



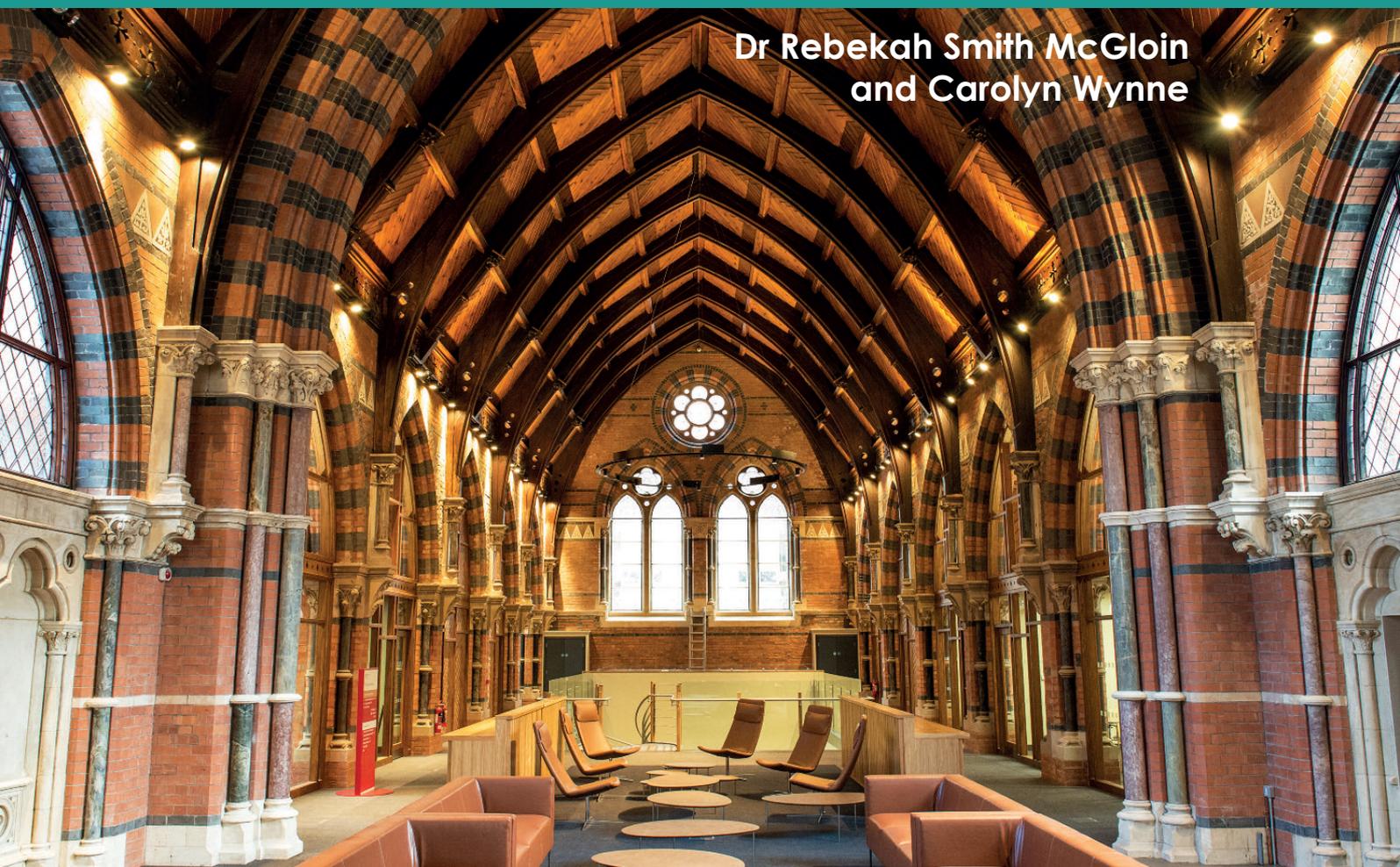
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Structural Changes in Doctoral Education in the UK

A Review of Graduate Schools and the
Development of Doctoral Colleges

**Dr Rebekah Smith McGloin
and Carolyn Wynne**



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FOREWORD

Structural Changes in Doctoral Education in the UK

Provision of doctoral education has changed profoundly in the last decade. We have seen a global trend towards growth in the number of graduates from postgraduate programmes. At the same time the model, position and relative importance of doctoral education within universities has evolved greatly. Doctoral education has shifted from being a semi-private connection between supervisor and supervisee to become an integrated part of universities' research and training strategies. In Europe, the vehicle for this change has been the doctoral or graduate school as a structure for professional management of doctoral education. The UK is part of these trends, and it has often been at the forefront of developments. For this reason alone, this report is an important contribution.

The report gives insights and presents evidence that will undoubtedly be very welcome for discussions about doctoral education within the UK, and they will be of interest to many other countries around the globe, which have seen similar developments. The authors have recognised this by lifting their gaze from the national context to include an international perspective in the report.

The UK has a distinct advantage of having monitored the field for a long time, thanks to the UK Council for Graduate Education. As a consequence the authors have been able to draw on longitudinal data that they have used to highlight trends and to foresee future developments. The report raises important questions that will shape the direction of doctoral education in the future: the effect of student debt; increased collaborations between diverse institutions; and the diversification of the population of doctoral candidates.

This is a report that deserves a wide readership and has the potential to be a standard reference for evidence-based discussions on doctoral education in the future.

Congratulations to the authors for a contribution that will take discussions forward in the years to come.

Dr Thomas Jørgensen

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ACKNOWLEDGEMENTS

The authors would like to thank the HEIs who responded to the survey, particularly to the link members at those institutions who completed the survey on behalf of their institution or who identified the correct person to respond.

Thank you also to Pam Denicolo, Mick Fuller and Gill Clarke for their guidance and contributions in developing the survey and to those colleagues who tested the survey prior to the official launch in March 2015. Particular thanks to Mick Fuller and Gill Clarke for their comments and suggestions in an earlier draft of this report.

Finally, thank you to all of our membership for taking the time to think about the issues around the developments in doctoral education and for sharing your thoughts and comments.

- This study of the 2015 position of graduate schools and doctoral colleges in UK Higher Education Institutions (HEIs) largely repeats and updates previous surveys undertaken by the UK Council for Graduate Education in 1994 and 2004 and 2009. The survey was sent to 126 member institutions and elicited 46 responses (representing a 37% response rate). A web search of non-responding institutions was also undertaken, which altered the picture emerging from the returned surveys and so they are included in this report.

- In addition, the study focuses on the development of doctoral schools/colleges in a number of UK HEIs and the organisational re-structuring to support the delivery of doctoral training programmes.

RESULTS SUMMARY

- Postgraduate provision (taught masters [PGT] and doctoral programmes [PGR]) has varied considerably in terms of the size of the population, balance between masters students and doctoral candidates and the types of doctoral programmes offered since the 2009 survey. In 2009/2010, HESA recorded the total number of PG Students as 578,705 and their latest statistics for 2013/2014 show a decline of 6.8% to 539,440. This decline has been observed in the PGT provision, where in 2009/2010, student numbers were 479,800 but dropped to 427,945 in 2013/2014, a decline of 10.8%, largely within the part time student cohorts. PGR provision continues to rise steadily, increasing from 98,910 in 2009/2010 to 111,495 in 2013/2014, an increase of 12.7%. The majority of this increase has been due to growth in international students who now represent 30% of the total, the same as recorded after the 2009 survey. The gender balance continues to shift in favour of women (now 51.5%). While PhDs still dominate graduate provision, there has been significant growth in professional doctorates.¹
- In 2015, the majority of responding HEIs now have at least one graduate school; from the returned surveys this figure was 83%, reducing to 71% when including institutions from the web search, compared with 76% in 2009, and 67% in 2004. Within the combined institutions the dominant model is the institution-wide graduate school (63% and 89% respectively for the pre and post 1992 HEI's). All of these graduate schools serve research students and most serve professional doctorate students. Many fewer serve postgraduate taught students. The majority of graduate schools that include postgraduate taught students are located in pre 1992 HEI's.

¹ HESA data does not differentiate between professional doctorates from PhDs so it is not possible to give a disaggregated figure here. The most recent national picture on numbers of professional doctorates is provided by the profile of respondents to the 2015 Postgraduate Research Experience Survey (Turner, 2015). 5.3% of respondents identified themselves as registered on a professional doctorate, compared to 4.2% in 2011 (Hodsdon and Buckley, 2011). The 2013 PRES report does not incorporate professional doctorates in the respondent profile.

- Since the 2009 survey, graduate schools have become increasingly aligned with research areas (faculty/department/school-based) and research themes. This is evident at both institutional and cross-institutional level. Cross-institutional examples include the White Rose College of Arts and Humanities, The Marine Alliance for Science and Technology in Scotland (MASTS) and The Midlands Physics Alliance Graduate School (MPAGS)

- The roles and responsibilities of graduate schools across the sector have become more harmonised. Common responsibilities are: improving the quality of graduate education and the student experience; and sharing good practice in supervision. They all have responsibility for generic skills training programmes and most are responsible for quality assurance and monitoring of student progress.

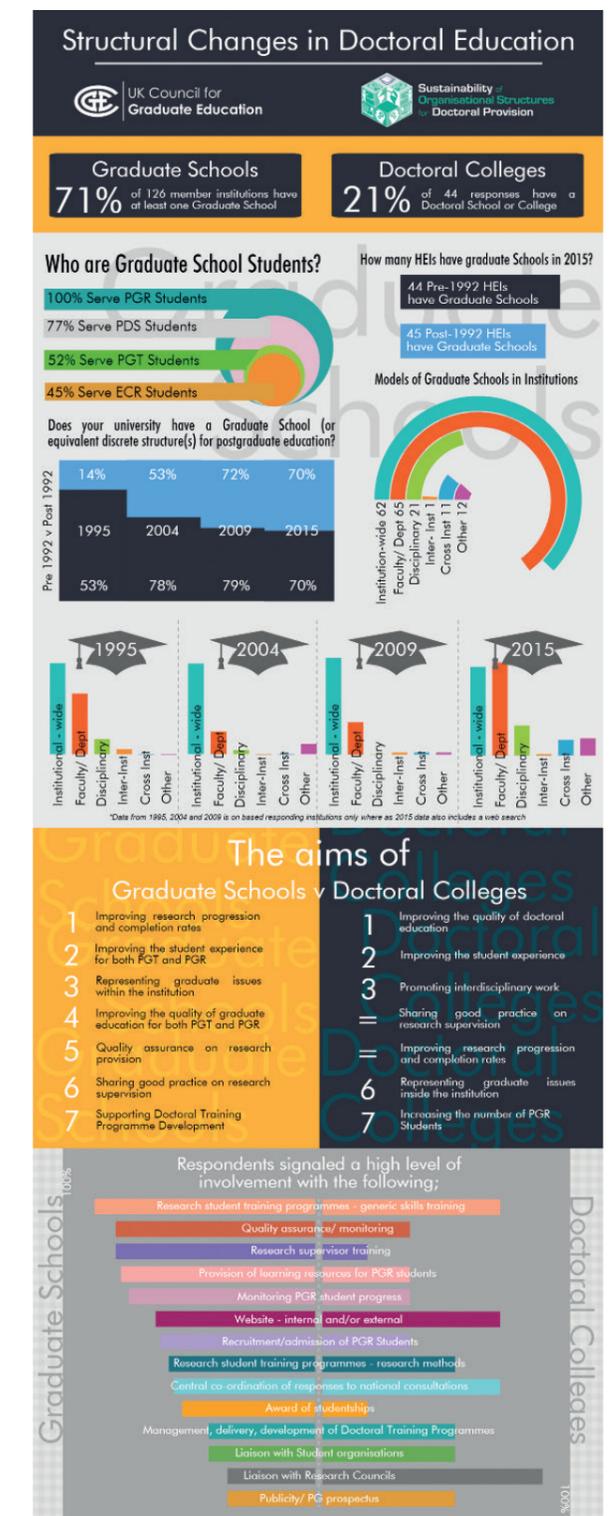
- During the five years since the last report, the UK Research Councils have significantly altered their research student funding models and now block grant or doctoral training programmes² account for the majority of their funded research training provision. Survey responses showed clearly that DTCs were predominantly located in the pre-1992 institutions although the University Alliance Doctoral Training Alliance (DTA) is a recently established 13-institution consortium in Applied Biosciences for Health that evidences how the model is being developed to fit with the research profiles and structures of modern universities.

- It is clear that DTCs are not currently replacing graduate school structures in respect of monitoring and generic skills provision.

- Emerging evidence suggests that some institutions, both pre and post 92 have disestablished their graduate school in favour of developing a doctoral college or are considering doing so. Some institutions have disestablished their graduate school with no view to developing a doctoral college and others have developed doctoral colleges to run alongside their graduate schools. The motivations of these changes in structures are considered further in the case studies contained at Appendix 2.

² There are a variety of terms used across the sector to describe cohort-based doctoral training programmes: DTC, CDT, DTP. RCUK (2013) sets out definitions and funding mechanisms for each term used by the UK Research Councils. Additional terms used by other funders and universities include Innovative Training Networks (ITN) funded by Marie-Curie Slodowska, PhD or Graduate Training Programme funded by Wellcome Trust and Doctoral Training Alliance (DTA) funded by participating universities within the University Alliance mission group. In this report we will use 'doctoral training programme' as the umbrella term to describe all cohort-based doctoral training.

Figure One Overview of survey responses with comparator data from previous surveys



1 INTRODUCTION

The UK Council for Graduate Education (UKCGE) was formed in 1994 'to promote the interests of graduate education'. It has a current membership of 126 HEIs in the UK representing the majority of research degree awarding institutions. In 1994 the UKCGE conducted a national survey which examined the reasons for the emergence of graduate schools in the UK, reviewed alternative organisational models, assessed the advantages and disadvantages of having a graduate school, and provided guidance on setting them up (UKCGE, 1995). This was followed by two further reviews in 2004 and 2009, which examined the further development of graduate schools in the UK.

The role, remit, form and structure of graduate education remains a significant matter for government, policy-makers and the higher education community.³ It is at the nexus of national and international policy changes in research, innovation, immigration, the professional skills agenda and funding for higher education. Much has changed in the wider economic and political environment during the last six years and may be set to change again in the light of the recent and expected reviews on university-business collaboration, support for research, the comprehensive spending review, further announcements on loan schemes to support postgraduate study, regulation of tier-4 international students⁴ and the outcome of the referendum on the UK's membership of the European Union.

When the first UKCGE report was published, graduate schools were a relatively new phenomenon in Britain but by 2004 they had been widely implemented across the country. They were influenced by the North American models of an institutional structure dedicated to postgraduate provision and were a response to increasing regulation and national and international guidance (see below). Their growth reflected a rising interest at the level of government in the potential for structured research education to support national innovation and socio-economic development policy.

Different models of graduate school have become a common feature across both research-intensive and industry-focused institutions in the UK and in Australia and Europe.⁵

The position in December 1994 was that 33% of UK HEIs already had graduate schools and another 30% were considering or planning to establish them. By 2004, the position had changed and 67% had graduate schools and a further 5% were considering establishing them whilst 5% had moved away from a graduate school model. Furthermore in 1994 graduate schools were predominantly the preserve of the "old" universities, but by 2004 they had become widespread across the sector, increasing further by 2009 (from 67% to 76%). The most recent survey shows the percentage of HEIs with at least one graduate school has decreased slightly to 71%, although a small group of institutions had established (or were considering establishing) doctoral colleges as an alternative structure.

The period between the 2004 and 2009 UKCGE reports was characterised by significant changes in the structure, quantity and relative importance of postgraduate training as a result of policy developments (QAA Code of Practice [2004], Salzburg principles [adopted in 2005]) and the impact of the publication subsequent "Roberts" funding associated with the "Set for Success" report [Roberts, 2002]). These funds, distributed formulaically to HEIs dependent on the number of funded RCUK research students and postdocs, stimulated a huge response in the sector to the provision of generic skills training. In those HEIs with a graduate school the responsibility for this agenda was normally handed over to the graduate school and for those without one it provided a further reason to consider establishing one.

During the period from 2009 to 2014, UK institutions have responded to developments such as the withdrawal of Roberts funding by integrating provision of professional skills development in the work of graduate schools

³ The significance of postgraduate study to research and innovation has been highlighted repeatedly. The following are a selection of key reports: HEFCE (2013) Postgraduate Education in England and Northern Ireland Overview; HEFCE (2013) Trends in transition from first degree to postgraduate study: Qualifiers between 2002-03 and 2010-11; DBIS (2010) One Step Beyond: Making the Most of Postgraduate Education; DBIS (2013) Exploring student demand for postgraduate study; DBIS (2015) The Dowling review of business-university research collaborations; RCUK (2010) Review of progress in implementing the recommendations of Sir Gareth Roberts, regarding employability and career development of PhD students and research staff.

⁴ Since February 2009, all education providers wanting to bring non-EEA students into the UK have to apply to become licensed sponsors under the Tier 4 category of the points-based system.

⁵ Australian and European models are addressed in more detail on page 20. See also Byrne, Jørgensen and Loukkola (2013) and Clarke and Lunt (2014).

or other structures. Institutions have also looked to position themselves effectively in a competitive market, in some cases collaborating with others to form doctoral training partnerships independent of traditional funding streams.

The findings of a 2013 Vitae Analysis of RCUK Institutional Responses on Funding Arrangements for Researcher Development (Vitae, 2013) which considered the impact of Roberts funding and gauged universities' future plans for researcher development at the end of the Roberts' era found overwhelming evidence that researcher development had been fully embedded in institutional strategies, with almost two-thirds of institutions suggesting that it was a senior level responsibility. The European HR Excellence in Research Award was also seen by institutions as an important strategic driver for researcher development. The report also cites efficiency savings as a key driver. This imperative sits awkwardly with the changes in the postgraduate population, the growing trend for bespoke, tailored training, cohort-based programmes and increasing sophistication of industry/employer engagement such that the potential for postgraduate researchers to make the largest impact on research and innovation and the wider economy is fully realised.

The aim of this new report is to update previous reports and to capture a snapshot of the changing landscape of doctoral education in the post-Roberts era. In particular it reviews the changing nature of the postgraduate population, the form and function of graduate schools, the development and expansion of doctoral colleges, the impact of doctoral training programmes (both RCUK and non-RCUK funded) and the roles these structures play in diversity and sustainability of doctoral education in the UK.

The 2015 survey involved an e-mail survey of the UKCGE's 126 institutional members. The 46 responses amount to a 37% response rate. A web search was then conducted of non-responding institutions to develop a clearer picture and enhance the understanding of current structures. Combined data accounted for 126 institutions, which is 84% of UK HEIs.

The results of the 2015 survey indicate a complex picture of organisational models across UK HEIs and increasing complexity within individual institutions. The growth and expansion of graduate schools has slowed and the overall number of institutions that have at least one graduate school has reduced since the 2009 survey. There is emerging evidence that some universities have disestablished their graduate schools or are considering replacing their graduate schools with a doctoral school/college. There is also a clear trend towards devolving support for postgraduate students back to Faculties/Departments.

The survey suggests similar aims in graduate schools and doctoral colleges in terms of supporting progression, enhancing the student experience, advocating for the needs of graduate students and quality of education including research supervision. However the communities they serve are different. Some graduate schools continue to support taught masters students whereas doctoral colleges focus on doctoral candidates and early-career researchers. There is also a suggestion that priorities are changing. The primary focus in doctoral colleges is on quality of doctoral education, whilst graduate schools continue to prioritise improving completion rates.

