and **entrepreneurial skills** and ability to handle uncertainty and new problems – personal and professional skills that are integral to the graduate-level jobs that **develop our knowledge economy**.
- Quantifying the precise ‘**added value**’ of the learning experience provided in a Russell Group university is, of course, very difficult but the cumulative effect of the following outcome measures speak volumes about **the benefits of studying in a research-intensive learning environment (paragraphs 3-5)**:
 - employer satisfaction and **wage premiums**;
 - higher than average overall **student satisfaction** scores, including some of the highest scores in the sector;
 - high scores in **teaching quality** (as measured by student satisfaction but also consistently high external rating);
 - the highest **completion rates** in the sector;
 - high **competition** for places;
 - high rates of **progression** to further study.
- A **substantial and growing body of evidence** points to the **benefits** of fostering a research-led learning environment in higher education institutions, and the **value** of learning through research (**paragraphs 7-27**). These include:
 - access to **high quality research-informed teaching**;
 - **developing entrepreneurialism** and independent learning skills through enquiry-based learning;
 - access to a wide range of career options including **leading professions**
 - promotion of a research ethos and access to research opportunities;
 - positive impacts on students, including improved confidence and motivation.
- The Russell Group believes that the demonstrable advantages of attending a Russell Group university reflect the benefits to students of studying within a research-intensive environment.

- Whilst this paper wishes **primarily to consider what a research-led learning environment** looks like, it is important to recognise that Russell Group universities **can demonstrate excellence in both research (paragraphs 31-33) and teaching (paragraphs 34-36)**, both of which add value to the student experience and contribute to a research-led learning environment.
- In Russell Group universities, students have access to leading academics at the forefront of their field internationally; learn within a research culture which spans the academic community; and are able to develop valuable **personal and professional skills** through an academic learning experience that is central to their university experience.
- All Russell Group universities are committed to **supporting** the research-learning relationship **effectively** to deliver a research-enriched learning experience which equips students with **valuable life and professional skills**. They are well-placed to **support the relationship between learning and research**:
 - they offer world-class research, library and teaching facilities;
 - as large, research-intensive institutions, they offer significant breadth and depth of research expertise;
 - there is a **strong institutional focus** on supporting the research-learning relationship and promoting enquiry-based learning.
- Recent public debate has revolved around **two related but distinct arguments: whether research-teaching links are found in universities; and whether research-teaching links can be beneficial**. The reported absence of links in some specific instances has encouraged a **false dichotomy between teaching and research** – in theory, not in practice – and has overshadowed the known benefits arising from learning through research. This report, therefore, seeks to re-emphasise:
 - the evidence that shows the **added-value** of studying in an environment in which research-led learning is supported
 - demonstrate the **many examples of where this environment is flourishing within Russell Group universities**
 - highlight the ongoing programme of work to **support and encourage** an environment of research-informed learning.

Conclusion: the Russell Group graduate

- In recent years, Russell Group universities have increasingly focused on maximising the opportunities they are able to offer to their students as research-intensive institutions. This includes: a prioritisation of and emphasis on **enquiry-based learning**; structured learning which supports students to **share in the responsibility for their own learning**; involving students in the research culture of both their department and of the institution as a whole; identifying the **valuable skills and attributes** that students acquire as a result of their engagement with independent learning and scholarship; and supporting students to **articulate** these.
- One of the most beneficial aspects of research-teaching links is being able to **engage students actively as independent learners** in a culture of research in which learning is integrated into the ongoing process of scholarship. It enables the development of **crucial attributes**, through research, team-working, communication, and analytical and problem-solving skills, which mean that Russell Group graduates are held in **high esteem by employers**.

Added-value: the Russell Group student learning experience

1. The research-intensive environment of Russell Group universities provides the circumstances in which research-led learning can flourish, **enhanced and fostered through institutional culture and strategy**. As large research-intensive institutions, Russell Group universities are able to instil a culture of research across the breadth and depth of the academic community (from staff to students), as well as provide the resources and facilities to support and exploit the relationship between teaching, learning and research for the benefit of students. The **size and success of the research endeavour** in Russell Group universities enables them to offer a student experience where teaching and learning are enriched and informed by leading-edge, world-class research.
2. Although it is difficult to identify conclusive evidence of the research-teaching relationship, a growing body of research suggests that there are significant benefits of a learning experience grounded in a culture of research and enquiry. The Russell Group believes that **the academic experience in Russell Group universities offers significant advantages to students**, not least in terms of the emphasis on the culture of research and enquiry-based learning which encourages the development of independence of thought and critical thinking and analytical skills.

The **University of Southampton** emphasises the linkages between research and teaching activities through its focus on student-centred **research-led learning** which offers students a **learning experience that mirrors the research experience** as much as possible, with the aim of developing valuable **skills for employment** as well as facilitating progression to postgraduate study. The QAA has identified “the approach taken by the University in fostering research-led teaching” as a feature of good practice and found that “the University was **actively promoting staff engagement with research-led teaching**.”

3. While no causal relationship can be established, a **clear cumulative added-value factor can be identified for students and graduates of Russell Group universities**. The **high competition for places** (an average of around 8 applications per place across Russell Group universities, and up to 20 applications per place for some courses), **student satisfaction** (85 per cent across Russell Group universities, compared to 81 per cent for the sector), **completion rates** (non-completion is 4.3 per cent on average across Russell Group universities, compared to 7.7 per cent for the sector as a whole), **employer satisfaction** (as discussed above), **external rating of teaching** (shown by positive QAA institutional reviews, high satisfaction ratings for teaching quality in the National Student survey and, previously, high TQA scores), **attainment rates** and **progression to further study** (Russell Group universities have some of the highest percentages of undergraduates proceeding to postgraduate study) all point to significant advantages of studying in a research-intensive environment – and in most cases, in attending a Russell Group university.

4. Wage premiums – a clear indicator of value in the graduate labour market – demonstrate that Russell Group graduates are highly esteemed by employers because they benefit from some of the **highest returns on their degrees**. Studying at a Russell Group university confers a **wage premium of approximately 10 per cent** compared to modern universities, after accounting for A level scores, parental background, school attended and other factors affecting wages.¹ It is likely that the education provided by Russell Group universities, with its emphasis on enquiry-based learning and engaging students as independent, critically-minded learners, is a significant factor in producing **graduates that are highly valued by employers**.
5. This is further evidenced by the world class rating given to Russell Group graduates in international employer recruitment surveys: five Russell Group institutions featured in the top ten in the THES *World University Rankings 2007* Employer Review², and 70 per cent of Russell Group universities were in the top fifty, with an average employer review score for Russell Group universities of 94.6 (compared to an average of 74.7 for the thirteen non-Russell Group universities in the top two hundred universities). Additionally, Russell Group universities' average career prospects score³ in the *Guardian* university league table for 2009 was 74 per cent, compared to an average of 60 per cent for the rest of the sector.
6. The emphasis on research-led learning in Russell Group universities represents excellent value for money, fully exploiting existing learning and teaching and research resources. By drawing on both teaching and research to inform and structure learning, Russell Group universities are capitalising on the synergies that exist between teaching and research investment, recognising that **investment in one activity can enhance the other** – for example, investment in pedagogical research can lead to improvements in teaching methods; improved research facilities can support learning; innovative learning spaces can benefit research activity; and students being taught by research-active staff, who can teach them about research and research processes (in addition to simply transmitting knowledge), means that the substantial investment in research in Russell Group universities also benefits teaching.