The survey evidenced a trend towards cohort-based doctoral training which mirrors a global trend highlighted in Clarke and Lunt (2014). The majority of doctoral training programmes reported were funded by Research Councils. There are currently 96 doctoral training programmes funded by the research councils for arts, social sciences, engineering and physical sciences and natural and environmental sciences. It should be noted that several of the research councils have announced their intention to increase the size and decrease the number of the next generation of doctoral training programmes such that single institutions that have previously received funding for doctoral training programmes will have to form partnerships and numbers of partners in many existing consortia will grow.⁶ Wellcome Trust fund a further 31 programmes in the biomedical sciences based in centres of excellence at universities throughout the UK plus an additional programme based at the Wellcome Trust Sanger Institute. There were also a few examples of universities who had decided to invest institutional funding in developing the cohort-based model. The data showed an emerging difference (also noted in Clarke and Lunt, 2014) between doctoral training in STEM subjects and arts, humanities and social sciences. STEM programmes were more likely to be clustered around themes whereas doctoral training programmes in the arts, humanities and social sciences tended to be much broader.

⁶ The current ESRC call for the next six cohorts of doctoral students announced a decrease from 21 to 15 in the number of doctoral training partnerships to be awarded. <http://www.esrc.ac.uk/funding/funding-opportunities/call-for-doctoral-training-partnerships-dtps/> (Last accessed on 26/09/15.) See also 'AHRC Doctoral Training – Developing the Next Phase' 24 Sept 2015 where the Research Council announced its intention to decrease the number of doctoral training partnerships from the current 18 to 10: <http://www.ahrc.ac.uk/documents/calls/ahrc-doctoral-training-developing-the-next-phase/>

The next section of this report provides an overview of the current position of postgraduate education in the UK followed, in Section 3, by a brief account of the development of graduate schools and a review of the dominant models, in terms of their remit and organisational structures. An international perspective of graduate schools is discussed in Section 4. In Section 5 the methodology employed to collect the data is described; the results of the 2015 survey are then presented and discussed, incorporating when relevant an overview of trends revealed by comparing the data of previous reports. Finally, Section 6, Discussions and Conclusions, summarises the main points emerging from this report, and offers some insights on the likely future of graduate schools.

Following the initial analysis of the results, a number of case studies were undertaken to consider the circumstances influencing changes in structures at individual institutions. These are included at Appendix 3.

2 THE NATIONAL CONTEXT OF POSTGRADUATE EDUCATION

Diversification of population and development of programmes and modes of delivery

The UK Higher Education landscape has changed considerably since the publication of the 2009 report.⁷ Two major trends are: significant changes in the student base and the diversification of doctorates. The latter includes evidence of a broader range of professional doctorates and an increase in the number and scale of structured doctoral training programmes.

HESA data show significant changes, outlined below, in the postgraduate population, in terms of the balance between undergraduate and postgraduate, home and international, full-time and part-time, and male and female students. Looking specifically at postgraduate research students, there have also been changes in the age of entry to study, and the length of time since graduating from an undergraduate or master's course. The data also evidence a continuing trend towards concentration of doctoral students in a small number of institutions. The decision by the majority of major postgraduate funders to invest exclusively in doctoral training programmes (mainly located in research-intensive universities) has accelerated this trend.

Postgraduate Research Student Population

The total number of students studying in UK Higher Education Institutions has declined at a steady rate from 2,493,420 in 2009/2010 to 2,299,355 in 2013/2014. Postgraduate students comprise 23.5% of the total cohort in 2013/2014. Over the past six years the number of Home/EU students has decreased from 2,212,655 to 1,989,155 while over the same period the number of international students has increased from 280,760 to 310,195 (HESA 2015).

Within these totals, postgraduate provision (PGT and PGR) has varied considerably since the 2009 survey. In 2009/2010, HESA recorded the total number of postgraduate students as 578,705 and their latest statistic for 2013/2014 shows a decline of 6.8% to 539,440. This decline has mainly been observed in the PGT provision, where in 2009/2010, student numbers were 479,800, dropping to 427,945 in 2013/2014, a decline of 10.8%, largely within the part-time student cohorts. Conversely PGR numbers continue to rise steadily, increasing from 98,910 in 2009/2010 to 111,495 in 2013/2014, an increase of 12.7%. The gender balance continues to shift in favour of women (now 51.5%).

Growth in international doctoral students

Much of the overall increase in PGR numbers is due to growth in the international student body, who now represent 30% of the total, the same as recorded after the 2009 survey.

Between 2007/8 and 2013/14 there was a slight increase in the number of students from countries outside of the EU graduating with a UK doctorate, with numbers increasing from 4775 to 5285. During the same period there was also a small increase in the number of Home / EU doctoral graduates, with numbers increasing from 11860 to 12305 (HESA, 2015).

⁷ The trends identified in this section are based on HESA Statistics 2013/14 <https://www.hesa.ac.uk/stats> and the following recent reports: Universities UK (2014) The Funding Environment for Universities 2014: Research and Postgraduate Research Training; British Council (2014) Postgraduate student mobility trends to 2024; DBIS (2013) Exploring Student Demand for Postgraduate Study; and HEFCE (2014b) Understanding the recruitment and selection of postgraduate researchers by English higher education institutions.

The growth in international students is attributed by some to the current international competitiveness of the UK doctorate, which may be reinforced by UK's strong researcher development provision. The largest increases in numbers have come from Malaysia, Hong Kong and Singapore. Other countries from which the UK recruits large numbers of students include India, Nigeria, China, the US and Saudi Arabia whilst within the EU, most students come from Germany, France, Greece and Cyprus. International student numbers are concentrated in particular disciplines, namely computing, engineering and technology, business and management, and law (HESA 2015).

Future threats to international recruitment are recognised to be: increasing competition as European PGR provision in English grows and the consequences of immigration policy changes. Despite this, the UK is forecast to see average growth of international postgraduate student numbers by 3.5% to 2024 (British Council, 2014).

Trends in applications for postgraduate study

PGR applications increased by 73% between 2005/6 and 2011/12, with a peak in 2009/10. The volume of applications to all PGR qualifications dropped considerably from 2010/11 onwards. There is some concern of stagnation as a result of the impact of fees but there is little consensus on this matter. A common expectation across the sector is that there will be challenges to the supply chain of high-quality UK-domiciled applicants, as a result of undergraduate and masters students facing increasing debts⁸ which may in turn make the prospects of further study less attractive. There is as yet no definitive answer to the question of the impact of undergraduate fees on postgraduate applications. The first graduates who have paid annual tuition fees of up to £9,000 have only just graduated (Summer 2015) and will embark on postgraduate programmes this October. Factors affecting transition to postgraduate study are explored in depth in the Transition to Higher Degrees Across the UK: An Analysis of National, Institutional and Individual Differences report (Wakeling and Hampden-Thompson, 2013) and summarised in Clarke and Lunt. Wakeling and Hampden-Thompson (2013) findings highlight that graduates from lower socio-economic groups are less likely to transition into postgraduate education. Although the authors caution that this may not be explicitly related to finance, as the proportion of graduates who self-fund through a higher degree did not vary significantly across different socio-economic groupings. The Clarke and Lunt (2014) report is an international comparison of postgraduate education based on a literature review and survey data from key informants in Australia, Germany, India, Norway, Scotland, Spain, United States. The authors note that contributors from all the countries in the report recognised a lack of funding as a barrier to recruitment to postgraduate degrees, although certain UK contributors considered that a first degree was a 'leveller' after which point entry to postgraduate programmes was not inhibited by background.

The impact of undergraduate fees on postgraduate recruitment is nevertheless a clear concern to institutions and government alike. OFFA (2014) points out recent 'steep increases in (...) work (by universities) to support progression into employment and postgraduate education.' The Autumn Statement 2014 revealed a new system of income-contingent loans will be introduced in England in 2016/17 for students under the age of 30 on taught masters courses,⁹ and the 2015 Budget announced a programme of income-contingent loans in England of up to £25,000 to support PhDs and research-based masters degrees.¹⁰ Current debates continue about the impact and effectiveness of both loan schemes with concerns being raised about a decrease in postgraduate recruitment in Scotland, Wales and Northern Ireland as result of implementation in England only, fee and credential inflation and an increase in the number of integrated masters programmes (taking England out of step with standardisation of degree requirements set out in the Bologna Process).¹¹

Recent reports have shown disparities in gender, ethnicity and social class (although prior attainment was the strongest predictor of successful application).¹²

There is also an emergent trend towards older applicants to professional doctorates. These grew by 343% from 2005/6 to 2011/12 (although they still only accounted for 2% of PGR applications.)

⁸ This will be exacerbated as a result of the July 2015 budget announcement regarding the replacement of the maintenance grant for low-income families with loans, and fees being allowed to increase beyond £9000 where universities can demonstrate "good quality": <http://www.independent.co.uk/news/uk/politics/budget-2015-universities-will-be-allowed-to-raise-fees-beyond-9000-says-george-osborne-10375910.html>

⁹ Hubble, S. and D. Foster (2015) New loans for postgraduate students announced in the Autumn Statement 2014. Standard note for House of Commons. Last updated 12 Feb. 2015.

¹⁰ HM Treasury (2015) Budget 2015.

¹¹ Havergal, C (2015) State-backed master's loans: is an 'own goal' looming? Times Higher Education 7 May 2015.

¹² See: Wakeling, P. and Kyriacou, C. (2010) Widening Participation from Undergraduate to Postgraduate Research Degrees: A Research Synthesis. NCCPE and ESRC; Wakeling, P. and Hampden-Thompson, G. (2013) Transition to Higher Degrees Across the UK: An Analysis of National, Institutional and Individual Differences. Higher Education Academy; DBIS (2013) Exploring Student Demand for Postgraduate Study; Universities UK (2014) The Funding Environment for Universities 2014: Research and Postgraduate Research Training.

Trends in PGR Funding

HEFCE (2013a) gives an overview of funding for PGR based on HESA data from 2011/12. It highlights the relatively large percentage of PGR with no financial backing, issues of lack of funding for living costs for postgraduate research students not in receipt of a studentship, uneven distribution of funding opportunities which are more numerous in the physical and biological sciences.

The declining resource budget to the Research Councils has resulted in a fall from 17% to 16.2% of all students for which the major source of funding is known, being funded by Research Councils or the British Academy. The total number of PhD starters funded by the Research Councils fell sharply between 2010-11 and 2012-13. This represented a cumulative decrease of more than 18% (or ~1000 students) over the period. The decline was particularly strong in EPSRC, BBSRC and AHRC.

At the same time, there is a slight increase 2011-14 in the number of PGRs funded institutionally (19.3 to 20%). In research-intensive HEIs institutionally-funded PGRs are moving to cluster in areas that align with research council priorities due to the requirement for doctoral training programme grant-holders to provide match-funding to research council studentships and also cover the costs of administrative support.

After a steady decline in the early 2000s the proportion of self-funded PGR students has risen from 37.6% to 39.1% between 2011 and 2014.

Despite this, institutions are anticipating a future decline in self-funded students, for the reasons outlined in the sections above.

Concentration of research students

The increased selectivity of research funding over the past ten to 15 years has resulted in a continued concentration of research students in a smaller number of institutions. In 2007/8, over one-third of the total student cohort was located in just nine institutions (HESA, 2009). Around 80 percent of the student base was located in 50 institutions (which is one-third of the total number of institutions with doctoral degree awarding powers). At the other extreme, 20 institutions had less than 25 postgraduate research students registered in 2007/8 (HESA, 2009).¹³ This trend towards concentration of funding for research and research students was highlighted in the recent review of the UK Research Councils (Nurse, 2015), which warned that 'excessive concentration of the research effort (...) can significantly damage research activity.' Nurse also referenced cohort-based doctoral training programmes as a barrier to PGRs being supervised by quality supervisors if the programmes were "too inflexibly applied".

There is equally a trend towards concentration of postgraduate courses in sciences and engineering. Since the UKCGE 2009 survey, the number of students enrolling for AHSS PG courses has decreased from 219,325 to 204,060 in contrast to the growth of students enrolling for STEM subjects which has increased from 112,905 to 114,075.

Diversification of the UK doctorate and modes of delivery

In the same period that the student base has undergone significant expansion, diversification, decrease in funding and concentration (in research area and institutions) there is evidence that the UK doctorate and the ways it is delivered has evolved substantially. This is partly the result of policy imperatives that have brought about structural changes such as Research Council, Wellcome Trust and Marie Skłodowska-Curie support for cohort-based doctoral training programmes. It may also be a consequence of institutional desires to grow PGR numbers, despite cuts in funding, by exploring other markets and models. DBIS (2013) notes that the majority of institutions responding to the 2013 survey stated that they were seeking at least some growth in their PGR numbers. This may at least in part be associated with the development of university ranking systems such as the Times Higher World University Rankings and the Shanghai Jiao Tong University Rankings that incorporate an institution's record in PGR.

The major trends are towards greater structure, more taught elements and a growing variation in modes of delivery that include mechanisms such as blended learning. Almost a half of responses to the Analysis of RCUK Institutional Responses On Funding Arrangements For Researcher Development (Vitae, 2013) noted an increase in e-learning provision and use of virtual learning environments as an efficient way to make development opportunities more widely available. This has resulted in the boundaries between full-time and part-time study becoming more blurred (DBIS, 2013), which may be a partial explanation for the steady rise in the number of students joining and studying on full-time rather than on part-time doctoral programmes, with full-time students now comprising around 73% of the total population, down from 75% recorded in the 2009 publication. The total number of full-time postgraduate research students increased from 70,490 in

2009/2010 to 81,940 in 2013/2014, whereas the number of part-time research students only increased from 28,420 to 29,555 (HESA, 2015).

There is also a significant increase in number and form of professional and practice-based doctorates. The Higher Education Funding Council for England (HEFCE) has commissioned a major national research project to gather information about professional doctorate programmes in English HE institutions and those who undertake it.

Professional and practice-based doctorates

Diversification of doctoral programmes in the UK has led to a variety of structures for doctoral training. Emergence of the professional doctorate in the 1990s in response to the needs of mid-career professionals wishing to progress to doctoral study in an area related to their professional background resulted in the development of a large number of professional doctorates in different fields, some of which are regulated by professional bodies. One, the DClinPsy, is a requirement for entry to the clinical psychology profession; others may support graduates in career progression. All require the candidate to undertake research directly related to their professional practice, which may have an immediate effect on the professional environment. As many professional doctorate candidates are returning to or may never before have undertaken research, these programmes often contain a significant amount of structured training, especially in research methodology. Candidates undertaking professional doctorates may also be assessed on the structured elements of their programme before progressing to the thesis stage.

Practice-based doctorates may have a 'professional doctorate' title or a 'PhD' title, depending on the nature of the degree and the field of study.

Further information about professional and practice-based doctorates may be found in the recently updated QAA publication, Doctoral Degree Characteristics (QAA, 2015).

Population trends, policy imperatives and contemporary academic debate

The population trends, policies and institutional aspirations mapped out here have implications for the structure and nature of training and support that is expected and required by postgraduate research students. Policy imperatives demand universities play their part in solving the "productivity puzzle" by supporting entrepreneurship, innovation, opportunity and discovery. Whilst doctoral programmes diversify to meet these demands and professional and practice-based doctorates grow and develop, funding cuts and concentration means that PhD programmes funded by major sponsors are coalescing into diminishing key strategic areas and in a shrinking number of institutions. Funded doctorates (traditional and professional and practice-based) are becoming increasingly targeted and focused on the needs of business and innovation. Self-funded doctoral candidates were expected to become fewer by universities responding to DBIS (2013) although an alternative scenario might be an increased demand for part-time doctoral programmes as combining work and study becomes more common. This scenario is based on the data showing self-funded doctoral candidates form the largest group currently and that doctoral study has been shown to be a good investment in the majority of subject areas (Mellors-Bourne, Metcalfe and Pollard, 2013). This, combined with the likely reduction in public funding, suggests the possibility of a larger group of doctoral candidates seeking to undertake their PhD part-time whilst working. This potential trend should be considered in the light of Turner (2015) which highlights part-time and self-funded students as a 'vulnerable group' in the analysis of 2015 Postgraduate Research Student Survey (pp. 5 and 20). 1,600 (3%) respondents who classified themselves as part-time and self-funded had no experience of research training or attending/presenting at conferences.

The cohort-based delivery model for publicly-funded PhDs is becoming ubiquitous in pre-1992 universities and is growing in strength across the UK sector. It is arguably emerging as a new paradigm for PGR training and support. But as noted in our 'Oxford Statement' (UKCGE, 2015), it will be important to evaluate the new doctoral training models to gauge their effectiveness for both universities and candidates and whether such models are sustainable given the current background of austerity in public funding. There are challenges in providing equality of access within a complex environment of multiple doctoral training programmes where some are better funded and resourced than others.

In addition, many doctoral training programmes are delivered through cross-institutional, business or international partnerships. Partnership-working has become a necessity for many institutions in order that they can capitalise on increasingly competitive funding opportunities and cut delivery costs. This new way of working collaboratively presents on-going challenges yet can offer universities whose doctoral programmes are not supported by the UK Research Councils an opportunity to develop wider resource-efficient and interdisciplinary partnerships that can enrich doctoral training.

13 | An update on these figures was not available.

Equality and diversity and recruitment are the two other remaining challenges. Clarke and Lunt note that all countries are facing the challenge of how to provide support to enable the most able students to fulfil their potential in a mass higher education system. Loans may be one solution – cautiously welcomed by some key voices after no public funding for postgraduate study for many years.¹⁴

We wait to see the long-term impact of rising student debt, although as Wakeling and Hampden-Thompson data suggests and Clarke and Lunt points out (from the Australia experience of income-contingent loans) debt may not necessarily dissuade students from pursuing postgraduate education. Nevertheless Universities will have to work hard to attract and retain the best postgraduate researchers from all corners of UK society and to retain global competitiveness in order to ensure they can continue to recruit the brightest and the best from overseas.

These national trends should be considered alongside wider, contemporary academic debates in the arena of doctoral education that focus on the nature of the doctorate and doctorateness (Denicolo and Park 2010, Wellington 2013, Poole 2014). The key concepts considered in recent years are the move away from the Humboldtian master-apprentice model of doctorate, the question of prioritising process (doctoral training) over product (thesis), and most recently the effectiveness of cohort-based delivery at a doctoral level in the context of educational theories around peer-learning, communities of practice and learning communities amongst doctoral students.

The previous publications (UKCGE 1995, UKCGE 2004 and UKCGE 2009) charted an unprecedented change in doctoral education through mapping the development in number, distribution and kind of organisational entities sharing the common name of graduate school.

Each publication was based on a survey addressed to UK institutions of Higher Education (HEIs). To provide context to the description of results from the latest survey on the topic (conducted in Spring 2015) similarly conducted with UK HEIs, that history is summarised here, categorised into three fairly distinct periods in the evolution of doctoral education in the UK with the third being explored further in the results section.

There is inevitably some overlap and interchange between each but broadly these periods can be characterised as: establishment of graduate school structures; consolidation and regulation of quality; and, collaboration, diversification and innovation of population and models.

The periods, taken together, trace a maturation of doctoral education between 1994 and 2015 that will be considered further in the results section.

3 EVOLUTION IN DOCTORAL EDUCATION AND THE DEVELOPMENT OF GRADUATE SCHOOLS IN THE UK

(i) Establishment

The recognition by academics and other stakeholders in research of a need to organise more effectively support and training of postgraduates, particularly research students, originated in a number of concerns about submission and successful completion rates for research degrees. Foremost among these were the marginalisation of postgraduate work during the years of expansion of programmes and competition from wider Europe for postgraduate registrations as institutions on the continent made efforts to formalise and improve research degrees and postgraduate provision. Further, the general expansion of postgraduate numbers, the growing emphasis of the UK Research Councils on formal training and the improvements in official monitoring mechanisms of postgraduate programmes and support, added to the pressure to move away from the traditional model of the research student as personal apprentice to a supervisor. Instead a model was sought that encompassed a focus of attention and resources through an identifiable organisational structure to complement the supervisor's role and enhance student support and training. The general concept of graduate school evolved in the UK from a North American model of graduate education that regards it highly, resources it well, attracts elite scholars and seeks to generate world-class research.

14 | See Morgan (2014), Mullen (2014) and Havergal (2015).

Despite the acclaimed wide diversity of UK HEIs that demands, and has resulted in, variations in the style, structure and detail of postgraduate provision, comparison of the results from respondents to the 1995 and 2004 surveys demonstrates a significant increase in the number of institution-wide graduate schools (53-78% in research-intensive universities and 14-53% in business-facing HEIs) with the majority of remaining institutions establishing or planning to create one or more graduate schools by the 2009 survey.

From virtual *tabula rasa*, graduate schools had become established in this period as the main institutional device in both research intensive and business-facing universities for dealing effectively with postgraduate provision and advocating at senior management level for postgraduate and research student interests.

It is of interest in the current climate of multi and inter-disciplinary collaborative research that only one example of an inter-institutional graduate school was reported at this stage.

(ii) Consolidation and regulation of quality

Between 2004 and 2009 we see a period of structural consolidation as business-facing universities catch up with research-intensive institutions in terms of numbers of graduate schools (53-72%). Significant change in this period however is driven from national and international regulation and codification of what quality in doctoral education is.

Whilst the 1995 report suggested a principal role for graduate schools in promoting high standards - “a distinct organisation concerned with the promotion of high quality graduate education” (UKCGE, 1995) it is this period that sees a flurry of policy relating to regulation of quality: Section 1 of the QAA Code of Practice (2004), Salzburg Principles (2005, 2010) and the QAA Quality Code (2011). Graduate Schools in the 2004 and increasingly in the 2009 report ranked quality assurance as one of their highest priorities.

(iii) Collaboration, diversification and innovation

As postgraduate numbers grew and staff experience accumulated, devolved models (Faculty or School level), that had formerly only been found in research-intensive institutions were increasingly found in business-facing universities, while some of the former were disaggregating institution-wide ones to provide more focussed Faculty provision.

Graduate Schools in 2009 foresaw an increasing need to diversify their provision to meet institutional and disciplinary cultural differences, and particularly to respond to evolving student need as the postgraduate student body changed and developments in technology enabled a broader range of modes of delivery.

How these predictions have played out in practice can be seen in the current section on the UK context. The impact of context change on the work of graduate schools in the UK, their style, structure and pervasiveness will be considered in the results and discussion sections of this report.

4 THE INTERNATIONAL PERSPECTIVE ON GRADUATE SCHOOLS

International growth in doctoral programmes

The need to develop a new, global approach to doctoral education to support research capacity development across the world and to meet global challenges was articulated in the EUA CODOC project publication (Jørgensen, 2012).

US used to be a strong leader in providing graduate education, along with universities in Europe, Australia and Japan. Within the last decade there has been strong growth in the capacity of Brazil, China and India to attract international students, develop doctoral programmes and produce high quality and quantity research outputs. There has also been significant investment in graduate education in certain countries across East Asia, Latin America and Southern Africa (Jørgensen, 2012, Annex 1) and a number are displaying strong growth in PGR completions, research output and inward flow of international students (British Council, 2014).

“Graduate education is thus becoming multipolar and the centre of gravity is gradually moving away from the North Atlantic.” (Jørgensen, 2012)

There is evidence of regional collaborations focused on developing structures, policies and practice to support doctoral education. One strong example is found in the intra-African context where international organisations have supported policy development,¹⁵ mapping of existing doctoral education¹⁶ and development of collaborative doctoral training structures like the African Doctoral Academy¹⁷ (based at Stellenbosch University), a multi-national graduate school, developed in 2012 to deliver regional and joint PhD training and exchange programmes in collaboration with doctoral schools at universities in Ghana, Uganda, Kenya, Tanzania, Nigeria and elsewhere in Africa. Most recently the newly-established African Research Universities Alliance initiative has brought together funding from 15 African universities to train postgraduate students.¹⁸

Although the number of countries delivering doctoral education has increased, and the scale and complexity of collaborations has multiplied, supported within recent decades by technology to ease communication and facilitate data-sharing, the majority of debate about doctoral education is focused in regions where the most research activity is taking place: North America, Australia and Europe.

North-America

The concept of the graduate school began in North America in the 1960's and is well organised and supported by established organisations such as the Council of Graduate Schools USA (CGS) and Canadian Association of Graduate Schools (CAGS). The model has been influential in the development of graduate schools or equivalent in Europe, Australia and New Zealand, China and Brazil.

Graduate education in universities in the United States is generally well resourced, with the most highly esteemed universities globally attracting significant amounts of funding.

Cuts in federal funding and a lack of academic jobs available for PhD graduates were highlighted in Clarke and Lunt (2014) as a limiting factor on doctoral recruitment in the last few years. Similar to patterns in UK and mainland Europe, Gumpert (2011) highlights funding inequalities, with the greatest support for doctoral education being concentrated in science and engineering.

The North-American model requires candidates to complete a masters programme (often with a strong research methodology focus) before embarking on a doctorate. Most graduate schools combine masters and doctoral level qualifications and deliver taught components and professional development training in a single unit.

Despite this, doctoral researchers are considered to be strongly integrated into the US university's research effort. Time to completion of a doctorate is usually 6-8 years (2 yrs M + 3/5 yrs D research + write-up).

The Carnegie Initiative on the Doctorate has been a recent major national project aimed at improving doctoral education at American universities. It investigated cohort models of doctoral training, quality and fit of professional skills and inter-disciplinarity across a number of US institutions. It also promoted flexibility to support the individual and discipline-specific needs of doctoral candidates. This work was synchronous with the development of the Bologna Process in Europe (2003) and in the UK, the introduction of Roberts funding.

Clarke and Lunt's findings set out a wide variety of institutions delivering graduate education in the US, in the public, private, urban and regional, and 'for profit' sectors. Although the 2010 National Research Council (NRC) assessment of research programmes found that doctoral education is mainly offered by public universities (72%). Graduate students have a wide choice at both masters and doctoral level, and a range in the quality of the graduate education that is delivered is found in each sector. A general lack of a national statutory standard-setting body was noted by one of the respondents to Clarke and Lunt (2014) as a reason for the variance in quality of the student experience and outcomes, although one aspect of defining and measuring quality is through regular graduate programme review and the 10-yearly NCR assessment (which aims to ensure quality through a fine-grained national assessment of the research degree environment.)

15 Report on the IAU-ACUP International Seminar on Innovative Approaches to Doctoral Education and Research Training in Sub-Saharan Africa, Addis Ababa University, 12-13 July 2012

16 Centre for Research on Evaluation, Science and Technology at Stellenbosch University undertook a comprehensive research programme on "The African Doctorate" in collaboration with the African Doctoral Academy. The project mapped existing doctoral programmes to create a web-based directory including statistical data on student mobility, models, supervision and infrastructure. Funded by the Ford Foundation, the project expired in 2013; IAU (2011) Changing Nature of Doctoral Studies in sub-Saharan Africa Challenges and Policy Development Opportunities at six universities in Sub-Saharan Africa International Association of Universities. Funded by SIDA.

17 <http://www0.sun.ac.za/ada/>

18 <http://www.cambridge-africa.cam.ac.uk/news/launch-of/>

Australia

The Australian HE system comprises several groups of universities, including the Group of Eight (Go8) research-intensives, the Australian Technology Network (ATN) of five universities, seven Innovative Research Universities (IRU) and six universities located in different Australian regions and grouped as the Regional Universities Network (RUN). As of 2013 and including overseas students, postgraduate numbers totalled 330,159, with larger numbers of PGT than PGR (Clarke and Lunt, 2014). According to the Go8, there was a 68% growth in doctoral enrolments in the decade from 2000 to 2010, from 27,966 to 47,066 (Go8, 2013). Professional doctorates have proved a controversial development in Australia (Clarke and Lunt, 2014) and the PhD remains the major form of doctorate, yet the Australian Qualifications Framework (AQF) specifies two pathways to the PhD: 'research' and 'professional' (AQF, 2013). A single Research Training Scheme (RTS) provides block grants to universities for research degrees and distribution is based on each university's research performance. The RTS is specifically to support research training for research masters and doctoral students and has five objectives, including to enhance research training provision and to ensure the relevance of research degrees to employment. Australia has experienced many of the challenges for doctoral education seen in other countries, such as concern about completion rates and the need to maintain quality in the face of growth in student numbers. The RTS has encouraged institutions to increase structure in doctoral programmes, including a greater focus on professional skills. Examples of structured training for doctoral students in Australia include partnerships such as the Mathematics and Statistics Doctoral Training Centre established by the ATN, specifically designed in collaboration with industry to address a skills shortage in mathematical sciences.¹⁹

Mainland Europe

During the last 15 years, as in the UK, mainland European universities have invested heavily in enhancing the quality of doctoral education. The policy discourse in Europe, much as in the UK, positioned high-quality research training at the heart of business, innovation and global competitiveness. Doctoral education and training were the major link between the two goals to create a European Higher Education Area and a European Research and Innovation Area²⁰ and a number of major policy initiatives relevant to doctoral education flowed from this, including: the Bologna Communiqués,²¹ Salzburg Principles (2005, 2010), Innovation Union (2010),²² Principles for Innovative Doctoral Training (EC, 2011). Funding mechanisms such as Marie Skłodowska-Curie actions and Erasmus Mundus also set standards for structure and content of research training and facilitated training networks (much as RCUK funding has done in the UK).

Although within different European countries the change brought about and the reasons for it varied, there were trends in common towards high growth in student numbers (increase of more than 60% in the number of new doctoral graduates in the EU over the period 2000 to 2011) (EC, 2014) and institutional-level organisation of doctoral education.

"Professional management" approach to doctoral education

The establishment of "doctoral schools" as strategic units has been a Europe-wide phenomenon. In 2007 30% of European universities had doctoral schools (Crosier, Purser and Smidt, 2007). This had increased to 65% in 2009 (Sursock and Smidt, 2010) and 82% in 2011 (Byrne, Jørgensen and Loukkola (2013). In the latest European Commission Research Area Survey (EC, 2013) doctoral schools were almost ubiquitous. These provided a more systematic approach to training, a system of procedures and structures in which to embed doctoral education in a more formal framework and to ensure the quality of research as well as the efficiency and relevance of programmes. Such units have also acted as a strategic force in universities (typically with a Dean or Vice Rector) and are increasingly incorporated into institutional research strategies.

Doctoral schools in Europe exist at a variety of levels within the institution as is increasingly the case in the UK.

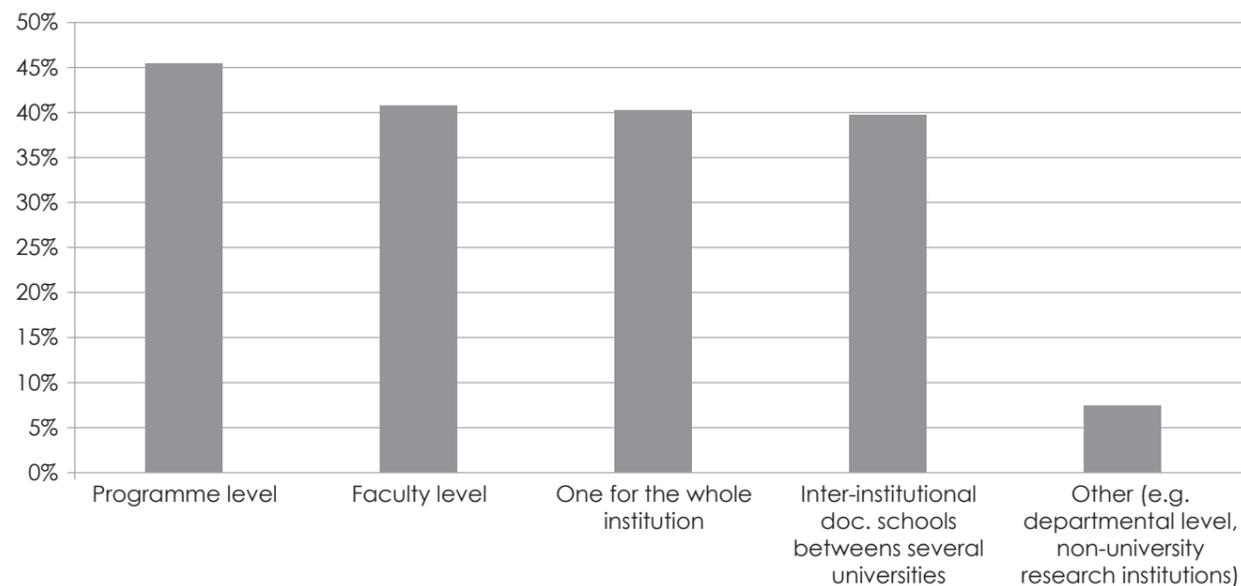
19 See: <https://www.qut.edu.au/study/phds-and-research-degrees/phds/doctoral-training-centre-mathematics-and-statistics>
20 Kehm, Barbara, 'Quo vadis doctoral education? New European approaches in the context of global changes', *European Journal of Education*, Vol. 42, 3, 2007.

21 Between the original Bologna Declaration in 1999 and the second Bologna policy forum in Vienna in 2010, European Ministers of Education met biennially to discuss progress, develop the original Bologna objectives and set priorities. The outcomes of these meetings were published in a series of communiqués: Prague (2001), Berlin (2003), Bergen (2005) and London (2007), Leuven (2009).

22 Innovation Union was one of seven flagship initiatives of the Europe 2020 strategy that were launched by the European Commission in October 2010. Its objective was to improve conditions and access to finance for research and innovation in Europe.

See: http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuld=FTU_5.9.7.html

EC (2013) European Research Area Survey



Key responsibilities for doctoral schools are very similar to equivalent structures in the UK: monitoring and quality assurance, production of common rules and guidelines, completion rates, student experience, curriculum development, transferable skills training, taught course coordination. 70% of respondents to Crosier, Purser and Smidt (2007) said that their doctoral programmes contained a taught element. This figure is significantly higher than in the UK and much closer to the US model.

Spain and Germany in particular have in recent years introduced initiatives to strengthen the quality of doctoral training and enhance industry engagement. In Spain *Estrategia Universidad 2015* (EU2015) was a university modernisation strategy which included the re-organisation of degrees (to bring them into line with Bologna) and the establishment of International Campuses of Excellence Initiative (CEI) (to strengthen regional development and support knowledge exchange.) Part of this included modernising the PhD through enhanced research training, incentivising doctoral programmes of excellence and encouraging the establishment of doctoral schools 'as dynamic structures for the new trans-disciplinary doctorates' (Government of Spain, 2010). In Germany one of the three key foci of 'The Excellence Initiative' was the creation of thematically-organised graduate schools to provide an excellent research environment for the training of highly qualified doctoral researchers and scholars. The other two priorities were the establishment of 'Clusters of Excellence' (collaborative arrangements between universities, research institutions and business/industry partners) and innovative institutional strategies.

Initiatives in Spain and Germany were supported by substantial additional funds, although Clarke and Lunt (2014) reports that one survey respondent from Spain questioned whether the allocated funding had in fact been awarded, following the 2008 financial crisis in the country.

In Germany, Clarke and Lunt (2014) suggests that the Excellence Initiative has meant an increasing 'gap' between universities and between subjects in terms of funding allocated (with natural and applied sciences emerging as winners). Considerable additional funding supported the organisation of focused graduate schools that provide high-quality courses in generic and professional skills, and the strongest research environment. This has resulted in a quality differentiation both between universities, and, to some extent, between subjects.

The trend towards "professional management"²³ has ensured that European countries have been able to manage a steep increase in doctoral candidates while at the same time continuing to achieve strong completion rates. It has also provided a platform to make considerable progress in the development of doctoral training in cooperation with industry so as to better link academia and the industry sector.²⁴ This was a key aim in the Principles for Innovative Doctoral Training policy document (EC, 2011).

Although the development of new types of doctoral programmes was articulated as a priority in the Bergen Communiqué (EC, 2005) and professional doctorates began to be specifically addressed in policy documents

from the middle of this decade, (EC, 2007), there is no data currently available to show the extent of professional doctorate programmes currently available in mainland Europe. However, a range of industrial doctorates in engineering and other sciences are increasingly common in countries such as Denmark, Germany and Italy, for example, and some have similar structures to the UK EngD.

Doctoral education internationally: a summary

There are clear regional differences in the maturity of research environments, access to facilities and funding, needs and priorities. The specific challenges of research development and doctoral education are set out in several publications, including in Jørgensen (2012). Regardless of the state of maturity of the research environment or doctoral education there are key global trends in organisation, aims and approach. These are, on the one hand, increased structure, harmonisation (at a regional level), standardisation and regulation. But on the other hand, the trends also increasingly acknowledge and support diversification, complexity, multi-level and multi-layer working, collaboration and mobility.

Are these opposing trends or does structure and professional management enable the delivery of the harder-to-reach policy and institutional objectives that will maximise economic impact of doctoral education, support growth and deliver this in a cost-effective way?

This question is discussed in greater depth in the results section.



5.1 Methodology

The 2015 survey comprised an online survey (Appendix 1) which was sent out electronically to all 126 institutions who were full members of the UK Council for Graduate Education at the time (Appendix 3). Non-respondents were sent three further reminders before the final closing date of 24th April 2015. The final response rate was 37 percent (46 responses from 126). It was noted that respondents were fairly evenly distributed with 54% from pre 1992 institutions and 46% from post 1992 institutions. This is very close to the proportions (50:50) of these groups which are members of UKCGE and to the proportion in the total population of UK HEIs with their own higher degree awarding powers (52:48).

The aim of the survey was to produce an authoritative national overview of how postgraduate/research degree provision is organised within higher education institutions. The survey focuses mainly on provision for PGR as a large number of graduate schools and doctoral colleges do not cater for taught masters students. Respondents were asked to annotate their answers if the questions did not fit their local circumstances very well. There were few such annotations but those that were included, accordingly, moderated how the data was interpreted.

The survey consisted of three parts to consider specific areas: graduate schools/colleges; doctoral schools/colleges and finally doctoral training programmes.

In the first section considering graduate schools/doctoral colleges, the first question set the scene by asking if the university had a graduate school or other discrete structure(s) for postgraduate education. It specifically excluded externally funded doctoral training centres. The ensuing six questions referred to specific aspects of the graduate school(s) such as which cohorts of students were support i.e. PGR, PGT, professional doctorates, and considered the remit and aims of the Graduate School.

In the second section, the survey considered doctoral schools/colleges, asking if the university had a doctoral school or college and, similarly to the first section, considered which cohorts of research students were supported and the remit and aims of the school or college.

²³ Jørgensen, Thomas, 'European doctoral education, a silent revolution'. Presented at Quality in Postgraduate Research, 10 April 2014, Adelaide University. http://www.qpr.edu.au/?page_id=6972

²⁴ Progress in this area is noted in EC (2013) State of the Innovation Union: Taking Stock 2010-2014. http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2013/state_of_the_innovation_union_report_2013.pdf See also EUA (2009) Collaborative Doctoral Education: University-Industry Partnerships for Enhancing Knowledge Exchange. <http://www.eua.be/eua-work-and-policy-area/research-and-innovation/doctoral-education/doc-careers.aspx>

Section three asked respondents to provide the number of doctoral training programmes offered by the university. Exploring both internally and externally funded programmes, this section asked respondents to comment on how programmes are delivered, whether they are run independently or in consortia and in which subject areas. The final part of section three explored the future development of doctoral training programmes, how they might be funded and the challenges that needed to be overcome in order to develop PGR provision.

The questions in the first part of the survey were derived directly from the previous reviews of graduate schools (1994, 2004 and 2009), with the remainder of the survey designed to take account of the widespread changes and developments impacting Doctoral Education in the UK.

The results are grouped as per the previous publication of 2009 with the only differentiation being between pre and post 1992 institutions. This allowed for some general comparisons among some of the questions with the data from previous surveys in which the responses from the latter were aggregated by combining the results from pre-1960 with 1960 to 1990 institutions and also combining the post-1990 results with those from HE colleges and institutions.