The benefits of studying in a research-led learning environment

7. Evidence points to the importance of **“a long-term, multi-faceted experience that draws the undergraduate into the culture and process of research”** at university⁴, thereby enhancing the learning experience and enabling students to develop valuable professional skills. Reports by HEFCE⁵ and the Research Forum⁶ both point to the benefits of learning in a research-intensive environment; the latter in fact suggests that those students who do not, are at a disadvantage.

¹ Chevalier, A. and Conlon, C., “Does it pay to attend a prestigious university?” Centre for the Economics of Education, LSE (table 5 for the 1995 cohort, page 29).

² <http://www.timeshighereducation.co.uk/hybrid.asp?typeCode=144>. This features 19 Russell Group universities in the top 200 universities world-wide (17 in the top 100).

³ This represents the percentage of recent graduates in graduate-level employment.

⁴ Russell, S., *Evaluation of National Science Foundation Support for Undergraduate Research Opportunities*, 2006.

⁵ Higher Education Funding Council for England, *Fundamental Review of Research Policy and Funding: Final Report of the sub-group to consider the interaction between teaching, research and other activities of HEIs*, 2000.

⁶ Research Forum, “The Relationships Between Research and Teaching in Institutions of Higher Education”, June 2004.

The QAA's institutional audit of the **University of Cambridge** stated: "there is no doubt that the **integration of teaching and research is culturally embedded throughout the University** (and structurally so in the college system)". This can be seen in particular through the University's **Undergraduate Research Opportunities Programme (UROP)**, modelled on a similar scheme at the Massachusetts Institute of Technology and developed through the Cambridge-MIT Partnership, enabling students to "step outside the classroom work on projects with faculty members as **fully participating members of a research team**". The Cambridge UROP is available across a number of departments and faculties; in 2007 and 2008 applications were invited for participation in research projects in engineering, chemical engineering, the Computer Laboratory, plant sciences, genetics, physics, social anthropology, music, materials science, mathematical sciences and in the Centre for Applied Research in Education Technologies. <http://www.eng.cam.ac.uk/teaching/urops/>

8. On balance, **the weight of evidence suggests that research-led learning offers significant benefits to students' academic, personal and professional development**. Three broad advantages arising from learning through research can be ascertained:
- the **motivation and development of students** as a consequence of exposure to expert subject matter;
 - promoting the value of **enquiry and 'deep' approaches to learning**;
 - and helping to develop **transferable skills through engagement in research** tools and processes.⁷

The **University of Sheffield's** Learning, Teaching and Assessment Strategy has a clear view of the "Sheffield Graduate", emphasising the important role of enquiry-based learning in developing students. The Strategy states "The most distinctive feature of our research-led approach to learning and teaching is the way our **students benefit from learning experiences that mirror research processes and activities**." The University ensures that all departments offer students opportunities to become involved in enquiry-based learning and to develop their skills in applying research methodologies and techniques. The QAA's institutional audit concluded that "the University is effective in maintaining links between its research agenda and activities and the teaching and learning opportunities for students", noting that "the research activities of staff provide the **challenging environment** within which University of Sheffield students can **develop the attributes that will enhance their employability**...[The University] also seeks to ensure that research quality is aligned with exciting pedagogy".

The benefits of research excellence

9. As research-intensive institutions that undertake much of the excellent research that is done in the UK, Russell Group universities are able to offer students insight into the wide and varied uses of research and its importance to the UK's society and economy. The research undertaken in Russell Group universities spans a wide range of disciplines and the full spectrum from basic to applied research; studying in universities which represent a high volume of research excellence allows students to engage with and learn from excellent research of all kinds. Students at Russell Group universities are part of a large academic community – the high numbers of

⁷ Blackmore, P. and Fraser, M., "Research and teaching: making the link" in Richard Blackwell and Paul Blackmore (eds.) *Towards Strategic Staff Development in Higher Education*, Open University Press, 2003.

postgraduate students⁸ demonstrates that research is not only something in which academic staff are engaged, but that students too are part of the research enterprise and the pursuit of knowledge, something reinforced through undergraduate students' own research experiences and engagement with researchers.

10. Russell Group universities' success in establishing spin-off companies⁹ and in developing collaborations with a wide range of external organisations, from businesses to other research organisations and Government departments, is testament to their **success at knowledge transfer** – something to which the highly skilled graduates of Russell Group universities will also make an important contribution. Students have access to staff who are consulted as experts in their field and who make important contributions to business development, solving problems and public policy. This external engagement through research activity demonstrates how research is connected to and vital for wider society and how it drives innovation and has an enormous impact on economic prosperity.

Learning is led by research-active academics

11. Recognising the potential for students to be enthused and motivated by leading experts in their field, many Russell Group universities are taking steps to ensure that **all students have access to eminent academics** early in their university careers. The various benefits of being taught by research-active academics have been summarised as follows: academics are at the cutting edge of their field and therefore have more authority to teach their subject and command more respect from students; they teach more relevant and up-to-date material; they gain enthusiasm for their subject from being research-active; and they teach from their immediate research experience, rather than second-hand scholarship.¹⁰

Access to leading researchers is a key benefit of studying in a research-intensive institution, with students having **exposure to world-class research activity at first hand**:

- The **London School of Economics and Political Science** is committed to offering students the opportunity to engage with leading academics. The QAA's institutional audit found that students "appreciated their exposure to leading researchers in the field and enjoyed contact with those School academics currently engaged in shaping national policy. For many students...these features provide a rich and intense learning opportunity."
- **King's College London** sees integrating students into the academic community through exposure to researchers and the research culture as a key feature of the learning experience. The QAA's institutional audit noted the College's "academic staff who were clearly enthusiastic about, and committed to, their role as teachers within an active research context" and found that, "students are in a position to benefit from studying in an environment where research is an integral part of academic activity."

⁸ Around a third of all students in Russell Group universities are postgraduate students (Based on HESA data. 30% of all RG students are postgraduate students (headcount data, all levels and modes, including all UK, EU and overseas students).

⁹ The Russell Group also fosters the most long-lasting spin-out companies with the greatest annual turnovers. The number of active spin-off companies surviving at least three years is on average approximately five times greater from Russell Group universities, compared with the sector average (HEFCE, *Higher education-business and community interaction survey 2005-06*, 2007).