As with the previous survey, the information has been provided by one contact person in each institution with the covering letter requesting that an appropriate person fulfil this role to help us provide a definitive statement on graduate schools in the UK. However, given the variation in the use of terms across the sector, it is recognised that individuals' responses may not always accord with the way others might represent their organisation's structure. In addition, not all questions were completed in full by all respondents while several institutions have more than one graduate school (from the 46 institutions that responded a total of 101 graduate schools were recorded, including the web search, of 126 institutions, a total of 175 graduate schools were recorded).

A study of institutional web-sites served two purposes, the first to seek clarification if some elements of responses were missing or confusing, and second to explore whether non-responding institutions had graduate schools. For relevant questions initial calculations were made using data from the survey and then re-calculated including data from the web search. It was found that the latter made notable difference to the percentages obtained and so this data has been included in tables.

5.2 Results

The first question required respondents to declare if their university had a graduate school, whether there was more than one and which parts of the institution they served. Table 1a demonstrates that, of those member institutions who returned a response, 71% have graduate schools, and that after conducting a web search of non-responding institutions, there was no prevalence between pre and post 1992 universities.

Table 1a Existing graduate schools (combining data from respondents and information from web search)

	Pre 1992	Post 1992	Total	Pre 1992 respondents and web search	Post 1992 respondents and web search	Total respondents and web search
Number who responded	25	21	46	25	21	126
Number with Graduate School	23	16	39	44	45	89
Number considering setting one up	0	2	2	0	0	
% with Graduate Schools	92%	76%	83%	70%	71%	71%

Some institutions reported complex combinations of graduate schools, such as one at faculty level and several at school level. Therefore Table 1b combines such data so that the focus is on 'institution-wide' or not. It shows that pre-1992 institutions have the greatest diversity of models while the dominant model across the sector, but particularly in the post 1992 group, is the institution-wide version.

Table 1b Does your university have a graduate school (or other equivalent discrete structure(s) for postgraduate education)? - Models of graduate schools in institutions: of those that have a graduate school how are they distributed?

	Pre 1992	Post 1992	Total	Pre 1992 respondents with web search	Post 1992 respondents with web search	Total respondents and web search
Institution-wide	13	15	28	25	37	62
Faculty/Department based	34	0	34	63	2	65
Disciplinary	19	2	21	19	2	21
Inter-institutional	1	0	0	1	0	0
Cross Institutional	5	1	6	6	5	11
Other	12	0	12	0	0	12

In total, from the 89 Institutions that have at least one graduate school, there are 171 graduate schools between them. Margin of error of 11 where there are institutions that are served by cross-institutional graduate schools such as SOCSI and SGSAH.

The figures derived from this survey were compared with those from the previous surveys (1994, 2004 and 2009). Table 1c demonstrates the plateau in the growth of graduate schools across the sector and the equal balance between pre and post 1992 group universities.

Table 1c Growth of graduate schools since 1994

% with at least 1 GS					
	1994	2004	2009	2015	2015 respondents and web search
Pre-92	53	78	79	92	70
Post-92	14	53	72	76	70
Overall	38	65	76	83	70

Table 1d Growth of Institution-wide graduate schools since 1994

of those with a GS% with Institution-wide GS					
	1994	2004	2009	2015	2015 respondents and web search
Pre-92	34	61	63	57	57
Post-92	12	85	89	94	82
Overall	21	46	74	72	70

The post 1992 group uses the institutional-wide model the most, perhaps reflecting a smaller number of research students, although overall there has been a large swing to this model. The trend across the sector since the 2009 survey has continued to show that faculty/department based model of graduate school is predominant among pre 1992 institutions with the institution-wide model being the most common model among post 1992 institutions.

However, this general model obscures a wealth of variety at a more detailed level as will be seen in the responses to subsequent questions.

Questions 3, 4 and 5 sought information on the groups of students served by the graduate schools in the institutions that responded. The choice presented allowed for postgraduate researchers (PGR), postgraduates on taught courses (PGT), professional doctorate students (PDS) and early career researchers (ECRs). All graduate schools reported that they served postgraduate research students but there was variation in the number serving PGT, PDS and ECR. The table below indicates the results in terms of the total numbers of graduate schools that provide for PGT, PDS and ECRs (Table 2a).

Table 2a In addition to postgraduate research students, do any of your graduate schools provide support to postgraduate taught students, professional doctorate students and early career researchers?

	Pre 1992			Post 1992			Total		
	Yes	Some	No	Yes	Some	No	Yes	Some	No
Serve PGT	34	3	22	2	0	14	36	3	36
Serve Prof Doc Students	14	7	6	8	5	4	22	12	10
Early Career Researchers	3	8	20	5	9	3	8	17	23

63% of pre 1992 graduate schools serve PGT compared to 13% of post 1992
 70% of pre 1992 graduate schools serve PDS compared to 77% of post 1992
 36% of pre 1992 graduate school serve ECRs compared to 82% of post 1992
 In total 52% serve PGT, 77% serve PDS and 45% serve ECRs

Of the total number of graduate schools, 52% serve PGT students and 77% serve PDS and 45% serve ECRs, however there is a distinct difference between groups. Of the pre 1992 institutions' graduate schools, 63% serve PGT students, 70% serve PDS as well as PGR students and 36% serve ECRs while of the post 1992 institutions' graduate schools only 13% also serve PGT students, 77% also serve PDS and 82% serve ECRs. This trend is largely comparable with the results of the 2009 survey, with the exception that 2015 survey has revealed a slightly higher percentage of post 1992 institutions serving PDS than pre 1992 institutions.

The data clearly show that there is a lot of variation in the sector in how PGT students are served. This was also evident in the earlier surveys.

Question 6 requested respondents to rate a number of provided aims as High, Medium, Low or Not Applicable in terms of their importance to their graduate school(s). A free text option was provided to enable respondents to add further aims and this was taken up by a several institutions both pre and post 1992 institutions who rated as high or medium the following additional aims:

- Supporting the PG society
- Building a vibrant postgraduate community
- Promote "bottom up", PhD student generated links at an academic and social networking level
- Expand the researcher development programme for distance learners and part time students

Table 3 presents the results ordered by the overall percentage of institutions rating each of the listed aims highly.

Table 3 How important are the following aims for your graduate school(s)?

	High	Medium	Low	N/A
Improving research progression and completion rates	94.9%	5.1%	0.0%	0.0%
Improving the student experience for both PGT and PGR	86.8%	2.6%	2.6%	7.9%
Representing graduate issues within the institution	84.6%	15.4%	0.0%	0.0%
Improving the quality of graduate education for both PGT and PGR	84.2%	7.9%	0.0%	7.9%
Quality assurance on research provision	79.5%	15.4%	2.6%	2.6%
Sharing good practice on research supervision	78.9%	21.1%	0.0%	0.0%
Supporting Doctoral Training Programme development	74.4%	12.8%	2.6%	10.3%
Increasing the number of PGR Students	74.4%	20.5%	5.1%	0.0%
Improving PGR degree administration	67.5%	30.0%	0.0%	2.5%
Promoting interdisciplinary work	61.5%	33.3%	5.1%	0.0%
Other, please specify below	60.0%	0.0%	0.0%	40.0%
Supporting PGT and PGR employability	51.3%	38.5%	2.6%	7.7%
Representing graduate issues outside the institution (to policy makers, funders etc)	46.2%	38.5%	15.4%	0.0%
Supporting ECRs	27.0%	29.7%	18.9%	24.3%
Increasing the number of PGT Students	20.0%	20.0%	17.1%	42.9%
Improving PGT degree administration	17.6%	20.6%	5.9%	55.9%
Sharing good practice on PGT teaching	8.6%	22.9%	17.1%	51.4%

All respondents agreed that improving research progression and completion rates were a high or medium important aim and, similarly, there was considerable agreement that improving the student experience, representing graduate issues within the institution and improving the quality of graduate education for both PGR and PGT was also of high importance. Many institutions considered that sharing good practice on research supervision and quality assurance of research provision were of high importance. These six most highly ranked aims of the graduate school have remained the same since the 2009 survey, although their place in the ranking has changed slightly.

Supporting doctoral training programme development and increasing the number of PGR students was also considered to be an area of high importance; this factor will be considered further along in the results section. Since the 2009 survey, the importance of representing graduate issues has declined in importance, according to the 2015 survey.

Aims in respect of PGT students were considered to be of less importance or not relevant to graduate schools. For those graduate schools that did not support PGT students these aims would clearly not have been of relevance. However even among those institutions whose graduate schools did support PGT students, the sharing of good practice of PGT teaching was not considered to be of high importance.

At question 7, the survey asked respondents to indicate the level of involvement of the graduate school in the delivery of key areas within their institution.

Table 4 Please indicate the degree of involvement of the graduate school(s)/graduate college(s) or equivalent) in delivery of the following:

	High	Some	None
Research student training programmes - generic skills training	82.5%	15.0%	2.5%
Quality assurance/monitoring	75.0%	22.5%	2.5%
Research supervisor training	75.0%	17.5%	7.5%
Provision of learning resources for PGR students	72.5%	22.5%	5.0%
Monitoring PGR student progress	70.0%	25.0%	5.0%
Website - internal and/or external	60.0%	35.0%	5.0%
Recruitment/admission of PGR Students	57.5%	32.5%	10.0%
Research student training programmes - research methods	55.0%	42.5%	2.5%
Central co-ordination of responses to national consultations	52.5%	35.0%	12.5%
Award of studentships	50.0%	40.0%	10.0%
Student records	50.0%	27.5%	22.5%
Other, please specify below	50.0%	0.0%	50.0%
Professional development	48.7%	46.2%	5.1%
Registration/matriculation	45.0%	22.5%	32.5%
Liaison with student organisations	40.0%	60.0%	0.0%
Social events/activities for students	40.0%	45.0%	15.0%
Management, delivery, development of Doctoral Training Programmes	40.0%	40.0%	20.0%
Dedicated space (social, study) for PGR	37.5%	30.0%	32.5%
Preparing returns to HESA, funding councils etc	35.0%	27.5%	37.5%
Publicity/PG prospectus	32.5%	60.0%	7.5%
Liaison with Research Councils	32.5%	47.5%	20.0%
Dedicated space (social, study) for PGT	17.9%	7.7%	74.4%
Development of new PGT Programmes	20.5%	23.1%	56.4%
Research student training programmes - learning to teach	17.5%	60.0%	22.5%
Support for ECRs	15.0%	47.5%	37.5%
Monitoring PGT student progress	12.8%	20.5%	66.7%
Specific support for international students	12.5%	67.5%	20.0%
Liaison with employers/industry etc	12.5%	55.0%	32.5%
Recruitment/admission PGT Students	12.5%	25.0%	62.5%
Providing career information	10.3%	66.7%	23.1%
Monitoring career destinations	7.9%	60.5%	31.6%
Placements	7.5%	45.0%	47.5%
Arranging and managing internships	2.6%	35.9%	61.5%

From this table it is apparent that the majority of graduate schools are involved with the generic skills training programmes for PGR students with 82.5% being highly involved. Nearly all are also involved in quality assurance and progression-monitoring as well as the provision of resources for PGR students.

Additional comments recorded for this question included high involvement for some institutions in the following areas:

- Managing studentship funding administration
- Managing national surveys such as PRES and PTES
- Strategy and policy in relation to all aspects of Graduate Education
- Development of specific training support for international students.

Other comments included more precise definitions of the level of involvement of certain areas, particularly how graduate schools interact with other departments in the university such as registry and the international office; other areas of postgraduate administration outside of the graduate school; and input from other academic departments.

From questions 8 to 13, respondents were asked to state if their institution had a doctoral school/college and as with the previous section, to indicate the aims of the doctoral school and their involvement in the delivery of key areas of training and support.

All but two of the respondents answered question 8, which asked if the institution had a doctoral school/college. A total of 44 institutions responded, of which nine (21%) currently have a doctoral school/college, seven were pre 1992 and two were post 1992 institutions. All the nine institutions with a doctoral college, also host graduate schools in parallel, four of which are institution wide and five are faculty or department based. Eight institutions are considering setting up a doctoral school/college, two of which are disestablishing their graduate schools in order to explore the development of a doctoral school/college. This will be explored as one of the case studies.

Table 5 indicates whether those institutions with doctoral schools also serve professional doctorate students or early career researchers within the school.

Table 5 In addition to Post Graduate Research Students, does your doctoral school provide support to Professional Doctorate Students and Early Career Researchers?

	Yes	No	Some
Serve Professional Doctorate Students	3	3	1
Early Career Researchers	3	4	2

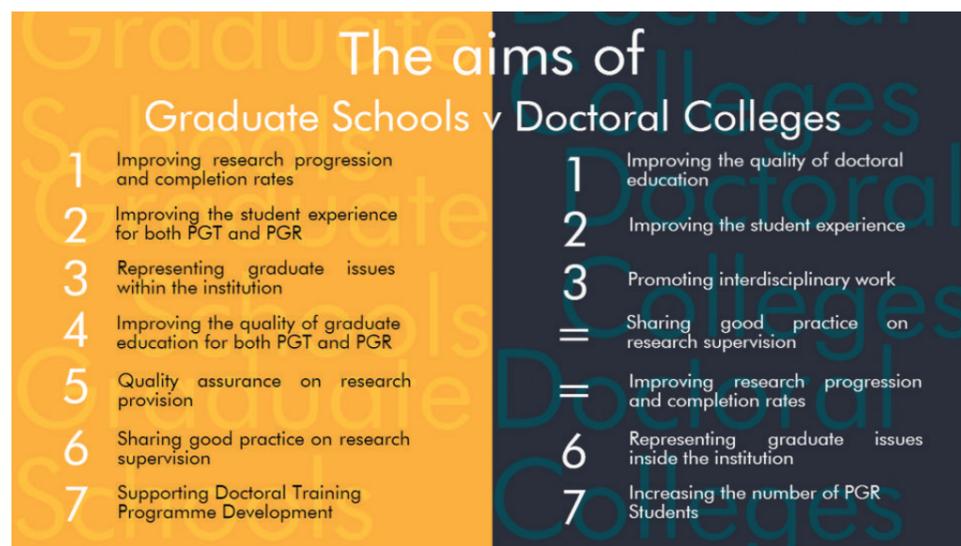
Question 12 requested respondents to rate a number of provided aims as High, Medium, Low or Not Applicable in terms of their importance to their doctoral college. A free text option was provided to enable respondents to add further aims and this was taken up by one institution who rated as high the following additional aim:

- Fostering informal exchanges between PhD students across differing subjects and Faculties.

Table 6 How important are the following aims for your Doctoral School/College?

	High	Medium	Low	N/A
Improving the quality of doctoral education	100.0%	0.0%	0.0%	0.0%
Other (please specify below)	100.0%	0.0%	0.0%	0.0%
Improving the student experience	85.7%	14.3%	0.0%	0.0%
Promoting interdisciplinary work	71.4%	28.6%	0.0%	0.0%
Improving research progression and completion rates	71.4%	28.6%	0.0%	0.0%
Sharing good practice on research supervision	71.4%	28.6%	0.0%	0.0%
Representing graduate issues inside the institution	71.4%	14.3%	14.3%	0.0%
Increasing the number of PGR Students	71.4%	0.0%	28.6%	0.0%
Supporting Doctoral Training Programme development	57.1%	42.9%	0.0%	0.0%
Representing graduate issues outside the institution (to policy makers, funders etc.)	57.1%	14.3%	14.3%	14.3%
Improving PGR degree administration	57.1%	0.0%	28.6%	14.3%
Supporting PGR employability	42.9%	57.1%	0.0%	0.0%
Quality assurance in research supervision	42.9%	28.6%	28.6%	0.0%
Supporting ECRs	14.3%	28.6%	14.3%	42.9%

Although ranked differently to the aims of graduate schools, the same aims featured highly in the top six: improving the quality of doctoral education; improving the student experience, promoting interdisciplinary work; improving research progression; sharing good practice on research supervision and representing graduate issues on research supervision. Promoting interdisciplinary work featured as a more important aim for doctoral colleges than for graduate schools.



At question 13, the survey asked respondents to indicate the level of involvement of the doctoral school or college in the delivery of key areas of doctoral education within their institution.

Table 7 Please indicate the degree of involvement of the Doctoral School/College in delivery of the following:

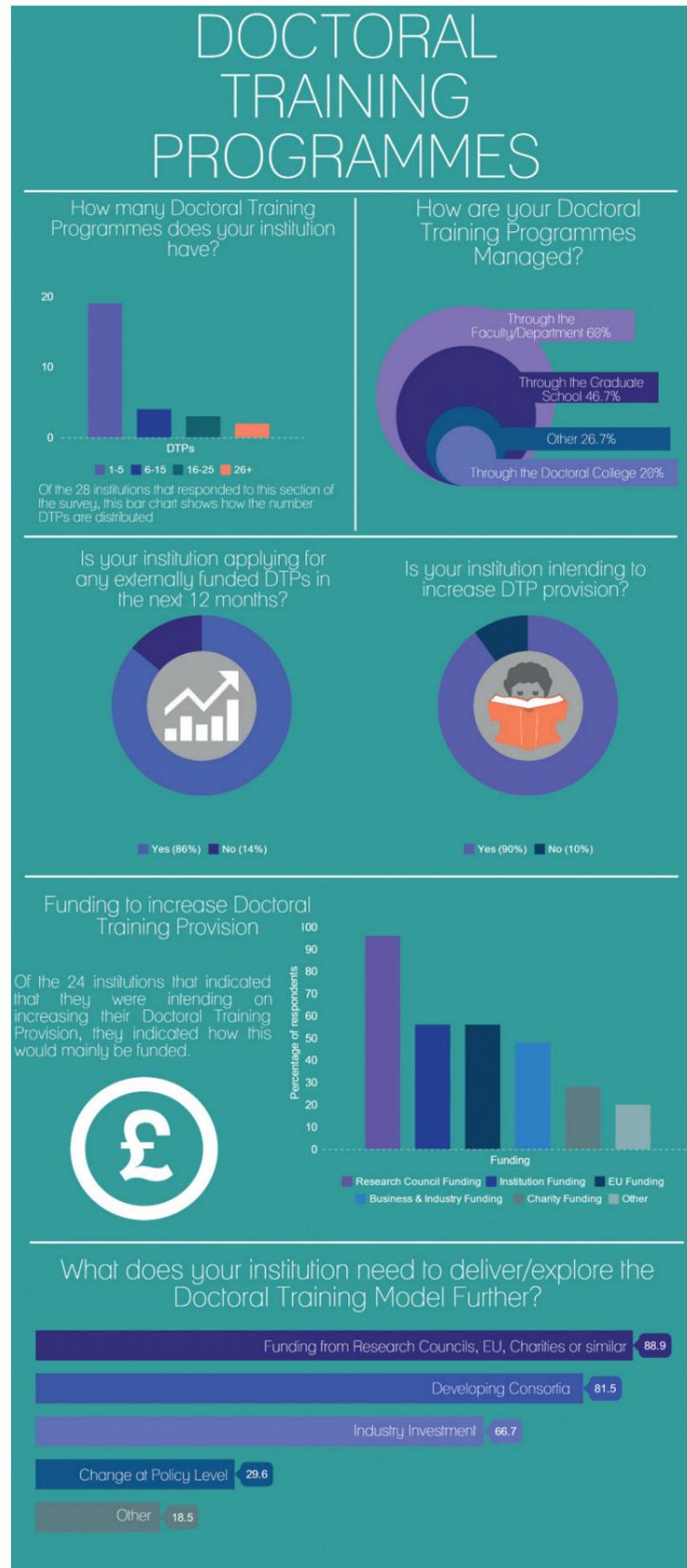
	High	Some	None
Liaison with Research Councils	83.3%	16.7%	0.0%
Website - internal and/or external	66.7%	33.3%	0.0%
Research student training programmes - generic skills training	66.7%	33.3%	0.0%
Central co-ordination of responses to national consultations	66.7%	16.7%	16.7%
Research student training programmes - research methods	50.0%	33.3%	16.7%
Liaison with student organisations	50.0%	33.3%	16.7%
Publicity/PG prospectus	50.0%	33.3%	16.7%
Management, delivery, development of Doctoral Training Programmes	50.0%	50.0%	0.0%
Provision of learning resources for PGR students	33.3%	66.7%	0.0%
Professional Development	33.3%	66.7%	0.0%
Monitoring career destinations	33.3%	50.0%	16.7%
Recruitment/admission of PGR Students	33.3%	50.0%	16.7%
Monitoring PGR student progress	33.3%	33.3%	33.3%
Quality assurance/monitoring	33.3%	33.3%	33.3%
Preparing returns to HESA, funding councils etc	33.3%	33.3%	33.3%
Dedicated space (social, study) for PGR	33.3%	0.0%	66.7%
Providing career information	16.7%	66.7%	16.7%
Liaison with employers/industry etc	16.7%	66.7%	16.7%
Social events/activities for students	16.7%	66.7%	16.7%
Research supervisor training	16.7%	50.0%	33.3%
Research student training programmes - learning to teach	16.7%	50.0%	33.3%
Student records	16.7%	33.3%	50.0%
Support for ECRs	16.7%	33.3%	50.0%
Award of studentships	16.7%	16.7%	66.7%
Specific support for international students	0.0%	66.7%	33.3%
Placements	0.0%	50.0%	50.0%
Arranging and managing internships	0.0%	50.0%	50.0%
Registration/matriculation	0.0%	33.3%	66.7%
Other, please specify below	0.0%	0.0%	0.0%

Additional comments recorded for this question included high involvement were as follows:

- As per our graduate school
- Many of the above are dealt with centrally by Education Services (Academic Registry) or Research and Innovation

The responses showed a distinct difference between key activities delivered by doctoral colleges in comparison with graduate schools. Generic skills training for research students was the only area that was ranked in the top five activities for both. Doctoral college activity was also focused on: liaison with Research Councils; website; central co-ordination of responses to national consultations and student training programmes – research methods.

Figure Two Summary of Section Three Results – Doctoral Training Programmes



Case Study Analysis

Following the initial analysis of the survey data, a number of institutions were identified as being interesting case studies to investigate in more detail, given the nature of the structural changes that had taken place within them since the 2009 survey. It had not been the intention to include case studies in this report, however the picture that was emerging from the initial analysis called for further exploration into the influencing factors and motivators driving the respondents to the survey to make the changes they have. The case study institutions were identified based on the specific changes that had occurred within their internal structures and not on their membership of or affiliation with any university group. However the case studies (see Appendix 2) do represent a variety of institutions (in terms of research intensity and geographical location). University Alliance also provided detailed information on the motivations, aims and objectives of the Doctoral Training Alliance in Applied Biosciences for Health which is a recently-launched national collaboration between 13 Alliance universities and the largest multi-partner doctoral training programme in the UK.

All case studies have been anonymised.

In particular the case study questions focused on the motivations that led certain universities to close or replace their graduate schools, their reasons for setting up doctoral colleges (either alongside or instead of previous doctoral support structures) and the perceived benefits and challenges of cohort-based training programmes (either institutionally or externally funded.)

Most case-study institutions spoke about a desire to increase PGR numbers and the intention to build structures that would support this growth effectively in terms of: a competitive offer which would attract strong applicants and external funding; and scalability of processes and programmes.

Doctoral Colleges

There was no clear consensus in the case studies around motivations for restructuring from graduate school to doctoral college but certain trends in training delivery emerged. Many respondents had kept graduate schools at a local level or in specific subject areas (Education, in two responses) and had introduced a doctoral college as a coordinating supra-structure. There was a clear movement towards more tailored training delivery in all case studies with the intention of enhancing the training offer, and in one case with the aim of better "ownership and empowerment" of faculty in doctoral training. This was balanced by a need for institutional-level coordination (in both research-intensive and business-facing institutions) to facilitate the kind of cross- and inter-disciplinary working required by research and by funders.

One post-92 institution had terminated their cross-faculty graduate school provision of research methods training in favour of an institutional framework for training (particularly in research methods) that was then developed and delivered by Faculty staff for PGR. Although unsure of a definitive name for this structure, it was felt likely that it would come under the umbrella of a doctoral college. The new emphasis was on a flexible curricular structure, cohort development and better integration of PGR into their research community. This last point was echoed by another case study respondent who felt that the concept of a 'doctoral college' made the link to research more explicit in their institution. This was considered to be a positive development.

Another factor driving the development of doctoral colleges was a desire to enhance the institutional reputation externally and particularly internationally and to support recruitment of high-quality students. This more outward-facing remit of doctoral colleges is also evident in the survey data, which highlighted external liaison with funders, web presence and responses to national consultations as key functions.

Two case studies from research-intensive institutions noted an explicit link between the decision to develop a doctoral college and the cross-disciplinary and collaborative working required by structured doctoral training programmes.

Doctoral Training Programmes

Doctoral training programmes were seen in one institutional response to 'drive innovation'. The respondent noted that the cross-institutional collaborations required by many cohort-based programmes were having an effect on institutional PGR policy and systems, such that the university quality framework was being adapted to become more flexible and accommodating to interdisciplinarity and collaborative-working across universities. Several case study responses also highlighted either actual or intended inter-disciplinary and cross-institutional collaboration amongst supervisors as a result of cohort-based doctoral training models. The models were positioned at the forefront in a number of cases of more effective and extensive partnership-working between university and business/third sector. Other case studies noted that collaborative doctoral training programmes had resulted in sharing of skills development training and survey data between

institutions. These were seen as positive developments, although a number of respondents also highlighted the administrative challenges of co-ordinating a large number of doctoral training programmes, each with their own diverse set of requirements.

National Training Programme

The final case study looked at a recent development to initiate a national-level cohort-based doctoral training programme in a 13-institution consortium of modern universities. The programme was not supported by research council funding. The case study responses pointed to a desire to create a structured approach to doctoral training in order to achieve the benefits of the cohort structure that are summarised above. However there was also a clear strategic intention to increase research capacity by developing doctoral research partnership-working into future broader research collaborations. Although this was also reported as a key aim in another regional collaboration, cited by one of the other case studies from a research-intensive institution, in this latter case doctoral education was separated out into a different work-stream from the development of cross-partner research collaborations.

6 DISCUSSION AND CONCLUSIONS

Graduate education is important to individuals, institutions and governments. It builds on human capital to drive economic success.²⁵ It is increasingly global in nature in terms of the individuals who undertake it, teach it and supervise it, the challenges it tackles and the citizens it produces. It is also changing. Taught postgraduate programmes are in decline and continue to face an unresolved funding crisis. Meanwhile doctoral education across Europe has seen what has been termed a 'quiet revolution',²⁶ in terms of the way it is structured and what it delivers.

This report is the latest in a series of UKCGE publications in 1994, 2004 and 2009²⁷ which have charted the development of discrete structures to support graduate education like graduate schools²⁸ and most recently doctoral colleges. It has been designed as a comparator, using a similar question structure and focus to allow tracking of trends over a two-decade period. The findings are focused particularly on structural changes in doctoral education with an eye to future challenges and on-going developments.

The early sections of the report outlined key developments in policy and practice in UK higher education and internationally that have particularly impacted on doctoral education since the 2009 report and the previous one in 2004. These serve to provide context to the comparisons made between the results of the two surveys presented in Section 5 of the present report. For completeness these comparisons also included, where available, the results from the original 1994 survey of graduate schools (tables 1c and 1d), a survey conducted in the year that the UK Council for Graduate Education was established. The UKCGE was then the first of many new organisations such as Vitae, SRHE Postgraduate Interest Network, Rugby Team - a sector working group on the impact of skills training) at the national level to focus on some aspect of the structures, functions, activities, outputs and outcomes of study beyond the first degree.

It is clear that there are significant contemporary UK political and economic uncertainties as well as unknowns in the global research arena that are likely to impact on recruitment, funding, training and structures for doctoral researchers. This report has however also highlighted a number of common trends and themes in both institutional and government aspirations. These are around growth, high-quality research training and the realisation of the true economic potential of the postgraduate research community.

The transformations in the acknowledged significance of this community that have taken place since the 1996 Review of Postgraduate Education (HEFCE, 1996) are unprecedented and that significance, beyond

25 A recent report commissioned by RCUK on the impact of doctoral graduates at the level of individual institutions and the wider economy suggests doctoral education is producing graduates who improve profitability, enhance productivity and enrich the workplace with their creative thinking and innovation. RCUK (2014) The impact of doctoral careers. <http://www.rcuk.ac.uk/RCUK-prod/assets/documents/skills/timodcfullreport.pdf>

26 EUA Progress Report (December 2013) on the implementation of the actions agreed in the Memorandum of Understanding (MoU) on the European Research Area, p. 4 <http://www.eua.be/eua-work-and-policy-area/euapolicy-position-and-declarations.aspx>

27 See UKCGE (1995), Woodward, D., Denicolo, P., Hayward, S. and Long, E. (2004) and Denicolo, P., M. Fuller and D Berry with C Raven (2009).

28 The survey referred throughout to 'graduate schools' though the first question allowed for the use of alternative nomenclature within institutions by including: 'or other equivalent discrete structure(s) for postgraduate education' within its rubric.

their numerical proportion in the UK, relates to the development globally of a knowledge society in which research, and the attributes and skills required to conduct it, are increasingly recognised as economic goods that are essential to the future prosperity of UK economy and more generally to society.

The language of the marketplace now permeates the HE academy and the economic impact of doctoral education is articulated by funders, governments and global development bodies.²⁹

This section goes on to explore the current key characteristics of graduate education and the changing nature specifically of the doctoral landscape.

PGT: The poor relation?

Taught postgraduate programmes are not the focus of this report but they are incorporated into a number of the survey questions and have historically been reported as a stakeholder community for a minority of graduate schools. As a pipeline to PGR recruitment, and a potential source of income generation with which to cross-fund PhD studentships, taught postgraduate programmes are also intrinsically connected to some of the changes taking place within doctoral education.

Although the report of the Higher Education Commission Independent Inquiry into Postgraduate Education noted that in a number of areas postgraduate (taught) study was becoming a norm there has nevertheless been a significant drop in UK PGT numbers³⁰ and as a consequence an increasing reliance by UK HEIs on international students to ensure the viability of taught postgraduate programmes. HEFCE (2015) Higher Education in England: Key Facts shows that in taught masters programmes in science, technology, engineering and mathematics subjects more than half of students are from overseas, making the subject areas "particularly vulnerable to any volatility in the overseas student market."

The sector waits for clarification of the promised postgraduate loan scheme that will be put in place to combat the potentially negative impact of the new undergraduate fees arrangements on the capability of students to undertake postgraduate study (at masters and doctoral level). In the meantime many institutions are undertaking a review of their taught postgraduate provision with a view to rationalising existing courses and developing new programmes and modes of delivery to target new markets. The programme analysis of HEFCE's Postgraduate Support Scheme (Wakeling, 2015) identified state funding as necessary to ensure the future supply of UK-domiciled PGT students; in particular graduates without the financial resources to fund themselves and for subjects of the highest strategic national importance. Wakeling's recommendations to government and HEFCE also supported on-going investigation and encouragement of alternative sources of PGT funding.

It is interesting to note that the 2009 UKCGE report (Denicolo et al., 2009) documented a blurring of boundaries between postgraduate research and postgraduate taught programmes as the research components in masters programmes expanded and taught course components (generic skills training, research methods training) were increasingly incorporated into doctoral programmes. This trend has clearly continued at a doctoral level with the four-year PhD (with an integrated taught element) now becoming the gold standard for students funded through all major funders. However, in terms of structural organisation it seems from the recent survey that provision of and responsibility for taught postgraduate programmes is increasingly splitting apart from support for doctoral education.

In previous surveys the majority of graduate schools in business-facing universities served postgraduate and postdoctoral communities with around half of graduate schools in research-intensive institutions supporting the taught postgraduate community. The latest survey reveals that even among those institutions with graduate schools that did support PGT students, aims such as sharing of good practice of PGT teaching were not considered to be of high importance. Whilst taught postgraduate programmes are a diminishing concern in graduate schools the survey revealed them to be entirely absent from the emerging doctoral college structure that, in some institutions, aims to better integrate PGR into the research environment.

PGT course development, delivery and coordination may be devolved to faculty and school/department level and draw on the expertise of other specialist units across universities. However given the role graduate

schools or similar discreet structures played in terms of advocating for postgraduates at senior management level, the survey results pose the question of what the long-term consequences of an absence of institution-level coordination, strategy development and advocacy for masters programmes and students will be.

Structural complexity

Innovation in hard times

The period since the last survey has been characterised by less money, greater demands and expectations in terms of quality and quantity of training and steady growth in PGR numbers. However doctoral education across the sector continues to innovate, to grow and to attract high-quality future research and business leaders from around the world.

The last survey in 2009 recorded sector-wide anxiety (but particularly in research-intensive institutions) associated with the end of ring-fenced 'Roberts' funding and the decrease in Research Council funding for research students. There was a perceived challenge at this point to quality and especially to the UK's status as world-leader in research education and training provision. There were associated fears over recruitment. However in the period 2009-2014 we see a continuous steady rise in student numbers and particularly strong recruitment from international markets. Although the consequences of changes at PGT level and the on-going impact of undergraduate fees have yet to be seen in full, there is evidence to suggest that the fears of the 2009 survey have not been realised.

Multiple Layering

The report on the 2004 survey included a caveat about the dangers of pursuing a 'one model fits all' policy in that such a model would be detrimental to providing for an increasingly diverse student body with a wide range of needs. Structural changes between 2004 and 2009 showed trends towards harmonisation of support for doctoral education in a single university-level graduate school, although in practice it was clear that models varied to meet the needs of the institution and student body.

The 2015 survey results show a sector that has overcome the threats to funding, recruitment and quality by generating and regenerating itself, creating different, multi-layered models, structures and provision to meet the changing needs of funders, students and business (as research collaborators and employers). The landscape is complex with institution-wide graduate schools, the emergence of graduate schools at faculty level, doctoral training centres both within and across universities, and the nascent doctoral college model.

Graduate Schools

Where the 2009 survey showed some harmonisation of vision of graduate school provision across the sector in that the institution-wide version is the model of choice for most (particularly in the business-facing group who were later to establish graduate schools), 2015 shows a steep rise in graduate schools located at faculty level. Equally where between 2005-2009 the development of inter-institutional graduate schools remained static across the sector, 2015 shows a strong trend towards inter-institutional co-operation.

Cohort-based structures

The most recent survey results also evidence a rapid growth in cohort-based doctoral training. There are currently 81 doctoral training programmes funded by the research councils for arts, social sciences, engineering and physical sciences and natural and environmental sciences (see Fig Three) with an anticipated 15-20 additional doctoral training partnerships to be announced at the end of October by the Medical Research Council. There are currently a further 32 programmes in the biomedical sciences funded by the Wellcome Trust. Although the total number of research council funded programmes is likely to decrease as a number of councils begin to favour larger consortia. The survey data also contain early signs of wider adoption and evolution of the model with some examples of institutions that were configuring their own studentships into doctoral training programmes, in some cases through inter-institutional and interdisciplinary partnerships. In one case study a national cohort-based programme has been developed by a University mission group. This structural reconfiguration is in-step with emergent academic debate around the value of peer-learning, communities of practice and the many-to-many model of doctoral supervision that are best summarised as follows:

Doctoral education and research training (...) are so important a resource (they are) no longer left in the hands of professors and departments but (have) become an object of policy-making and (have) moved to the institutional and national, even supra-national level. Kehm (2007, p.314)

Doctoral Colleges

The 2009 report highlighted the potential of the (at that time, small number of) DTCs to 'influence the sectoral landscape for graduate schools in the future.' In the 2015 survey results we see that one of the ways doctoral training programmes may have done this is through the emergent trend towards establishing doctoral colleges.

²⁹ EPSRC (2015) evidences the critical role played by engineering research and postgraduate training in supporting a dynamic and growing economy, at the centre of global research and innovations. UK Budget 2015: "the government is developing a more highly-skilled UK labour market by strengthening support for postgraduate research and apprenticeships, and setting out plans for further investment in the UK's world-leading science and innovation base". See also OECD (2010).

³⁰ UK-domiciled students fell by 17% between 2009-13 (2% increase in 2013-14 following a decline in the previous year) for full time courses (Universities UK, 2014) and there has been a steady decline in part-time PG student numbers (HEFCE, 2013a).

Whilst the numbers are small, this structure, as with graduate schools and doctoral training programmes, has emerged most strongly in research-intensive universities. The case studies set out a common aim to facilitate the types of cross- and inter-disciplinary working that are required by cohort-based doctoral training programmes. One of the key characteristics of a doctoral college evident in the survey data is the emphasis on liaising with the Research Councils (principal funders of doctoral training programmes) and research methods training (a key component in the cohort-based model.) This is alongside website development and responding to national consultations. For comparison, graduate schools focus on progression, provision of learning resources, generic skills training, supervisor training and quality assurance. Both structures share similar aims including: enhancing progression and completion; improving student experience; representing graduate issues, improving quality of education, supporting best practice-sharing in supervision.

The prioritisation of these aims is of interest as it shows how graduate schools continue to put first the challenges that were fundamental to doctoral education back at the time of the inaugural report in 1994: student progression and completion rates and quality assurance. Whilst these are still undoubtedly significant in 2015 and are stated key objectives for structures that support doctoral education around the world, quality of the education (over the completion of the thesis), interdisciplinary-working, and growth in student numbers are the new priorities for doctoral colleges. These hint at a potential desire amongst certain institutions to move the sector on, and to build on the firm foundations, now more or less understood to be in place.

This maturation in thinking sits well in a complex landscape and one in which growing diversification is a key characteristic not only in terms of multi-layered structures, but also in terms of the student body and doctoral programmes.

Diversification

In the period between 2009 and 2015 we have seen further diversification in terms of the student body and some indication of diversification in doctoral programmes (type and mode of study) offered by universities.

The key trends are towards an increasingly international doctoral population and larger numbers of women postgraduates. There is significant work remaining for institutions to attract and retain UK-domiciled students from black and minority ethnic and non-traditional backgrounds.

Although QAA's recent update of the doctoral degree characteristics document has shown little significant change between 2011 and 2015 in what a UK doctorate is, the survey results and HESA data suggest some limited diversification in doctoral programmes. Respondents indicated that graduate schools and (to a lesser extent) doctoral colleges increasingly have support for professional doctorates incorporated into their remits, although HESA data on numbers of students registered on professional doctorates is not currently available. What HESA data has shown (but this did not emerge strongly in the survey responses) is an increasing interest across the sector in diversifying modes of PhD study, including PhD by distance-learning. This is evident also to some extent in other national reports from this period and may be a result of policy imperatives around business engagement and institutional ambitions to grow student numbers in a tough recruitment climate.

The increase in students registered as distance learners poses further challenges in terms of where they might fit in to campus-based structures and local modes of training delivery, quality code requirements to provide students with a strong research environment and parity of experience with 'traditional' PhDs. It also calls into question the cogency of traditional full-time and part-time delineations in registrations where blended doctoral programmes with significant online content can be accessed anywhere and anytime.

Future trends

This survey has provided a snapshot of graduate education with a focus on the doctoral landscape at a moment of change and growing complexity.

Student debt has been identified as a potential barrier to postgraduate study in general. The pipeline from taught postgraduate programmes seems currently to be under threat and there is no clear evidence that taught postgraduate issues are a priority (or in many cases within the remit) of the structures that the report examines.

As the sector has matured we see a change in emphasis in policy and practice in terms of doctoral education. Similarities of PGR training needs, their synergies and complementarity are being increasingly nuanced by a tolerance and an appreciation of difference. As funding has declined, populations have diversified and partnership-working has become necessary and desirable to meet institutional needs and policy imperatives around tailored training programmes, business/industry engagement and economies of scale.