¹⁰ Coate, K., Barnett, R., and Williams, G., "Relationships Between Teaching and Research in Higher Education in England" in *Higher Education Quarterly*, Volume 55, No.2, 158-74, 2001.

12. In some disciplines, a close relationship between researchers and **leading professionals** provides **privileged access and teaching of the latest practice**: one particular example is medical students at Russell Group universities who are able to gain experience of research at the academic-clinical interface through being taught in university hospitals, with first-hand exposure to the application of research in a clinical setting. Such experiences also deliver **first-hand experience of innovation in research and application and of how knowledge is transferred from universities and researchers**.
13. Russell Group universities also offer **valuable cross-disciplinary opportunities** (due to the range of subjects and disciplines available for study), enabling students to take modules and courses not directly related to their field of study or to study specialist topics in great depth, **enriching their learning experience** (the importance of interdisciplinary learning was noted by the Boyer Commission).

Developing entrepreneurialism and independent learning through enquiry-based learning

14. Information from Russell Group institutions suggests that a significant advantage of enquiry-based learning – that is, encouraging students actively to pursue new knowledge and learning through a process of enquiry, rather than passively being taught – enables them to develop analytical skills and to critically engage with and challenge new ideas and concepts. It also **develops their ability to be innovative** and problem-solving. Students develop an understanding of how knowledge is created and contested – a vital transferable skill highly valued by employers. They are also able to gain an understanding of how the body of knowledge is developed in their discipline and **develop critical thinking skills built around research experiences**.
15. A recent CIHE report looked at the importance of an approach to learning that had **problem-solving at its core**. It found that “universities are valued by employers because they help develop through long courses the **analytical reflective practitioners** who can transform organisations; they offer **intellectual ‘stretch’**; **support innovation and creativity**; and provide access to in-depth expertise in a particular field.”¹¹
16. Enquiry-based learning draws on research in a number of ways, from investigating research findings to incorporating research processes into the learning experience, so that students are active participants in the university’s academic community. The ability to transfer the skills of **looking at problems** critically from different perspectives and **in new and innovative ways is a key skill** in a rapidly evolving work place. Exposing students to the research process and showing them that knowledge is contested gives them the **confidence and ability** to tackle different situations and new problems.

¹¹ CIHE, *Influence through collaboration: Employer Demand for Higher Learning and Engagement with Higher Education*, 2008; <http://www.cihe-uk.com/docs/0809CollabReport.pdf>

Entrepreneurship in Russell Group universities

Russell Group universities are increasingly developing best practice in entrepreneurship and enterprise education for their students. Activity includes:

- **LSE's** Entrepreneurial Internship Scheme provides an opportunity for new and developing businesses to access some of the most sought after graduates in the country, who are looking to develop their research, problem-solving and analytical skills in a dynamic, entrepreneurial environment
- units to provide cross-faculty enterprise education at **University College London** and the **University of Nottingham**;
- Science Enterprise Centres established at the Universities of **Bristol** and **Sheffield**;
- the partnership to deliver enterprise education between **University College London** and London Business School;
- the Prospekt Partnership at the **University of Edinburgh** which aims to boost activities in knowledge exchange, entrepreneurship and public outreach; and
- the **Bristol** Enterprise Network.

In addition, Centres of Excellence in Teaching and Learning for Entrepreneurship have been established at the Universities of **Leeds**, **Nottingham**, and **Sheffield**.

Access to leading professions, a wide range of career paths and higher average wages

17. Evidence shows that graduates of leading universities are more likely to enter some of the most **prestigious and influential professions** including law, politics and journalism.¹² Russell Group graduates also dominate the **medical professions** with three-quarters of the nation's doctors and dentists coming from Russell Group universities. The major graduate recruiters often target Russell Group universities in their 'milk round' recruitment process. A Russell Group graduate will have a **wide-range of career options** on graduation including some of the **most sought-after positions**.

18. Further evidence of the satisfaction of employers with Russell Group graduates and the access to highly skilled posts is the **significant wage premium** received by graduates from Russell Group universities (see paragraph 4). A recent study from the LSE shows that attending a 'higher quality' institution leads to higher wages of between 10 and 16 per cent.¹³

¹² Research by the Sutton Trust into the legal and journalism professions has shown that the majority of barristers, judges and partners in the City's five 'magic circle' law firms attended a leading university, as did the majority of leading journalists. In addition, nearly half of MPs and over half of peers attended a leading university. (Source: Sutton Trust Briefing Note: *The Educational Backgrounds of the UK's Top Solicitors, Barristers and Judges*, 2005; The Sutton Trust, *The Educational Backgrounds of Members of the House of Commons and the House of Lords*, 2005; The Sutton Trust, *The Educational Backgrounds of Leading Journalists*, 2006.)

¹³ 2008 CEP research shows that if a student attends an institution in the highest quartile - as determined by a number of different quality measures (RAE scores, retention rates, and tariff scores) - this leads to a higher wage of between 10 and 16 per cent (depending on the measure) compared to an individual who attends an institution in the lowest quartile. Although the report does not identify individual institutions, Russell Group universities achieve high RAE score, retention rates and tariff scores so it is very likely they are in the top quartile of institutions in the UK. "University Quality and Graduate Wages in the UK" Hussain, McNally and Telhaj, Centre for Economic Performance, London School of Economics, 2008.

19. Research published by the CIHE which explored the views of a range of employers from small and large businesses, highlighted the “**additional value**” **sought by employers** from graduates, including ‘**deep**’ **intellectual capabilities** as well as communication skills (86%); team-working skills (85%); confidence (80%), planning and organisations skills (74%) and analysis and decision-making skills (67%).¹⁴

The Queen’s University, Belfast enables level 3 **undergraduate** students in anatomy and physiology to complete a **lab-based research project** – with the help of funding from the department – rather than a library-based dissertation. This is a practice which external examiners’ reports have consistently praised for driving up levels of achievement. There are also opportunities for some physiology students to take advantage of a year of **research study** in Nevada. This is one example of the University’s commitment to **enhancing their graduates’ employability** by providing opportunities for students to develop valuable skills through research-led learning. As well as the teaching of employability skills being **embedded within the curriculum**, the University’s new employment and skills policy seeks to highlight the importance of skills such as leadership, good communication and team-working.

Student Satisfaction

20. Student satisfaction scores, although imprecise, offer a partial indicator of the high-quality student experience offered by Russell Group universities. It is notable that students at Russell Group institutions express **high levels of satisfaction** with their university experience. Russell Group universities are continually highly rated for overall satisfaction in the National Student Survey – in response to the 2008 National Student Survey, **86 per cent** of students at Russell Group universities agreed that they were generally satisfied with the quality of their course. This is higher than the sector average for overall satisfaction (82 per cent) and some Russell Group universities received overall satisfaction ratings as high as 93 per cent.
21. Additionally, Russell Group universities have the **highest student completion rates** across the university sector, with an average non-completion rate of **4 per cent** – below 2 per cent in some institutions – compared to a UK sector average of 7.7 per cent (as high as 30 per cent in some institutions). High completion rates indicate that students at Russell Group universities are well supported in a learning experience which enables them to develop their potential and achieve success. The Russell Group would suggest that learning in a research environment and a culture of enquiry is an important contributory factor to student satisfaction and retention.

High student expectations and performance

22. Research-led learning, and in particular undergraduate research opportunities (see below), help to encourage **high academic and professional expectations among students**.¹⁵ The high competition for places at Russell Group universities means that undergraduate students learn with a high calibre peer group who hold high

¹⁴ Archer, W. and Davison, J., “Graduate Employability: What do employers think and want?”, Council for Industry and Higher Education, 2008.

¹⁵ Russell, 2006.

degree expectations which are fostered by the research-intensive environment¹⁶. The research-intensive environment and excellence in research of Russell Group universities are important in attracting students¹⁷; Russell Group universities also produce high-quality graduates who perform well academically. As demonstrated by the value-added measure of the *Guardian* university league table for 2009¹⁸, based on a comparison of individuals' degree results with their entry qualifications, there is a **clear added-value premium for graduates of Russell Group universities**, with an average ranking of 5.9 out of 10 for Russell Group universities (compared to a non-RGU average ranking of 5.4 out of 10) and as high as 7.2 out of 10 for some institutions.

Undergraduate research opportunities

23. As institutions with a strong research mission, Russell Group universities are able to provide their students with opportunities to directly experience and participate in research (see below). Studies in the US exploring the benefits of undergraduate research experiences in universities there have found that **undergraduates across all disciplines benefitted significantly** from these opportunities, cognitively, professionally and personally.¹⁹ Recently, Professor Nigel Thrift in his review of research careers recommended that a national undergraduate research experiences programme should be established in the UK to offer undergraduates experience across different research environments²⁰.

The **University of Birmingham** places **enquiry-based learning** at the **heart of its Vision for Learning** and is developing an institutional statement on the Birmingham experience, including the **benefits of learning in a culture of enquiry** and defining the capabilities that Birmingham graduates should expect to have. The University is also exploring different models of supporting the research-teaching nexus that are relevant to specific disciplines. With TQEF funding, Birmingham is running the Learner Independence Project, a beacon project in different Schools to develop initiatives around enquiry-based learning and share best practice.

24. A number of benefits from undergraduate research opportunities were identified including: high satisfaction rates with research experiences, student awareness of resulting advantages – such as increased understanding of research, increased confidence in research skills and career prospects – and higher expectations of

¹⁶ Russell (2006). found that it was the students with the highest degree expectations that were attracted by research opportunities.

¹⁷ The latest results from i-graduate's International Student Barometer (the largest study of the international student experience) found that In selecting a university, 90% of students noted research quality as important determining factors in choosing a Russell Group university, with 82% of students then noting that research at the university was an important learning element of their course. In addition: 95% of students believed their lectures were experts in their subject area; 89% were satisfied with the academic content of their course; and international students had a higher rate of overall satisfaction at Russell Group universities than by the average overall benchmark.

¹⁸ <http://image.guardian.co.uk/sys-files/Education/documents/2008/05/08/rankingsrevised.xls>. The rankings feature seven Russell Group universities in the top ten and all Russell Group universities in the top 50 institutions).

¹⁹ See Lopatto, D., "What Research on Learning Can Tell Us about Undergraduate Research", presented at the 10th National Conference of the Council on Undergraduate Research, La Crosses, WI, 2004; Seymour, E., et al "Establishing the benefits of research experiences for undergraduates in the sciences: first findings from a three-year study" in *Science Education*, Volume 88, 493-534, 2004; Russell, 2006.

²⁰ Thrift, N., *Research Careers in the UK: A Review*, published by DIUS, 2008, p.15.

obtaining a PhD. Students surveyed in follow-up studies also said that their undergraduate research experiences had been important to their career decision.²¹

25. Whilst there has been no corresponding research into the benefits of undergraduate research opportunities in the UK, a number of Russell Group universities have introduced their own schemes in the belief of the considerable benefit that they offer to students. These schemes demonstrate how research is integrated into the curriculum at Russell Group universities, making an important contribution to students' academic experience and success.

- the **Cardiff University** Undergraduate Research Programme (CUROP) which provides funding for undergraduates to participate in research activity via extra-curricular projects that are linked to staff research interests;
- the **Imperial College London** UROP which enables students to participate in research across a number of placements available in the departments of the College;
- the **Leeds University** Research Experience (LURE) provides external sponsorship for medical students to work in research labs over the summer as well as participating in mentoring and outreach activity - the University is currently developing plans to expand the scheme to all students and is exploring sponsorship opportunities; and
- the **University of Warwick's** Reinvention Centre for Undergraduate Research, a collaborative project with Oxford Brookes University, funds undergraduate students to carry out research as well as funding academic and support staff to develop research-based teaching, promoting new teaching and learning methods focused on research-based learning and redesigning spaces and environments to support learning.

Progression to further study

26. It has also been noted that undergraduate research opportunities can encourage progression to further study.²² A large number of students from Russell Group universities go on to pursue doctoral study, which would suggest that students' experience of the research culture in Russell Group universities supports and realises their high academic expectations. In 2001-02, of the 10 higher education institutions with the highest percentage of first degree graduates progressing to research postgraduate study within 6 months, 6 were Russell Group universities²³. This trend has been maintained in recent years; in 2006-07 **over half of students progressing to postgraduate research degrees were from Russell Group universities** (3365 of 7725); nine Russell Group universities were in the top ten institutions with the highest number of students progressing to postgraduate research study (all Russell Group universities are in the top thirty).²⁴

27. According to research from HEPI, first degree graduates from the research-intensive 'old' universities are more likely to progress directly to postgraduate study, and in particular to postgraduate research study - for example, a graduate from the University of Cambridge was six times more likely to progress directly to a research

²¹ Russell, 2006.

²² Russell, 2006.

²³ These were: Cambridge (13.9%); Imperial (11%); Oxford (10.1%); Birmingham (6%); UCL (5.3%) and Newcastle (5%). HESA data for 2001-02.

²⁴ HESA, *Destinations of Leavers from Higher Education 2006-07*, 2008; data for leavers progressing to a higher degree mainly by research.

degree programme, compared with an average graduate from an English higher education institution.²⁵ Russell Group universities therefore make an important contribution to the education, training and development of the next generation of researchers, producing more than half of all doctorates in the UK (56 per cent²⁶ – despite representation just over 11 per cent of the sector).