However there are questions to answer regarding the impact of the changes on student experience,³¹ quality, the sustainability of doctoral training programmes in terms of the financial burden of the cohort-based model and the intrinsic inequalities of a two-tier system of doctoral education. There have always been inconsistencies in the doctoral training offer (within and between institutions) dependent upon funding, industry engagement and quality of supervision. It could be argued that whilst doctoral training programmes have highlighted some inequalities between certain groups they have also acted as poles of innovation, driving up standards of doctoral education across the sector. As the first mission group develops a national doctoral training alliance will the model continue to evolve and grow across the sector? And if it does, how can the degree of 'messiness' that is characteristic of partnership-working (Wagstaff, 2013) be managed or resolved in a cost-effective way without stifling the creative spirit that has characterised this innovation?

A challenge for institutions in the future is associated with managing and rationalising structures in a multi-layered framework to retain world-leading status for the quality of UK doctoral education whilst achieving cost-effectiveness and equality in provision. Can and should all of these structures continue to coexist?

It remains to be seen what the future holds for graduate schools and whether the trend towards establishing doctoral colleges continues. Will doctoral colleges fulfil their promise to be more than a change of name (as one survey respondent suggested)?

There will undoubtedly continue to be challenges to overcome in order to retain international competitiveness, drive growth in student numbers, manage costs effectively, enhance training and further exploit the value of the UK doctoral community to the national and global economy. As the sector matures, expectations increase, demands grow, partnerships and collaborations become more complex and demanding. The three UKCGE surveys have not only charted the changing nature of the landscape for postgraduate education in the UK over the past fifteen years; they have also evidenced resilience, innovation and responsiveness. These are without question the characteristics that will continue to ensure the future of world-leading doctoral education in the UK.

³¹ Postgraduate Research Experience Survey 2015 analysis will be published by HEA in Autumn 2015. Initial findings presented at Vitae 2015 (3 Sept. 2015) suggest PGR located within doctoral training programmes may feel better integrated into the research environment and may rate the training more highly. However further analysis is required to understand confounding factors such as a greater concentration of doctoral training programmes within science, technology, engineering and maths disciplines.

APPENDICES

APPENDIX 1 STRUCTURAL CHANGES IN DOCTORAL EDUCATION SURVEY

You and your institution

Name of institution	
Your own name	
Your position in the institution	

PART ONE: Graduate Schools/Colleges

1. Does your university have a graduate school/graduate college (or other equivalent discrete structure(s) for postgraduate education and training)? Please do not include doctoral schools/colleges in this section; these will be covered in section 3.

				Response Total
1	Yes, one serving the whole institution (to be referred to as GS1 for the remainder of this survey)			
2	Yes, one but serving only one particular faculty, discipline or area (to be referred to as GS2 for the remainder of this survey)			
3	Yes, more than one (to be referred to as GS3, GS4, GS5 etc for the remainder of this survey)			
4	No, but a similar model (please continue to provide responses as appropriate to your model)			
5	No but we are considering setting one up			
6	No, there are no plans to develop one			
Comments:				

2. If you answered "Yes, more than one", please specify if each is faculty, disciplinary, cross-institutional, inter-institutional or other.

	Faculty	Disciplinary	Cross-Institutional	Inter-Institutional	Other	Response Total
GS3						
GS4						
GS5						
GS6						
GS7						
GS8						

3. In addition to postgraduate research students (PGR for the remainder of this survey), do any of your graduate schools/graduate colleges (or equivalent) serve postgraduate taught students (PGT for the remainder of this survey)?

	GS1	GS2	GS3	GS4	GS5	GS6	GS7	Response Total
Yes								
No								
Comments:								

4. Do any of your graduate schools/graduate colleges (or equivalent) serve professional doctorate students? If yes, please specify which professional doctorates are offered by your institution in the comments box e.g. EngD, EdD, DBA etc.

	GS1	GS2	GS3	GS4	GS5	GS6	GS7	Response Total
Yes, fully supported								
Some support								
No, they are supported elsewhere in the institution								
No, we don't offer Professional Doctorate programmes								
Comments:								

5. Do any of your graduate schools/graduate colleges (or equivalent) serve early career researchers (ECRs for the remainder of this survey)? Definitions of an ECR vary from institution to institution, most prominently perhaps are those offered by the REF and the Research Councils, where there is a tendency for ECRs to be defined in relation to the time since their PhD Viva. For the purposes of this survey, please consider ECRs as per the definition for your own institution.

	GS1	GS2	GS3	GS4	GS5	GS6	GS7	Response Total
Yes, fully supported								
Some support								
No								
Comments:								

6. How important are the following aims for your graduate school(s)/graduate college(s) (or equivalent)?

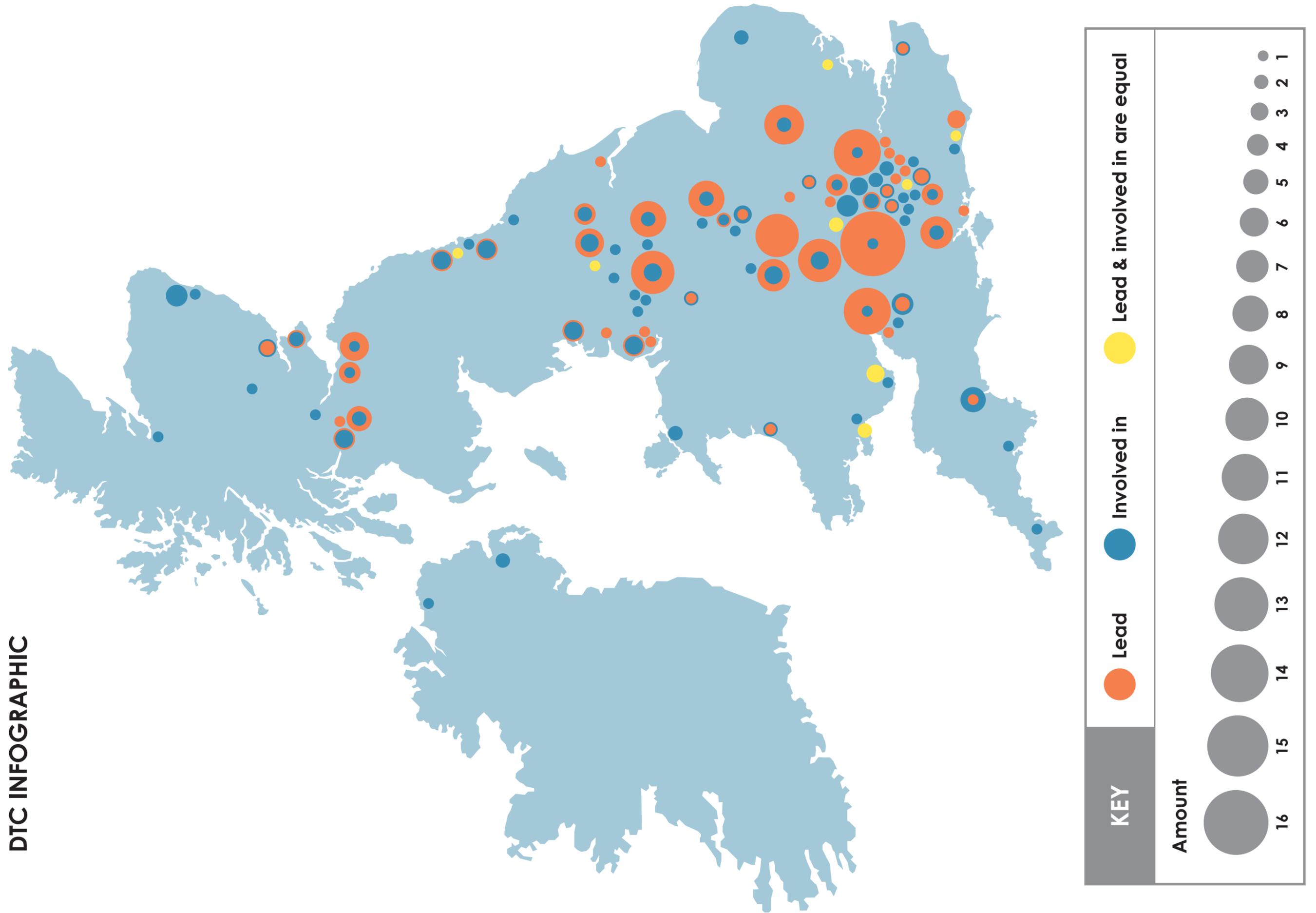
	High	Medium	Low	N/A	Response Total
Improving the quality of graduate education for both PGT and PGR					
Increasing the number of PGT Students					
Increasing the number of PGR Students					
Representing graduate issues within the institution					
Representing graduate issues outside the institution (to policy makers, funders etc)					
Promoting interdisciplinary work					
Improving PGT degree administration					
Improving PGR degree administration					
Improving research progression and completion rates					
Improving the student experience for both PGT and PGR					
Sharing good practice on PGT teaching					
Quality assurance on research provision					
Sharing good practice on research supervision					
Supporting Doctoral Training Programme development					
Supporting ECRs					
Supporting PGT and PGR employability					
Other, please specify below					
Comments:					

7. Please indicate the degree of involvement of the graduate school(s)/graduate college(s) (or equivalent) in delivery for the following:

	High	Some	None	Response Total
Development of new PGT Programmes				
Award of studentships				
Recruitment/admission PGT Students				
Recruitment/admission of PGR Students				
Registration/matriculation				
Student records				
Monitoring PGT student progress				
Monitoring PGR student progress				
Quality assurance/monitoring				
Central co-ordination of responses to national consultations				
Preparing returns to HESA, funding councils etc				
Provision of learning resources for PGR students				
Research student training programmes - research methods				
Research student training programmes - generic skills training				
Research student training programmes - learning to teach				
Placements				
Specific support for international students				
Social events/activities for students				
Dedicated space (social, study) for PGT				
Dedicated space (social, study) for PGR				
Research supervisor training				
Publicity/PG prospectus				
Website - internal and/or external				
Liaison with student organisations				
Liaison with employers/industry etc				
Liaison with Research Councils				
Management, delivery, development of Doctoral Training Programmes				
Support for ECRs				
Monitoring career destinations				
Providing career information				
Professional development				
Arranging and managing internships				
Other, please specify below				
Comments:				

Figure Three

DTC INFOGRAPHIC



PART TWO: Doctoral Schools/Colleges

8. Does your university have a doctoral school/college?

		Response Percent	Response Total
1	Yes, one serving the whole institution (to be referred to as DS1 for the remainder of this survey)		
2	Yes, one but serving only one particular faculty, discipline or area (to be referred to as DS2 for the remainder of this survey)		
3	Yes, more than one (to be referred to as DS3, DS4, etc for the remainder of this survey)		
4	No, but we are considering setting one up		
5	No, there are no plans to develop one		
6	Other (please specify):		

9. If you answered "Yes, more than one", please specify if each is faculty, disciplinary, cross-institutional, inter-institutional or other

	Faculty	Disciplinary	Cross-Institutional	Inter-Institutional	Other	Response Total
DS3						
DS4						
DS5						
DS6						
DS7						
DS8						

10. Do any of your doctoral schools/doctoral colleges serve professional doctorate students? If yes, please specify which professional doctorates are offered by your institution in the comments box e.g. EngD, EdD, DBA etc.

	DS1	DS2	DS3	DS4	DS5	DS6	DS7	DS8	Response Total
Yes, fully supported									
Some support									
No, they are supported elsewhere in the institution									
No, we don't offer Professional Doctorate programmes									

11. Do any of your doctoral schools/doctoral colleges (or equivalent) serve early career researchers (ECRs for the remainder of this survey)? Definitions of an ECR vary from institution to institution, most prominently perhaps are those offered by the REF and the Research Councils, where there is a tendency for ECRs to be defined in relation to the time since their PhD Viva. For the purposes of this survey, please consider ECRs as per the definition for your own institution.

	DS1	DS2	DS3	DS4	DS5	DS6	DS7	DS8	Response Total
Yes, fully supported									
Some support									
No									

12. How important are the following aims for your doctoral school/college?

	High	Medium	Low	N/A	Response Total
Improving the quality of doctoral education					
Increasing the number of PGR Students					
Representing graduate issues inside the institution					
Representing graduate issues outside the institution (to policy makers, funders etc.)					
Promoting interdisciplinary work					
Improving PGR degree administration					
Improving research progression and completion rates					
Improving the student experience					
Quality assurance in research supervision					
Sharing good practice on research supervision					
Supporting Doctoral Training Programme development					
Supporting ECRs					
Supporting PGR employability					
Other (please specify below)					
Comments:					

13. Please indicate the degree of involvement of the doctoral school/college in delivery of the following:

	High	Some	None	Response Total
Award of studentships				
Recruitment/admission of PGR Students				
Registration/matriculation				
Student records				
Monitoring PGR student progress				
Quality assurance/monitoring				
Central co-ordination of responses to national consultations				
Preparing returns to HESA, funding councils etc				
Provision of learning resources for PGR students				
Research student training programmes - research methods				
Research student training programmes - generic skills training				
Research student training programmes - learning to teach				
Placements				
Specific support for international students				
Social events/activities for students				
Dedicated space (social, study) for PGR				
Research supervisor training				
Publicity/PG prospectus				
Website - internal and/or external				
Liaison with student organisations				
Liaison with employers/industry etc				
Liaison with Research Councils				
Management, delivery, development of Doctoral Training Programmes				
Support for ECRs				
Monitoring career destinations				
Providing career information				
Professional Development				
Arranging and managing internships				
Other, please specify below				
Comments:				

PART THREE: Doctoral Training Programmes

14. Does your Institution offer Doctoral Training Programmes?

		Response Percent	Response Total
1	Yes		
2	No		
Comments:			

15. How many Doctoral Training Programmes does your institution have?

	Response Percent	Response Total

16. Please tell us how your Doctoral Training Programmes are run and managed, selecting all that apply:

		Response Percent	Response Total
1	Through the graduate school/college		
2	Through the doctoral school/college		
3	Through the Faculty/Department/School (non graduate/doctoral School)		
4	Other (please specify):		
Comments:			

17. In this next section of the survey, we will be asking for information and details on your Doctoral Training Programmes (PhDs, Industrial PhDs, hybrid etc) including funder, if it is in consortia or independent and if in consortia, who the partners are. Please select the relevant HESA codes, or, if you would prefer, you can upload a file that contains the same information. Please either [AttachFile] and

		Response Percent	Response Total
1	move to next section		
2	or enter HESA codes		

18. Please list your Doctoral Training Programmes using the HESA subject groups supplied (please use the numbers and/or letters that apply per programme): (1) Medicine & Dentistry (2) Subjects Allied to Medicine (3) Biological Sciences (4) Veterinary Sciences (5) Agriculture & Related Subjects (6) Physical Science (7) Mathematical Science (8) Computer Science (9) Engineering & Technology (A) Architecture, Building & Planning (B) Social, Economic & Political Studies (C) Law (D) Business & Administrative Studies (E) Librarianship & Information Science (F) Languages (G) Humanities (H) Creative Arts & Design (I) Education

	HESA Code	Funder(s)	Independent or in consortia	Consortia Partners	Response Total

19. Please detail how internships are managed and arranged.

		Response Percent	Response Total
1			

20. Is your institution applying for any externally-funded Doctoral Training Programmes in the next 12 months?

		Response Percent	Response Total
1	Yes		
2	No		

21. Is your institution intending to increase Doctoral Training Programme provision?

		Response Percent	Response Total
1	Yes		
2	No		

22. If yes, how will this mainly be funded?

		Response Percent	Response Total
1	Research Council funding		
2	Institution funding		
3	Business and industry funding		
4	European Union funding		
5	Charity funding		
6	Other (please specify):		
Other (please specify):			

23. What does your institution need to deliver/explore the Doctoral Training Programme model further?

		Response Percent	Response Total
1	Industry investment		
2	Developing consortia		
3	Funding from Research Councils, EU, charities or similar		
4	Change at policy level (Doctoral Degree regulations, funding regulations or similar)		
5	Other (please specify):		
Other (please specify):			

24. What advantages do Doctoral Training Programmes bring to your institution? Please select all that apply.

		Response Percent	Response Total
1	Provides structure to achieve critical mass in a particular research area		
2	Develops relationships with other HEIs and partners		
3	Improves quality of student experience and support		
4	Better economies of scale		
5	Quality assurance		
6	Promotes interdisciplinary research and interdisciplinary relationships		
7	Promotes best practice		
8	Improves supervision of students		
9	Provides a more straightforward interface for the industrial sponsorship of doctoral degrees		
10	Provides a structure for higher quality doctoral training		
11	Provides a more visible face for international cooperation		
12	Other (please specify):		
Other (please specify):			

25. Have you developed a specific metric to assess/measure the added value of a structured Doctoral Training Programme over other modes of Doctoral Training?

		Response Percent	Response Total
1	Yes		
2	No		
If you have completed any reviews of the effectiveness of DTP's please summarise the outcomes here			

26. What challenges do Doctoral Training Programmes bring to your institution?

		Response Percent	Response Total
1	Achieving cost efficiency in delivery		
2	Managing a multi-track doctoral system		
3	Sustaining and continuing funding		
4	Geographical issues in consortia of delivering training/building a cohort		
5	Working across research and learning and teaching structures		
6	Managing taught element regulations		
7	Greater expectations of applicants		
8	Other (please specify):		
Other (please specify):			

27. In what ways can these challenges be overcome?

		Response Percent	Response Total

28. If any challenges have been cohort specific, please use the free text box to provide details

		Response Percent	Response Total

29. To what extent are your existing Doctoral Training Programmes integrated with graduate school/graduate college (or equivalent) provision within your institution?

		Response Percent	Response Total
1	Fully integrated		
2	Partially integrated		
3	Free standing		
If you have completed any reviews of the effectiveness of DTP's please summarise the outcomes here			

30. How do your Doctoral Training Programmes work and interact with your graduate school/graduate college (or equivalent)?

		Response Percent	Response Total

31. How do your Doctoral Training Programmes work and interact with your doctoral school/college?

		Response Percent	Response Total

32. How do your Doctoral Training Programmes work and interact with each other?

		Response Percent	Response Total

33. If you have any further comments or points to note about the structures in your institutions, please use this space to tell us about them.

		Response Percent	Response Total

CASE STUDY 1

Case Study of Institution 1: exploring further the issues emerging from Structural Changes in Doctoral Education Survey, Spring 2015

Thank you for agreeing to take part in a small case study to explore further the structural changes at Institution 1. The questions are specific to the University's responses to the 2015 survey and the responses given to a similar survey conducted by UKCGE in 2009. Both have been attached for your reference.

1) Is the Graduate School that was referred to in the 2009 Survey Response the same Graduate School that you refer to in the 2015 Survey response i.e. Graduate School of Education?

Yes this is the same entity. This is the only part of the University that uses the terminology "Graduate School" at Institution 1. It was formed in 2009/10 with the restructure of our education provision. There are currently "Graduate Research Schools" within two of our six academic Colleges which describe the Professional Service teams who support PGR student administration within that particular College.

2) How has the support for PGR and PGT students differed from that offered at the Graduate School of Education to that in departments/faculties that don't have a Graduate School?

The Education department is the only department at Institution 1 not to offer undergraduate programmes. With the decision to close the UG Education programmes, it was decided to merge the administration for PGT, PCGE and PGR into one unit named the Graduate School of Education. In all other departments/Colleges, administration for UG and PGT is delivered together, whilst PGR is delivered by a separate administrative team. This reflects the division of faculty responsibilities between the Faculty of Taught Programmes and the Faculty of Graduate Research Programmes at the Institution 1. This is the only difference in the support offered within the Graduate School of Education and that of other departments.

3) Your Graduate School for Education supports both Postgraduate Taught (PGT) and Postgraduate Research (PGR) students. Why is it important to the University for the Graduate School to support both student cohorts?

Please see the above answer for the rationale for the delivery of Education programmes.

4) Does the Graduate School of Education structure have any effect on institutional aims such as improving the student experience, completion rates, quality etc?

We have found this to be an effective structure for the nature of the programmes being delivered and provides effective focus for the delivery of institutional priorities around quality assurance, student experience and other metrics. It is not seen to have any considerable advantages or disadvantages over any other structure found in other departments.