Defining the relationship between teaching, learning and research

28. It can be difficult to define conclusively **what is meant by research-led learning**, particularly given that a ‘one size fits all’ approach to supporting this type of learning environment is unlikely to be successful. **Learning through research** exists in a variety of modes appropriate to individual institutions, departments and disciplines and is constantly evolving. However, it is possible to identify some of the broad approaches to promoting research-informed learning to help to **describe how the relationship exists in Russell Group universities and what it means for the student experience** – in particular, how the learning experience can reflect and draw from the research culture.

The **University of Oxford** states that “Oxford’s experience bears out the case presented in the Teaching-Research Nexus Project in that the benefits to students of learning in a research environment, from active researchers, are considerable: deepens students’ understanding of the knowledge bases of disciplines and professions, including their research methods and contemporary research challenges and issues; builds students’ higher-order intellectual capabilities and enhance their skills for employment and lifelong learning; develops students’ capacity to conduct research and enquiry; and enhances students’ engagement and develop their capacity for independent learning. Opportunities for undergraduate students to connect with the research of the discipline includes: learning about others’ research (research-informed learning); learning to do research (research skills and methods); and learning in a research mode (enquiry-based learning).

University of Oxford, Written submission to the House of Commons Innovation, Universities, Science and Skills Select Committee, Students and Universities Inquiry, December 2008.

29. Research-led learning can be supported in a number of ways, including through the content and structure of the curriculum, through teaching practice, and through providing student research opportunities – variously “research-led”; “research-based”, “research-oriented” or “research-informed” teaching and learning²⁷. The importance of **developing a research culture to support the integration of research, learning and teaching** and providing opportunities for students to engage directly in research, has also been observed²⁸. In particular, enabling students to

²⁵ HEPI, *Postgraduate Education in the United Kingdom*, 2004.

²⁶ HESA, *Performance Indicators 2007-07*, 2008.

²⁷ Griffiths, R., “Knowledge production and the research-teaching nexus: the case of the built environment disciplines”, *Studies in Higher Education*, 29:5, 709-727, 2004. Griffiths developed a typology drawn from the findings of Oxford Brookes University’s LINK project on enhancing teaching-research links in the Built Environment disciplines (now the Reinvention Centre for Undergraduate Research at Oxford Brookes and Warwick Universities). Jenkins and Healey (2005) note that these definitions were amended in 2003 by the then Pro Vice-Chancellor of the University of Manchester, Michael Bradford, to: learning about others’ research; learning to do research; learning in research mode; pedagogic research.

²⁸ See Blackmore, P. and Fraser, M., 2003.

develop **independent learning skills through research** and knowledge of the research process and to understand the role of research in their discipline. This demonstrates to them how knowledge is developed and critiqued and supports them to continually **pursue knowledge and solve new problems**.

30. Research-led learning enables students to develop an understanding of the processes of knowledge and the capacity to acquire and challenge new knowledge – increasingly important skills in the context of the global knowledge economy. Russell Group universities devise methods of teaching and learning which are explicitly designed to model or reflect the research process and to explore the limitations and contestation of knowledge. Research-active staff are able to explain and demonstrate to students from direct experience what research involves and how knowledge is created. Whilst independent learning is encouraged, this is in a context of structured research-led learning in which students are supported to develop progressively to take on greater self-direction.
31. Russell Group universities promote a **variety of interactions between teaching, learning and research activities**²⁹, focusing on the facilitation of learning³⁰ so that students are encouraged to engage critically in the learning process, and recognising that teaching and learning methods should be adapted as appropriate according to different disciplines and departments³¹. The aim is to provide a research-led learning environment; where the curriculum is informed by up-to-date academic research interests; and where students are engaged in the process of enquiry, in the overarching context of the **well-established research culture and broad scope of research activity** in Russell Group institutions. Educational and pedagogical research is also an important resource in improving methods of teaching and learning³² – most Russell Group universities have their own educational research centres, which inform teaching practice.

The **University of Leeds** puts the translation of excellence in research into learning opportunities for students at the centre of the University's Strategy Map. The focus is on **actively engaging students in research processes** to develop their knowledge and understanding, and equip them with valuable life and professional skills for both academic and other careers. Through 'Leeds for Life', students learn to articulate confidently the skills derived from their education in a research-intensive institution. One approach is to **link students with researchers** – commonly PIs – so they are **involved in the central activity of research projects**, and for researchers to teach not only subject content but research skills and processes as well. The QAA's institutional audit identified "the varied mechanisms for **making research-led teaching increasingly a distinctive feature of the University**" as a feature of good practice and noted that "The University expects learning and teaching to involve teaching staff who are engaged in world-class research and innovative professional practice, curricula that reflect recent developments, and a **culture of enquiry and challenge that encourages research skills**...A concern to integrate research and teaching pervades the University, and the enthusiasm individual staff and students was evident to the audit team."

Two Higher Education Academy reports on linking teaching and research have featured a significant number of examples of best practice from Russell Group universities (Jenkins and Healey, 2005; and Jenkins, Healey and Zetter, 2007).

³⁰ The importance of this is noted in Brew, A., "Research and teaching: changing relationships in a changing context," *Studies in Higher Education*, 24:3, 291-301 (1999).

³¹ The importance of supporting links in ways appropriate to difference disciplines is noted in, for example: Brew (1999); Robertson, J. and Bond, C., "Experiences of the Relation between Teaching and Research: what do academics think?" in *Higher Education Research and Development*, 20:1, 5-19 (2001).

³² Noted in Gordon et al., *Building capacity for change: research on the scholarship of teaching*, Report to HEFCE, 2003.

32. It is important to recognise the nature of the provision that Russell Group universities are able to offer by virtue of the size of their institutions, the scale of their research mission, their **world-class research and teaching facilities**, the **breadth of their research expertise**, and the **strong institutional mission focus** on enhancing learning through research. Russell Group universities, as research-intensive institutions, are able to foster the interface where research, learning and teaching meet³³ and are placed to introduce their students to an in-depth research culture³⁴ and to an intellectual and academic community, enabling them to offer a **highly-valued experience of research-led learning and scholarship to their students**.

Excellence in teaching and research: one part of research-led learning

33. All Russell Group universities are clear that their aims are to deliver excellence in both research and teaching.³⁵ Whilst this paper wishes **primarily to consider what a research-led learning environment** looks like, it is important to recognise that Russell Group universities **can demonstrate excellence in both teaching and research**, both of which add value to the student experience and contribute to a research-led learning environment.

Research excellence:

34. Russell Group universities' strengths in research are also clear from the results of the 2001 RAE, in which **78 per cent of academic staff in Grade 5* departments** and 57 per cent of staff in Grade 5 departments were based in Russell Group universities. This shows that **much of the UK's highest-quality research is carried out by academics employed in Russell Group universities**, meaning that students at a Russell Group university will have the opportunity to be taught by and learn from academics performing **internationally-recognised research** at the leading edge of their fields.

35. The research excellence in Russell Group universities helps to drive the UK's position as an international leader in research³⁶. Evidence shows that the **UK is number one in the G8 of advanced industrial nations for research productivity**³⁷: UK researchers produce 16 research papers per \$1 million of

³³ This is identified as a key element in promoting the research-teaching relationship in Coate, Barnett, and Williams, (2001).

³⁴ This aspect of research-intensive institutions is noted by, for example: the Boyer Commission on Educating Undergraduates in the Research University, *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*, 1998; in Prince, Felder and Brent (2007). The Boyer Commission report emphasised that research-intensive universities have a responsibility – and a distinctive ability – to introduce their undergraduates to enquiry-based learning and ensure they can benefit from the intellectual resources, research opportunities, and cross-disciplinary experiences available.

³⁵ This is highlighted on websites and in strategic plans.

³⁶ For example, all of the UK universities in the 2008 Shanghai Jiao Tong Academic Rankings of World Universities are Russell Group universities.

³⁷ *International comparative performance of the UK research base*, Evidence Ltd / Department for Innovation, Universities and Skills, July 2008.

research funding – compared to 9.9 in the US and 3.6 in Japan.³⁸ The UK's high level of productivity is a particularly good return given that the UK is ranked seventh in the G8 for public funding for research³⁹. Furthermore, the UK is second only to the US in research excellence – with 1 per cent of the world's population we produce 9 per cent of publications and account for 12 per cent of citations. On average, UK scientists receive about 10% of internationally recognised science prizes. Most of these are conferred on academic staff at Russell Group universities.

36. Russell Group universities are among the **UK's leading research-intensive institutions** and produce a significant proportion of the UK's high quality research, demonstrated through their share of research income – both in terms of QR funding from the Funding Councils, and competitively awarded grant income from the Research Councils:
- in 2007-08 Russell Group universities were allocated 65.6 per cent of QR funding from HEFCE⁴⁰;
 - in terms of income from Research Council grants, Russell Group universities accounted for 68.5 per cent of research income from the Research Councils in 2006-07 (increasing from 67.6 per cent in 2005-06)⁴¹;
 - additionally, Russell Group universities gained 66% of total grant income⁴² in 2006-07.⁴³

Teaching excellence:

37. The teaching excellence at Russell Group universities is reflected in the Quality Assurance Agency's (QAA) institutional audits (which include a consideration of the management of academic standards). Of the nineteen Russell Group universities that have received QAA institutional review reports to assess teaching quality, **all have been awarded "broad confidence" (the highest level)**. Russell Group university staff have also been individually recognised through the Higher Education Academy's National Teaching Fellowship - **as of 2008, fifty-five academics at Russell Group universities have been awarded Fellowships**⁴⁴. Additionally, sixteen of the seventy-four HEFCE-funded Centres for Excellence in Teaching and Learning are based in Russell Group universities⁴⁵, a number of which specifically focus on research and enquiry-based learning, and fourteen of the twenty-four HEA Subject Centres, showing that much of the subject-specific support to improve learning experiences is based at Russell Group universities⁴⁶.

³⁸ Universities UK, *Spending Review 2007: Securing the Future*.

<http://bookshop.universitiesuk.ac.uk/downloads/SR2007.pdf>

³⁹ The UK spent 1.82% of GDP on R&D compared to an average of 2.24% according to a study of 21 comparator nations (PSA target metrics for the UK research base, Evidence Ltd / Office of Science and Innovation, 2007).

⁴⁰ HEFCE, "Recurrent Grants for 2007-08: final allocations" (October 2007/32).

⁴¹ HESA data for 2006-07.

⁴² This includes income from Research Councils, Funding Councils, charities and industry.

⁴³ HESA data for 2006-07.

⁴⁴ This is out of a total of 235 awards since the scheme's inception in 2000 – staff at Russell Group universities have received a disproportionate number of awards (18 per cent of the total) compared to Russell Group universities' share of the UK higher education sector (11 per cent). The scheme applies to England and Northern Ireland.

⁴⁵ This number (22 per cent of all CETLs) is disproportionate to Russell Group universities' share of the English higher education sector (13 per cent).

⁴⁶ Again, Russell Group universities account for a disproportionate number of Subject Centres (58 per cent) compared to their share of the sector (11 per cent).

38. National Student Survey (NSS) results show that student satisfaction of teaching quality across The Russell Group is very high at 86 per cent - above the sector average (83 per cent) - according to the 2008 National Student Survey. Some of our universities rate as highly as 92 per cent.⁴⁷
39. Student experience and students' satisfaction of teaching and learning at Russell Group universities can also be found from recent studies of international student experience. The i-graduate's International Student Barometer (ISB)⁴⁸ is the largest study of the international student experience, the latest results based on feedback from nearly 25,000 students at Russell Group universities. These results from Russell Group international students found that:
- **In selecting a university, 97 per cent of students noted that teaching quality and 90% noted research quality as important determining factors in choosing a Russell Group university.**
 - 95 per cent of students believe their lectures are experts in their subject area
 - **82 per cent of students noted that research at the university was an important learning element of their course**
 - International students had a higher rate of overall satisfaction at Russell Group universities than by the average overall benchmark.

The added value of research and teaching excellence

40. It is clear from the evidence above that students **benefit from receiving excellent teaching** at Russell Group universities. It is also clear that an environment of research excellence offers students first hand **exposure to leading edge research, scholarship and innovation.**
41. Furthermore, research shows that Russell Group universities' commitment to research excellence helps them to attract the very best minds and the best teachers. In recognition of the advantages of an environment of research excellence, which helps to attract and retain high calibre staff. HEFCE has noted:
- the opportunity to engage in research remains one of the most important factors in motivating individuals to enter and remain in the academic profession. This is one of the most important ways in which research benefits teaching⁴⁹.
- Russell Group universities' reputation for research excellence also plays an important role in attracting international academic staff** – despite comprising just 11 per cent of the UK higher education sector, Russell Group universities employ 16,560 overseas academic staff – 48 per cent of the UK sector total.
42. Research conducted in the UK exploring students' attitudes has found that students felt that they benefited from staff engagement in research because staff were more

⁴⁷ Overall satisfaction rates of the student experience across The Russell Group are also high at 86% on average - this is also above the sector average and a further increase from 2007. Some institutions have rates as high as 93%. (Source: unistats.)

⁴⁸ http://www.i-graduate.org/services/student_insight--student_barometer.html

⁴⁹ Higher Education Funding Council for England, *Fundamental Review of Research Policy and Funding: Final Report of the sub-group to consider the interaction between teaching, research and other activities of HEIs*, 2000, p.6.

up to date and learning was more scholarly.⁵⁰ Additionally, a number of studies surveying the views of academic staff in universities have found that a majority of staff believed there was a beneficial link between teaching and research⁵¹.