5) Institution 1 is now in the process of developing Doctoral College. What were the influencing factors to establish this college has part of the University structure in delivering doctoral provision?

The University is undertaking a Transformation Programme which is reviewing the effectiveness of the structures and processes that we have in place across all Professional Service areas. The development of the Doctoral College addresses the strategic priority areas of improving the experience for PGRs/ECRs at Institution 1, our international reputation, and the need to ensure we continue to attract appropriate numbers of high quality applicants. The invent of the doctoral training partnerships (which are typically inter-disciplinary and therefore require cross College working) and Institution 1's success if being awarded these centres, has meant that we are developing new ways of working to facilitate the changing nature of programme delivery.

6) What role will the Doctoral College take on that your current Graduate School does not provide?

The Doctoral College is a supportive team that will help facilitate and prioritise investment in resources, space and provision. The Doctoral College is reviewing processes and procedures to look for improvements and enhancements through streamlining and harmonisation. The Doctoral College will also help facilitate the development of inter-disciplinary research cultures that can most effectively be done at a University level. The Doctoral College also has overall responsibility for overseeing standards and quality, and working with the Students' Guild is focusing on the identity and voice for ECRs as well as PGRs within the University.

The Graduate School will continue to provide the same service that they always have to their academics and students.

7) How will the Graduate School for Education interact with the Doctoral College in delivering doctoral provision?

The Graduate School for Education is a department within the College of Social Sciences and International Studies. Each College has an Associate Dean for Research (ADR) and a Director of PGR Studies (DoPGR). ADR's are members of the Doctoral College Strategy Board and DoPGRs, as well as College administrative leads, are members of the Doctoral College Management Group.

As part of the consultation phase of the Doctoral College establishment, all Discipline Directors of PGR Studies were consulted by the Director of the Doctoral College (Prof Michelle Ryan) on their views for the priorities for PGR and ECR provision, and this feedback has helped inform the objectives and direction of travel for the Doctoral College.

Questions 8 and 9 relate to some emerging evidence from the survey that some universities have either disestablished or are considering disestablishing their Graduate School after developing a Doctoral College (or developed one soon after), or are considering developing one. These questions are therefore posed as there are very few institutions that have both Graduate Schools and a Doctoral College and the Council would like to understand more of what is prompting this change and where relevant, seek evidence of why institutions wish to maintain both structures for doctoral provision. We appreciate that you may not be in a position to answer or may wish to decline answering.

8) Does Institution 1 intend on keeping the current Graduate School of Education in the short to medium term?

Yes, we have no plans to change the structure of the Graduate School of Education at present.

9) Are there any plans or intentions to develop further Faculty/Department Graduate Schools? Please detail the reasons why for either a yes or no answer?

We have no immediate plans or intentions to develop any additional Graduate Schools as part of the establishment of the Doctoral College. The Graduate School of Education was created to reflect the specific academic focus of the Education department and is not expected to be replicated elsewhere in the University.

10) In the 2009 Survey, you advised us that you had between 2-5 Doctoral Training Centres, are they all in existence today?

We currently have 12 DTCs funded by RCUK and Charities. These have all been funded since the 2009 survey; therefore we are unsure which DTCs were references in the 2009 survey.

11) Of the further DTCs that Institution 1 are intending to apply for, are there any target subject areas e.g. increasing Science provision

The awarding of DTCs is very much driven by the nature of the calls released by the funders. Each call is reviewed internally to ensure that we have sufficient research strength and capacity in that area. There have been discussions with some research themes about the possibility of establishing non-RCUK funded DTCs to further develop and broaden the PGR activity in that area, however these remain at a very early stage of discussion.

12) In increasing the number of DTCs, how will they be supported i.e. through the Doctoral College/Faculties/Graduate Schools?

All administration and student support will continue to be delivered by the Professional Services teams located within each academic College. These teams will be line managed by the Doctoral College, and one of the driving influences to establishing the Doctoral College was to provide cross-College support for the increasing number of DTCs.

13) Of the funding options you noted (Research Council funding, Business and Industry, EU Funding, Charities etc.) which is Institution 1 the most reliant on for its current provision and for the future?

At present this is RCUK (when not taking into account self-funding or institutional waivers). An objective of the Doctoral College is to review our cost recovery model and widen the range of funding sources available.

14) In what ways are your DTPs integrated with the Graduate School and how do they interact with each other (if at all)?

The Graduate School of Education has been awarded studentships through the ESRC funded South West Doctoral Training Centre (SWDTC) since its inception in 2011/12.

15) At question 24 of the 2015 survey, you have listed the advantages that DTPs bring to your institution as:

- Provides structure to achieve critical mass in a particular research area
- Develops relationships with other HEIs and partners
- Improves quality of student experience and support
- Better economies of scale
- Promotes interdisciplinary research and interdisciplinary relationships
- Provides a structure for higher quality doctoral training
- Provides a more visible face for international cooperation

What examples or evidence have emerged from Institution 1 in support of the advantages you have listed?

Some examples include:

- The SWDTC Student Conference which is an annual event organised for students by students. It is a free event open to all PGR students across the three constituent institutions, regardless of their funding source. Now in its fourth year, the conference offers a unique opportunity for students to meet other students from differing universities who are at different stages of their research, to share ideas, details of projects, plans and experiences.
- The SWDTC Student Journal ("Tor: The Open Review of the Social Sciences"). This is a student led, peer reviewed and open access journal for the Social Sciences aimed at championing the work done by students within the SWDTC and providing editorial experience to students who help run the journal.
- The SWBio Professional Internships for PhD Students (PIPS) scheme which provides students with the funding to undertake a three month internship within a professional non-research related area to allow the students to see first-hand how a particular employment sector functions and gain transferable skills to be able to apply to their research and further careers.
- Oil and Gas CDT Training Academy which provides 20-weeks of bespoke modules delivered by governmental and industry experts from all sectors covering the main themes identified by the Funding Council, as well as those of direct relevance to the oil and gas sector. An annual conference is held during the Training Academy which allows students from across 17 universities to present the results of their research to date. The conference provides an opportunity for interaction with individual students and their supervisors, and hence provides a chance to identify further research links.
- Cognitive Behavioural Coaching is offered by the Clinical Education Development and Research Centre at Institution 1 to students studying within the Metamaterials CDT. This aims at strengthening academic adaptability and problem-solving capabilities.

16) In the 2009 Survey, Institution 1 responded that the skills training programme was highly dependent on Roberts Funding. How, if at all, has this shortfall in funding been compensated for?

In the post-Roberts funding environment, centrally delivered Researcher Development activity was initially funded directly by PGR student fees for transferable skills training and contributions from Research Only staff on Grades E & F. The PGR contribution was gradually rolled out through the student cohorts starting

with year 1 in 2011/12 (£200 FTE per annum). Prior to the formation of the Doctoral College, funding model proposals were discussed by the Researcher Development Steering Group and Research and Knowledge Transfer Management Group and were also incorporated into the Academic Services service implementation plan as well, where appropriate. In 2012/13 the university moved to a revised financial planning process that integrates both strategic and operational planning. This brought together the academic, financial, capital, infrastructure and support service facets of the University's business into a holistic, integrated planning process. It also shifted the focus away from one year budgeting to five year holistic planning and focuses more on what is needed to deliver the right service, rather than the income that might be generated directly through historical research grant and PGR fee funding mechanisms. This means that funds (including researcher development budgets), can be planned and deployed more strategically over longer time-frames, allowing for more sustainable and measured growth.

17) Institution 1 is also a member of the GW4. What impact has this cross institutional alliance had on supporting PG students at the University? (for example the student experience, skills development, quality etc.)

A number of work streams and work packages have been established as part of the GW4 Alliance to facilitate greater research collaboration. One of these is the 'Building Capacity and Developing People' area which focuses on the benefits to be gained through the GW4 Alliance. Developments through this work stream in the past year have included: increased opportunities to access funding; increased opportunities for co-supervision across the four universities; access to training and resources for PGR students and research networks; sharing of best practice in student experience and skills training; supporting joint teaching and training activities; understanding of the differences in regulations and operational practices and finding resolutions to improve the student experience; training for research and support staff in collaborative activities.

18) What impact has the GW4 had on the broader PG Community and to those institutions who are members?

Please see the above answer. Also to note: the primary work undertaken through the GW4 Alliance is for PGR students only.

19) What impact, if any, would it have on Institution 1 of the GW4 no longer existed?

It would be significantly more difficult for each member university to work in partnership in delivering collaborative doctoral programmes were it not for the GW4 Alliance. It has provided necessary leadership, guidance, structure and funding for a wide range of exciting developments which have enhanced our research portfolio as well as the experience for our PGR students. Examples include: an annual workshop for PGR students across the four universities to develop skills and practical experience in initiating and maintaining collaborative research projects; an international careers fair for GW4 students and graduates in China; an early career neuroscientist day; access to all PGR student training opportunities and resources across all four institutions.

CASE STUDY 2

Case Study of Institution 2: exploring further the issues emerging from Structural Changes in Doctoral Education Survey, Spring 2015

Thank you for agreeing to take part in a small case study to explore further the structural changes at Institution 2. The questions are specific to the University's responses to the 2015 survey and the responses given to a similar survey conducted by UKCGE in 2009. Both have been attached for your reference.

1) You have noted that the Graduate School, as at 2015, only serves one or two faculties within the institution. In the 2009 survey, the Graduate School was noted as serving the whole institution, at this point did the Graduate School serve all faculties?

The Graduate School has delivered a taught programme, providing a taught Postgraduate Diploma in Research Methods (with an optional MRes route). In 2009 this was open to Postgraduate Research (PGR) students from all the then six Faculties of the University, but in recent years it has been primarily directed at the Faculty of Management and Law and the Faculty of Social Sciences. Students from other Faculties could access this provision, if it was felt pertinent to their disciplines or research, but recently that opportunity has only been taken up by a small number of students from the Faculty of Health Studies.

The Graduate School has also provided short courses for researchers (staff and PGR students). These have been accessible to all Faculties up to 2015.

2) When did the Graduate School structure start to only serve these one or two faculties that you have noted?

Historically, the Graduate School was developed in the late 1990s by the Faculty of Social Sciences and the Faculty of Management and Law, an initiative that was subsequently reinforced by the ESRC's research training requirements, applicable to the PGR students the Council then funded in both Faculties. Although its taught programme remained open to other Faculties, that opportunity was mainly taken up by PGR students from the Faculty of Health Studies and from the former School of Lifelong Education and Development (disestablished in 2012). The short courses for researchers, however, have remained accessible to, and used by, all Faculties.

3) How has the support for PG students differed for those that come under the Graduate School umbrella and those that don't?

Until 2009 all the PGR students of the Faculty of Social Sciences and the Faculty of Management and Law took the Graduate School's taught programme, a third of which was Faculty-based. Hence, the support for PGR students combined the one given by the Graduate School with that from the respective Faculty.

After 2009 that remained the case for the PhD students at the Faculty of Management and Law, but not for those taking their professional doctorate, the DBA Programme, who had a research training programme similar to that of the Graduate School, but was provided by academic staff from that Faculty and the support provided to those PGR students was adjusted to the DBA requirements. The Faculty of Engineering and Informatics and the Faculty of Life Sciences developed their own training programme, providing support for their PGR students from a more perspective aligned with their respective disciplines and research areas.

4) Has Institution 2 noted any considerable differences in completion rates, student experience etc. between those students covered by the Graduate School and those that are not?

There is no definitive data that suggests a slower /faster pace of progress amongst those students who attended Graduate School provision that can be specifically attributed to the student experience of the Graduate School taught programme.

5) What have been the main factors that have influenced the disestablishment of the Graduate School?

The Graduate School was not effectively serving the broader university and student satisfaction was poor due to differences between faculties. The University intention has been to provide a stronger coherence in a PGR framework of development open to all students (ie all faculties) with a cohort based approach (two input cohorts per year). The University wishes to significantly increase its PGR population and thus it needed to devolve responsibility for Post Graduate Research Degrees to Faculties to foster more ownership and empowerment. The current Graduate School provision had not developed to provide contextual research methods training to support all of the University disciplines neither was it felt that this was the correct route to foster this development. The aim was to provide an over-arching framework for research methods research to ensure parity of support across all disciplines but enable distinctive approaches to best support students in their chosen subject area.

6) In the 2009 Survey, it was noted that the Graduate School supported Professional Doctorate students but not Postgraduate Taught Students. In the 2015 it was noted that now Professional Doctorate students are served elsewhere in the institution and that now the Graduate School serves Postgraduate Taught Students. When did these changes occur and why?

Until 2009 the Graduate School supported a Professional Doctorate, the Doctorate in Business Administration (DBA), but since then the Faculty of Management and Law has provided the research training and support for that programme. The Professional Doctorate in Pharmacy, DPharm, has always been supported by the Faculty of Life Sciences, and its nature would make it difficult to consider any alternative. The Graduate School does not support Postgraduate Taught (PGT) students, without prejudice that PGT students may have taken some of the short courses the Graduate School has offered.

7) Will Professional Doctorate and Postgraduate Taught Students be supported through the new Postgraduate Framework? If not, what structures within the institution will support them?

The PGR Framework is exclusively oriented to support the training of PGR students. Postgraduate Taught (PGT) students are supported at their respective Faculties through the structure provided by their programmes. Professional Doctorate students have well organised programmes, with specific support structures, requirements and facilities; however, within those constraints, they could access the PGR Framework if they and their supervisors consider it appropriate.

8) How is it envisaged that the structure of the Postgraduate Framework will differ to that of the Graduate School? For example, will the aims and support be different?

The PGR Framework applies to all PhD students across the University, it is Faculty-based and student-centred. Each Faculty will develop its own structure to support PGR students, led by the Faculty's PGR Director, offering subject specific modules and able to access the research methods modules offered by all the Faculties across the University. At the same time, the PGR Framework is student-centred, supported by Vitae RDF, based on an analysis of training needs conducted by each PGR student and their supervisors, reviewed normally every six months. The PGR student will at the same time be closely supported by their Faculty, and fully related to the broad community of PGR students with a particular focus on maintaining their cohort links.

That will be quite different from the Graduate School, that largely related to the PGR students of two Faculties, with a fixed curricular structure and no cohort based activities to promote multi-disciplinarity.

9) Institution 2 is considering developing Doctoral College. What are the influencing factors to establish this college has part of the University structure in delivering doctoral provision?

We have not specifically referred to our new approach as a Doctoral College. The aims of the new scheme are that it brings the PGR students fully into the research community, giving them access to development opportunities that have previously been reserved for Early Career Researchers (as provided by Research and Knowledge Transfer Support and Organisational Development). They also have access to the University "Research Forum" events and a new series of inspirational lectures from research leaders (eg our new series of 50th Anniversary Chairs) explaining how they conceived a particular project, the methodology adopted, planning experiments, data analysis and follow through to publication and dissemination more generally. These to take place in the new "PGR Lounge" dedicated space. Each student "owns" their development, both in terms of research skills and, more widely, transferrable and employment skills.

10) What role would the Doctoral College take on that your current Graduate School and new Postgraduate Framework does not?

Integrated engagement with the PGR Lounge and PGR administrative staff extending to identification with the University's three Research Themes (Advanced Healthcare, Innovative Engineering and Sustainable Societies) promoting multi-disciplinary working in teams. Engagement with the Research & Knowledge Transfer Centres in promoting student entrepreneurship and opportunities for "students as consultants".

11) How would it be envisaged that the Doctoral College interact with the Postgraduate Framework?

The DC is an "environment issue" wrapping around the core Postgraduate Framework and promoting a vibrant research culture to inspire and empower the research community

12) Would the Doctoral College be institution wide or serve a particular faculty?

Institution wide as part of the enhanced research culture.

13) Of the funding options you noted (Research Council funding, Institution Funding and Business and Industry Funding) which is Institution 2 the most reliant on for its current DTP provision and for the future?

University investment, supported where possible by Research Council Funding. The University is involved in a Doctoral Training centre funded through the Arts and Humanities Council based at Hull University and is forming consortia (eg White Rose) to pursue further funding.

14) At question 24 of the 2015 survey, you have listed the advantages that DTPs bring to your institution as:

- Provides structure to achieve critical mass in a particular research area
- Develops relationships with other HEIs and partners
- Improves quality of student experience and support
- Better economies of scale
- Quality Assurance
- Promotes interdisciplinary research and interdisciplinary relationships
- Improves supervision of students
- Provides a more straightforward interface for the industrial sponsorship of doctoral degrees
- Provides a structure for higher quality doctoral training
- Provides a more visible face for international cooperation

What examples or evidence have emerged from Institution 2 in support of the advantages you have listed?

This is the start of a new journey and thus specific details are hard to come by. Individual student comments have been highly supportive of the new culture. This year's PRES results were very strongly up, across the board, compared to the last one.

15) In the 2009 Survey, Institution 2 responded that the skills training programme was highly dependent on Roberts Funding. How, if at all, has this shortfall in funding been compensated for?

Roberts Funding was not recurrent but the University has prioritised PGR for investment. The creation of a bespoke (socio-educational) space for PGR students has been a significant capital investment. This allows study across discipline areas and the aim is to foster both formal, and informal, interdisciplinary conversations. The space allows for communal areas and social interaction but also space for the delivery of bespoke delivery to PGR students which currently comprises offerings from Careers, Library and Doctoral Skills training.

The PGR support team, based in the same space, also offer drop-in sessions and bespoke submission of thesis training to enhance our delivery to PGR students and make effective use of the PGR space.

The University also invested over £5000 in DVD training materials produced by the UK Council for Graduate Education. These cover areas such as:

- An introduction to the UK doctorate,
- Managing your Supervisor,
- A guide to a good transfer/progression to PhD
- A guide to a good VIVA.

CASE STUDY 3

Case Study of Institution 3: exploring further the issues emerging from Structural Changes in Doctoral Education Survey, Spring 2015

Thank you for agreeing to take part in a small case study to explore further the structural changes at Institution 3. The questions are specific to the University's responses to the 2015 survey and the responses given to a similar survey conducted by UKCGE in 2009. Both have been attached for your reference.

1) Since the 2009 Survey, has the total number of Graduate Schools at Institution 3 reduced? If yes, please detail the reduction e.g. reduction in Faculty/Department/Disciplinary Graduate Schools.

The overall number is about the same, as two faculty graduate schools have come and gone between 2009 and 2015, but disciplinary ones in some of the larger schools have remained fairly unchanged.

2) If there has been a reduction in the number of Graduate Schools, what influenced that reduction and how did these structural changes affect institutional aims such as improving the student experience, completion rates, quality etc.

n/a

3) In the 2009 survey, the University indicated that they were exploring arrangements for a University wide Graduate School. From the 2015 survey it would appear that this was not implemented, why was this?

There was support for a University-wide Doctoral College (i.e., focus on PGR) rather than a University wide Graduate School (i.e., all PG).

4) Your Graduate Schools support both Postgraduate Taught (PGT) and Postgraduate Research (PGR) students. Why is it important to the University for the Graduate Schools to support both student cohorts?

Largely because of the way the educational management structures are set up at present. The PVC (Education and Students) is responsible for all students, including PGR, and the main management boundary lies between UG and PG, not taught and research (i.e. we have Academic Directors of Graduate and Undergraduate Studies who report in to the PVC, and Faculty Graduate and Undergraduate Education Directors).

5) Since the 2009 survey, Institution 3 developed a Doctoral College in 2013. What were the influencing factors to establish this college as part of the University structure in delivering doctoral provision?

External drivers including changes in RCUK funding and increasing competition for the best PGR students, plus internal support for a focus on PGR at university level.

6) What role has the Doctoral College taken on that the Graduate Schools did not provide?

University-wide coordination of skills development; focus and champion for PGR at University level to help to raise awareness of PGR among the senior team and governing body, respond to external changes and to support the University's desire to increase PGR numbers; effective and efficient coordination of the large number of CDTs and DTPs we have won since 2013.