43. These benefits, however, are just one part of a much wider and richer picture of what it means to be learning in a research-intensive environment.

King's College London's "King's Graduate Project" (which involves both staff and students) includes a review of research-teaching interaction in teaching and learning which is developing a flexible framework for use across the College which will identify processes to **foster research-teaching links and identify and articulate the benefits and skills arising from these**. The review is also considering the possibility of an optional core curriculum, to be run alongside the normal degree course, which would focus on **independent and enquiry-based learning and research skills**.

Enhancing and supporting the research-led learning environment

44. It is essential for Russell Group universities to continue to develop ways of exploiting their strengths as research-intensive institutions to enhance the learning experience they provide and to engage their students in the pursuit of enquiry, thereby developing analytical, critical thinking and problem solving skills. Encouraging students to take responsibility for their own learning also instils curiosity, entrepreneurship, and the ability to seek out new knowledge and cope with change and uncertainty.

The **University of Manchester's** current **review of undergraduate education** and teaching and learning is considering **teaching in a research intensive university** and exploring how to link the outcomes of the review with the work of the Centre for Excellence in Teaching and Learning in Enquiry-Based Learning at the University. The university is also developing the **Manchester Matrix** - a list of attributes that all Manchester graduates should demonstrate.

45. This has been clearly recognised in Russell Group universities, where the support and fostering of learning through research is an increasing priority. Institutional strategies highlight a strong commitment to research-led learning to ensure that it is **integrated through institutional policy and embedded in the student experience**⁵². Russell Group universities' strategies⁵³ demonstrate that they are

⁵⁰ Jenkins, A. et al, "Teaching and research: student perspectives and policy implications" *Studies in Higher Education*, Volume 23, No.2 (1998) 127-141. The authors note, however, that students sometimes felt that staff focused on their research to the detriment of teaching; this suggests the importance of ensuring that teaching has parity with research.

⁵¹ Halsey, A.H. *Decline of donnish dominion: The British academic profession in the twentieth century*, Clarendon Press, 1992; Kremer, J., "Identifying faculty types using peer ratings of teaching, research and service" *Research In Higher Education*, Volume 32 (1990) 351-361; Neumann, R, "Perceptions of the teaching research nexus: a framework for analysis", *Higher Education*, Vol. 23 No.2, (1992) 159-71; Neumann, "The teaching-research nexus: applying a framework to university students' learning experiences, *European Journal of Education*, Volume 29, No. 3 (1994) 323-339.

⁵² All publicly available Russell Group learning and teaching strategies discuss the ways in which the research-teaching relationship can be supported and strengthened.

⁵³ The majority of Russell Group universities' strategic / corporate plans or vision statements highlight research-based teaching and learning as a key strength of their educational provision and set out objectives for building on and reinforcing the integration of research with learning.

seeking new ways of supporting the relationships and promoting the concept of integrated teaching, learning and research⁵⁴ across their institutions.

46. The “unique capabilities and resources” of research-intensive institutions which enable them to offer a distinctive learning experience to students are noted by the Boyer Commission⁵⁵. As research-intensive institutions, Russell Group universities are able to introduce their students to a research culture and to the research process as a part of learning, promoting interaction between research and teaching so that teaching across the institution is **informed and enriched by research** and **learning through enquiry** is a central part of the learning experience⁵⁶. . Additionally, Russell Group universities are placing increasing emphasis on the **promotion of teaching excellence**, with an emphasis on training and staff development⁵⁷ (including teaching awards and accreditation) to maintain high teaching standards, as well as encouraging the dissemination of best practice through online resources, learning and teaching units⁵⁸ and staff networks.
47. Understanding and promoting the relationship between teaching and research helps to encourage parity of esteem between these related fields. As Professor Alison Richard has noted, universities’ continued contribution to society “hinges on the presence of successive generations of researchers who are also teachers, people who inspire in students a similar passion for a life of learning, discovery – and teaching.”⁵⁹ It is important to provide high-quality training and support to maintain high standards among teaching staff, including through teaching accreditation.
48. Russell Group universities emphasise training and staff development in their teaching and learning strategies and provide a number of training opportunities, including teaching awards for staff, as well as encouraging the dissemination of best practice through online resources, learning and teaching units (the majority of Russell Group universities have specialist support units for teaching and learning) and staff networks.

⁵⁴ Coate, Barnett, and Williams (2001) note that effective management requires “a managerial strategy that promotes the intellectual perception of teaching and research as integrated”. They suggest the value of “explicit management strategies that bring teaching and research together” and call for “more of an understanding of the ways in which different relationships between teaching and research are shaped”.

⁵⁵ The Boyer Commission noted that research universities can give their students “a dimension of experience and capability they cannot get in any other setting”. This distinctive aspect of research-intensive universities, in terms of the resources and experience they are able to offer their students is also noted in Prince, Felder and Brent (2007).

⁵⁶ These priorities for the student learning experience are highlighted on Russell Group universities’ websites and in their undergraduate prospectuses.

⁵⁷ Discussed in Russell Group universities’ teaching and learning strategies.

⁵⁸ The majority of Russell Group universities have specialist support units for teaching and learning.

⁵⁹ Richard, “The Well-Educated Undergraduate”, Address to the Regent House, 2 October 2006.

Supporting excellence in teaching and beyond

The **University of Oxford** Learning Institute hosts the HEFCE-funded Centre for Excellence in Preparing for Academic Practice, which supports postgraduate research students and postdoctoral researchers who wish to develop academic careers, focusing on three essential elements of academic practice: inquiry through research and scholarship; teaching (in particular developing support for postgraduate research students and contract research staff who wish to teach); and service to the profession, institution and academic community.

The Centre conducts and promotes research into academic practice and disseminates best practice throughout the University and the broader higher education community. The University has also convened a Preparation for Academic Practice Network with six other research-intensive institutions: the **University of Cambridge**, the **London School of Economics**, **Imperial College London**, **King's College London**, the **University of Edinburgh** and the **University of Warwick**.

The academic debate: analysis of teaching and research as separate entities

49. Previously, analysis has tended to focus on exploring the relationship between teaching and research as separate entities, examining evidence of a correlation or 'synergies' between the two areas. Rather than continuing to examine teaching and research as separate entities, this paper looks at the **added value of learning in a research-intensive environment**, of which supporting **synergies between teaching and research is just one part**.
50. Nevertheless, it is important to consider the existing evidence regarding the relationship between teaching and research. Although conclusively proving a positive relationship between research and teaching *activity* can be problematic, The Russell Group contends that a correlation between research and teaching *excellence* can be demonstrated.

Correlation between teaching and research excellence:

51. Historically, there has been a strong correlation between TQA scores and RAE scores⁶⁰ showing that departments with a strong research performance also perform well in terms of teaching. The correlation between research excellence and teaching excellence in the UK is also supported by analysis of the National Student Survey which shows a positive relationship between research and teaching excellence.⁶¹ Students in subject areas with RAE scores of 5 or 5* were more positive about a number of categories, including "teaching and learning", "assessment and feedback", "learning resources" and "personal development", as well as "overall satisfaction". Some commentators have also observed that students appear to use research

⁶⁰ Drennan, L. and Beck, M., "The End of Quality" (The Sixth QHE Seminar, Birmingham, 25-26 May, 2001). The authors note a high correlation between TQA scores and RAE scores (as well as student entry standards), but question whether this correlation, and therefore TQA scores, are driven by reputation, rather than teaching or research quality. Interestingly their analysis suggests that, if so, reputation derived from research quality draws high student entry standards and results in high TQA scores – therefore in terms of perception at least, research quality becomes a proxy indicator for overall quality, including teaching quality.

⁶¹ Analysis of the NSS by Surridge, P., University of Bristol, published by HEFCE (http://www.hefce.ac.uk/pubs/rdreports/2007/rd14_07). RAE ratings of 4 were the reference group.

rankings in university league tables as proxies for other factors, such as teaching quality⁶² (this is perhaps in part due to the correlation between measures of teaching excellence and research excellence).

52. However, there is **continuing debate** over the extent to which the relationship between research and teaching exists in universities⁶³, Hattie and Marsh, much cited on this topic (including in the UK's 2003 Higher Education White Paper⁶⁴), found little evidence of a demonstrable positive relationship between teaching and research activity at an individual academic and departmental level in universities. It should be noted that they examined the relationship between excellence in teaching and research *activity* rather than with research *quality* (the NSS study cited above found a positive relationship between teaching and research quality).
53. From reviewing the literature, it has become apparent that the debate has revolved around two related but distinct arguments: whether research-teaching links are found in universities; and whether research-teaching links can be beneficial.⁶⁵ Critically, Hattie and Marsh **did not conclude that there was no potential benefit that could be derived from such links**; instead, they emphasised that the correlation between teaching and research was “zero” rather than “negative” (it should be noted that they did in fact find some homogeneity between teaching and research in research universities) and concluded that: “The strongest policy claim that derives from this meta-analysis is that **universities need to set as a mission goal the improvement of the nexus between research and teaching.**”⁶⁶
54. The Hattie and Marsh study suggests a variety of strategies that could be adopted to improve the relationships between teaching and research in universities. The Russell Group would therefore suggest that, given that clear benefits can be identified from research-led learning (these are discussed further below), notwithstanding the reported difficulties, the most useful conclusion to be drawn from Hattie and Marsh's work is that of the importance of successfully supporting the relationship in institutions. The **importance of effective support of teaching-research** links is borne out by further analysis of the literature exploring the links between research and teaching.⁶⁷ It is generally agreed that where links are found to be poor, this is due in large part to a failure of the appropriate mechanisms to foster the relationships; research-teaching links do not automatically occur but must be deliberately promoted and fostered.

⁶² Scott, P., “Knowledge work in a knowledge society: rethinking the links between university teaching and research”, Higher and Education Academy Learning and Teaching Conference 2004.

⁶³ See, for example: Jenkins, A., *A Guide to the Research Evidence on Teaching-Research Relations*, Higher Education Academy, 2004; Hattie, J. and Marsh, H.W., “Research and Teaching: Closing the Divide? An International Colloquium”, Marwell Conference Centre, Winchester, 18-19 March 2004; Prince, M., Felder, R. and Brent, R., “Does Faculty Research Improve Undergraduate Teaching? An Analysis of Existing and Potential Synergies” in *Journal of Engineering Education*, Volume 96, No.4, 283-294, 2007; Jenkins, A., Healey, M., and Zetter, R., *Linking teaching and research in disciplines and departments*, The Higher Education Academy, 2007; Elton, L., “Collegiality and Complexity: Humboldt's Relevance to British Universities Today”, *Higher Education Quarterly*, 0951-5224, Vol. 62, No. 3, 224-236, 2008.

⁶⁴ It should be noted that Hattie and Marsh subsequently refuted the conclusion of the White Paper that “research was not necessary for high quality teaching in higher education” (Hattie and Marsh 2004).

⁶⁵ Prince, M., Felder, R. and Brent, R., 2007.

⁶⁶ Hattie, J. and Marsh, H. W., “The Relationships between Research and Teaching: A Meta-Analysis”, *Review of Educational Research*, Volume 66, No. 44, 507-542, 1996.

⁶⁷ See for example Marsh, H.W. and Hattie, J., “The relation between research productivity and teaching effectiveness”, *Journal of Higher Education*, Volume 73, No. 5 (2002) 603-641;; Coate, K., Barnett, R., and Williams, G., 2001; and Jenkins and Healey, 2005.

Obstacles to the research-led learning environment

55. There remain a number of obstacles to fostering a research-led learning environment, not least identifying how the benefits arising from it can be quantified. Russell Group universities can usefully contribute to progress in this area by continuing to develop ways of supporting the research-led learning environment for the benefit of the student experience, thereby educating highly skilled, critically minded graduates who can make a positive contribution to the economy and society. Some of the ways in which Russell Group universities are **promoting research throughout the learning process** are discussed in this report; it is important to recognise that this is an ongoing process and institutions will **continue to develop and evolve** methods of teaching and learning that embed research in the academic experience
56. Other difficulties in supporting research-led learning include:
- the ongoing need to ensure that the relationship between research, learning and teaching is adequately resourced and appropriately and effectively supported;
 - the need to tailor research-led learning according to different disciplines and to develop different approaches to fostering links that are appropriate for individual departments and learning and teaching methods;
 - promoting the status of teaching – in particular further developing the concept of teaching as a scholarly activity (so that teaching and learning are part of the enterprise of scholarship just as research is);
 - the academic preparedness of students – recognising that the university experience can differ markedly from the school experience and ensuring that students are supported to engage in the academic and research culture and to take responsibility for their own learning;
 - public perceptions of teaching and learning – in particular the need to demonstrate that the learning experience is about quality rather than quantity (number of contact hours) and that Russell Group universities offer a high-quality learning experience with a deliberate emphasis on independent learning through research to encourage their students to develop into self-reliant graduates, able to pursue new knowledge and cope with uncertainty.
 - The reported absence of links in some specific instances has encouraged a false dichotomy between teaching and research – in theory, not in practice – and has overshadowed the known benefits arising from learning through research.
57. Such obstacles notwithstanding, Russell Group universities are **committed to continuing to evolve research-led learning** and the academic and research experience they **offer students to maximise the benefits of learning in a research-intensive institution.**