Questions 7 and 8 relate to some emerging evidence from the survey that some universities have either disestablished or are considering disestablishing their Graduate School after developing a Doctoral College (or developed one soon after), or are considering developing one. These questions are therefore posed as there are very few institutions that have both Graduate Schools and a Doctoral College and the Council would like to understand more of what is prompting this change and where relevant, seek evidence of why institutions wish to maintain both structures for doctoral provision. We appreciate that you may not be in a position to answer or may wish to decline answering.

7) Does Institution 3 intend on keeping the current Graduate Schools in the short to medium term?

Yes, at disciplinary level.

8) Does Institution 3 intend on increasing the number of Graduate Schools?

No

9) From the 2015 survey response, the aims of the Graduate Schools and the Doctoral College are largely the same (questions 6 and 12), how do they work together to achieve these aims?

The Doctoral College focuses on activities which cannot be done locally, in order to add value to local provision.

10) In the 2009 Survey, you advised us that you had between 6-9 Doctoral Training Centres, are they all in existence today?

We are now involved in 24 externally-funded DTPs/CDTs/DTCs, of which 12 are Institution 3-only or Institution 3-led.

11) Of the further DTCs that Institution 3 are intending to apply for, are there any target subject areas e.g. increasing Science provision.

We bid for all DTPs/CDTs on a case-by-case basis.

12) In increasing the number of DTCs, how will they be supported i.e. through the Doctoral College/Faculties/Graduate Schools?

All overarching support (e.g., for bids and post-award agreements) is now provided by the Doctoral College, with local delivery of programmes managed through the Centres/Partnership Hubs.

13) Of the funding options you noted (Research Council funding, Business and Industry, EU Funding, Charities etc.) which is Institution 3 the most reliant on for its current provision and for the future?

Depends on the discipline.

14) In what ways are your DTPs integrated with the Graduate School and how do they interact with each other?

Which Graduate School?

15) At question 24 of the 2015 survey, you have listed the advantages that DTPs bring to your institution as:

• **Provides structure to achieve critical mass in a particular research area**

DTPs place a huge emphasis on creating significant communities of industry-ready specialists, particularly for Engineering departments. They offer access to a variety of research groups within the Bristol area, and provide interdisciplinary learning opportunities across related fields.

The DTPs are embedded within different multi disciplinary research groups. Students are often co-located in a large open plan office with other researchers (PhD students and academic staff), which contributes to a critical mass of variety of research activities. Feedback from the students consistently shows that they value being part of a wider thriving world-leading research groups.

• **Develops relationships with other HEIs and partners**

Advisory boards create partnerships and build networks between academic institutions/bodies and industry opportunities. DTPs engage students in innovative research projects, alongside training, placements and offering external resources for students that may be unavailable at their academic institution.

Some DTPs are a consortium of few (up to 8) HEIs in the South, West and Wales. The DTP's students are normally co-supervised by two different institutions, creating and maintaining institutional relationships. The DTPs have an annual Partners' Board to develop relationships with external partners. Partners provide their expertise at DTP training sessions and cohort days. Partners attend the DTP's Information Day for applicants, helping to recruit students to the consortium.

• **Improves quality of student experience and support**

A large emphasis is placed on pastoral care, personal development, professional development, and outreach amongst all the DTPs. DTPs also encourage cohort support and building, running induction activities for first year students as well as providing mentoring schemes between years. DTPs often employ supervisors from a range of schools and faculty around Bristol in conjunction with local industries (e.g. Defence, Aerospace, ITC and Manufacturing).

Due to cross faculty- cross institutions nature of many DTPs, they drive innovation in various areas of PGR experience, focusing on key needs of PGR students. The University's understanding of PGRs is changing because of DTPs, and hence QA processes. The Institution 3 doctoral college works closely with DTPs and Academic quality team to adapt the University quality framework to become more flexible and accommodating for inter-disciplinarity and collaborations.

For example, the cohort structure of programmes delivery means that students have a ready-made support network, which is highlighted by DTP students as one of the key benefits of the DTP-based programmes. Highlights from Students feedback include:

- 'Good sense of being part of a team'
- 'Cohort feeling and support between each other'
- 'Being in a cohort. The first year builds a strong team, whose support I have found to be invaluable throughout the following years of the PhD.'

- 'Large network of researchers for support.'
- 'Facilities. We have an excellent lab and support staff who make pretty much anything possible for you.'
- 'Cohort framework and the opportunity to get to know the department and academics before choosing a PhD project.'

Few DTPs operate a student mentoring schemes, which provide additional support to the first year students, coming from variety of disciplinary backgrounds.

Students from the older cohorts run induction activities for the new cohort to pass on their knowledge. For example, they run a workshop every year called 'Top-tips on getting the most out of your first CDT year'.

• **Promotes interdisciplinary research and interdisciplinary relationships**

Particularly in areas of science/engineering, interdisciplinary learning and working is encouraged by DTPs. They welcome and actively invite interdisciplinary applications. They offer services to connect students with supervisors from different fields, or experts in other areas, to work on projects in a carefully structured and controlled environment. DTPs also help better prepare students to teach within their field, and to draw from a broader range of knowledge and how their particular field can be applied.

DTPs aspire to develop the next generation of research leaders for academia and industry in various disciplines by stimulating adventurous interdisciplinary research. Interdisciplinary research activities are carried out between discipline specific departments within faculties (for example, Engineering Maths, Electrical and Electronic, Aerospace, Mechanical, Civil in the faculty of Engineering) and between University's faculties – Engineering and Social science, Sciences: Physics, Chemistry, Biological sciences, Oral and Dental Sciences, Physiology and Pharmacology, Social and Community Medicine.

• **Promotes best practice**

DTPs have a variety of expert-led projects for students to engage with, often ranging from 12 weeks to several years, and allowing for relationship building and quality supervision over an extended period of time. Outreach programmes and workshops on safe best practice are offered by all DTPs.

The first year taught component provides students with a breadth and depth of expertise.

Skills training is a central pillar of the DTPs and provides a significant contribution to the added value of the DTP approach. Each DTP supplements the central skills training provision offered by the Institution 3 Doctoral College. Courses are often suggested by, and developed in conjunction with, the students themselves.

Funding is available for students to attend international conferences and summer schools.

There are examples of good practice with a student-led public engagement committees. It enables the students to develop their own outreach activities rather than being limited to participating in established existing activities. This encourages leadership skills development and stimulates creativity of PGR students.

• **Improves supervision of students**

Regular progress reports, annual reviews, and minimum face-to-face contact hours are stipulated in several DTPs. Students are often co-supervised between their academic institution, their DTP and their industrial placement (if relevant), assuring a secure support network and supervision on all levels of learning.

It is a standard practice that DTP students are normally co-supervised by academics from different disciplines – they are normally based in different faculties or in partner organisations. This provides students with access to additional expertise, resources and support across institutional boundaries.

Supervisors undertake induction at the beginning of the academic year which informs them about the DTP's expectations of supervision.

Students and supervisors completed an Annual Review process, which reflected on the student's progress during the year. The DTP's Management Boards review the performance of all students in a DTP and complete the Annual programme review report, which is submitted to the Schools boards.

- **Provides a structure for higher quality doctoral training**

DTPs often offer funding, making it possible for students to participate in conferences, training schemes, outreach and international secondments. They also provide a structure of learning that balances taught research, transferrable skills training, outreach, and peer-to-peer learning. DTPs provide a multi-faceted learning environment rich in industrial and academic resources, as well as in funds.

- **Provides a more visible face for international cooperation**

DTPs are partnered with international organisations and have several international placements to offer students, including the NASA Langley Research Center and BMW.

Some DTPs run an international placement scheme. Students can bid for funds to undertake a placement of between one week and three months at a leading international research organisation. Students have attended international conferences in Austria, Belgium, Canada, China, Czech Republic, France, Germany, Italy, Portugal, Russia, South Korea, Spain, Sweden, The Netherlands, and the USA.

The DTPs run a researcher exchange scheme, whereby world-leading experts are invited to the DTPs to give short courses, guest lectures and seminars.

16) In the 2009 Survey, Institution 3 responded that the skills training programme was highly dependent on Roberts Funding. How, if at all, has this shortfall in funding been compensated for?

Funding has been mainstreamed and it is now the responsibility of the Institution 3 Doctoral College to secure a budget for PGR skills training.

17) Institution 3 is also a member of the GW4. What impact has this cross institutional alliance had on supporting PG students at the University? (for example the student experience, skills development, quality etc.)

We are partners in an increasing number of CDTs and DTPs, so are starting to see students spending time at two or more GW4 institutions. We are beginning to share skills development, to try to align our QA and governance frameworks more closely and to share some data on student experience (e.g. PRES 2015)

18) What impact has the GW4 had on the broader PG Community and to those institutions who are members?

Doctoral training is a very important component of the GW4 Alliance.

19) What impact, if any, would it have on Institution 3 of the GW4 no longer existed?

It would impact on our ability to win some DTPs and CDTs.

CASE STUDY 4

Case Study of Institution 4: exploring further the issues emerging from Structural Changes in Doctoral Education Survey, Spring 2015

Thank you for agreeing to take part in a small case study to explore further the structural changes at Institution 4. The questions are specific to the University's responses to the 2015 survey and the responses given to a similar survey conducted by UKCGE in 2009. Both have been attached for your reference.

1) In the 2009 survey, the University indicated that they were considering setting up a Graduate School, which you now have. When was the Graduate School established?

2011

2) What were the main influencing factors to set up the Graduate School?

To provide a sense of identity for the increasingly diverse graduate population

3) Your Graduate School supports both Postgraduate Taught (PGT) and Postgraduate Research (PGR) students. Why was it important to the University for the Graduate School to support both student cohorts?

They are both important!

4) What impact has the Graduate School had on the Student Experience for both PGT and PGR students?

WE have no quantified information which can answer this question. Anecdotally the students like it.

5) What affect, if any, has the Graduate School had on completion rates for PGR students?

We cannot attribute PGR completion rates to a single activity like the graduate school

6) In the 2009 survey, Institution 4 had two Doctoral Training Centres are these both still in existence?

YES

7) Your Doctoral Training Programmes (DTPs) are managed through the Faculty/Department rather than the Graduate School, why is this?

There is significant subject specific material involved

8) In what ways are your DTPs integrated with the Graduate School and how do they interact with each other?

They communicate and share common teaching wherever possible

9) At question 24 of the 2015 survey, you have listed the advantages that DTPs bring to your institution as:

- Provides structure to achieve critical mass in a particular research area
- Improves quality of student experience and support
- Promotes interdisciplinary research and interdisciplinary relationships
- Promotes best practice
- Provides a structure for higher quality doctoral training
- Provides a more visible face for international cooperation

What examples or evidence have emerged from Institution 4 in support of the advantages you have listed.

The renewal of competitive funding is the strongest supporting evidence for the above

10) In the 2009 Survey, Institution 4 responded that the skills training programme was moderately dependent on Roberts Funding. How, if at all, has this shortfall in funding been compensated for?

From University general funds

11) You have answered that the development of DTP provision will mainly be through Research Council funding, what additional funding sources will be used?

University General Funds and some external funds from industry

12) What does Institution 4 need to explore the DTP model further?

I don't understand the question. We understand the DTP model

13) Institution 4 is also a member of the Scottish Graduate School of Social Science and the Scottish Graduate School for Arts and Humanities. What impact have these cross institutional Graduate Schools had on supporting PG students at the University? (for example the student experience, skills development, quality etc)

The range of training and workshops has improved student experience

14) What impact do they have on the broader PG Community in Scotland and to those institutions who are members?

The range of training and workshops has improved student experience

15) What impact, if any, would it have on Institution 4 if these Graduate Schools did not exist?

It would be a loss of activity and opportunity

CASE STUDY 5

Please briefly detail the Doctoral Training Alliance?

The Doctoral Training Alliance (DTA) is a collaboration between 13 Alliance universities: Coventry, Greenwich, Huddersfield, Kingston, Lincoln, Liverpool John Moores, Manchester Metropolitan, Nottingham Trent, Plymouth, Salford, Sheffield Hallam, Teesside, and UWE Bristol. It is the largest multi-partner and only nationwide initiative of its kind.

The DTA aims to produce independent, highly-employable researchers with knowledge, expertise and skills in strategically-important research areas.

Building on these universities' collective strength in Applied Biosciences for Health as demonstrated through REF 2014, the first DTA will take the form of a co-ordinated training programme delivered by specialist training officers from partner universities and industry. Partner universities are each fully funding between two and four studentships per year plus a travel bursary to support national travel to cohort events. This DTA will span three cohorts of three-year PhDs, with a final cohort size of at least 80 students.

The cohort will be brought together for induction and for annual summer schools, both of which will use the opportunity for networking between students, supervisors and industry, and training and development courses. Throughout the year jointly-delivered training courses and an online community hub will cement the cohort experience for students. The training schedule is informed by the BBSRC's skills matrix and input from employer advisers.

DTA: Strategic objectives

- Excellence in postgraduate research training (advanced technical, subject-specific and generic skills with a focus on critical reasoning, research integrity, socio-economic context and impact)
- Development of a mobile, nationwide and international community with broad connections to professional networks, industry and commerce.
- Focus on communication and translation of applied research within academia, with industry (particularly SMEs) and to the general public.
- The opportunity for research training staff to build a national network and develop themselves through interacting with a wider staff and student base across many universities and through the connections to external professional networks, industry and commerce.
- DTA supervisors will be an integral part of the training programme and will be included in the cohort training opportunities with time to interact and form mutually beneficial research partnerships.

Please detail the challenges faced by University Alliance institutions that prompted the development of the Doctoral Training Alliance?

The detail of the structural-level challenges faced by Alliance institutions in the face of changing PhD market and funding environment is set out in University Alliance's recent (2015) report *Evolve. Connect. Succeed. Funding a Healthy Research and Innovation Ecosystem*.

There are both pull and push factors. The main push factor has been a significant decline in public funding and a need to build competition back into the doctoral training landscape. As well as an overall 18% reduction in research council studentships, the move to 'fewer, larger, longer' awards DTC/DTP model has been combined with the removal of PhD researchers as a viable cost in the majority of research project grants and the restriction of other PhD funding including iCASE studentships to restricted lists of universities. The result has been increased concentration of public funding for doctoral training into fewer institutions, leaving many research units with 4*-rated work outside of public funding systems for PhD students. The part of the sector - including Alliance universities - that has been growing its research capacity and quality has seen, inversely, a drop in the amount of public funding it receives to develop new research talent. The funding challenges are bringing related diversity issues with damaging consequences.

The main pull factor is that the cohort model may indeed enhance the training environment for PhD students. There is still a need for further evidence of the benefits of cohort training, however the enhanced networks of peers and a wider research community plus targeted training were all considered valuable characteristics to Alliance universities who wanted to bring these benefits to their students. The most successful models were considered to be the multi-institutional consortia favoured by some Research Councils, bringing together a diverse and far reaching group to increase the network benefits, and it is this model that the DTA is building on.

Other benefits include the opportunity to bring our research supervisors together at the summer schools that will include a postgraduate researcher conference, to give them the opportunity to meet one another from which new partnerships may arise. The latter also provides an excellent opportunity to showcase our research and our doctoral students to funding bodies, professional societies and industry through our Independent Advisory Group and other associated networks. Thus the benefits extend beyond just the students and include research and development opportunities for our academic supervisors and our training staff who will have the benefits of sharing best practice with trainers from all over the country.

Given the different structures that are in place at the different institutions, how is it envisaged that the national structure for University Alliance members will be embedded?

The model of the DTA was deliberately designed such that the students were registered at a particular host institution and progressed through their own milestones and graduate according to their host institutions regulations. This was perceived to be the simplest model that would have the lowest administrative overheads. Centrally, the DTA will take an active interest in the progress of every student and will engage regularly with the Student Forum for their input such that we continue to tailor the training programme and other opportunities created by the DTA to ensure that we provide a world-class cohort experience.

What advantages will the Doctoral Training Alliance bring to member institutions?

As well as an enhanced training environment for DTA students through targeted training courses and a vibrant cohort community, the DTA is also bringing together supervisors and research support staff from across the partner universities who are collaborating in research and training delivery. It also brings efficiency and more viable training group sizes.

Advantages to partners:

- Delivery of enhanced cohort training for PhDs – participation in the DTA provides a critical mass for peer-to-peer support, both for students and universities
- The ability to provide a training programme with greater breadth and depth, drawing on national expertise
- Improving capacity, enabling delivery of high-quality training in niche areas
- A distinctive from the offer of any single institution (no matter what size)
- National connectivity
- Follow-on research collaborations between supervisors and industry
- Access for staff and students to a national network of researchers and research assets
- Sharing of knowledge and best practice processes
- Innovation through collaboration
- Building a strong precedent in collaborative delivery for future positioning

Has there been any resistance to moving to a National Structure? If yes, we would be grateful for any information you are able to provide.

From the start, the geographical challenges of building a national cohort-based training programme have been acknowledged. Partners agreed at an early stage to include a generous travel allowance to help facilitate the face-to-face networking of students and supervisors.

The training schedule has also been carefully designed to augment and enhance training offers that are already provided as standard individually within Alliance universities. Close collaboration on the design of the training programme has allowed the sharing of experts across the Alliance and in some cases made training courses viable through increased group sizes.

Following the introduction of this structure, what effects, if any, will be hoped to be evidenced on the support for Postgraduate Students i.e. the student experience, completion rates etc?

We believe that the cohort aspect to the training will help the students build a community through which the students will provide technical and moral support to each other, leading to positive benefits for the student experience and completion rates.

How will the Doctoral Training Alliance be incorporated into the current structures in place at member institutions, for example into Graduate Schools/Doctoral Colleges?

The DTA is intended to supplement and enhance local training provision, particularly in the areas of subject specific skills for which a greater critical mass of students is desirable. The cohort aspects which provide

opportunities for peer-to-peer learning and support will be aided by the option to attend electives throughout the year, the autumn (induction) and summer schools, as well as through the many social media channels that facilitate on-line communities nowadays.

What are the main long term aims of the Doctoral Training Alliance i.e. improve funding opportunities for individual institutions, promote better links with industry, increase student numbers?

- Build competition into the PhD training landscape
- Increase the capacity to collaborate and improve national connectivity
- Building practical collaborations to better position as a fundable consortium in the future

APPENDIX 3 DTC DATA

Mapping Doctoral Training Centres and Doctoral Training Partnerships by Research Council – updated 25th November 2015

Data collection exercise undertaken by the UKCGE Postgraduate Student Experience Working Group

Arts and Humanities Research Council (AHRC) – Doctoral Training Centres

<http://www.ahrc.ac.uk/skills/phdstudents/fundingandtraining/>

AHRC Doctoral Programme in Celtic Languages

- University of Glasgow (Lead institution)
- Bangor University
- The Queen's University of Belfast
- Swansea University
- University of Aberdeen
- University of Cambridge
- University of Edinburgh
- University of Oxford
- University of the Highlands and Islands
- University of Ulster
- Centre for Advanced Welsh and Celtic Studies
- University of Wales
- University of Wales Trinity St David
- National Library of Wales (partnership)
- BBC Northern Ireland (partnership)
- Bòrd na Gàidhlig (partnership)

Heritage Consortium

- University of Hull (Lead institution)
- University of Bradford
- University of Huddersfield
- Leeds Metropolitan University
- Northumbria University
- Sheffield Hallam University
- Teesside University

- Iziko Museums South Africa (partner)
- Heritage Lottery Fund (partner)
- National Coal Mining Museum (partner)
- Yorkshire Film Archive (partner)
- Prussian Palaces and Gardens Foundation (SPSG) (partner)
- North Sea Maritime Museum Network (partner)
- National Maritime Museum (partner)
- International Slavery Museum (partner)

CEELBAS (Centre for East European Language-Based Area Studies) AHRC Consortium

- University College London (Lead institution)
- University of Cambridge
- The University of Manchester
- University of Oxford
- The Foreign & Commonwealth Office (partner)
- British Library (partner)
- OpenDemocracy (partner)
- Pushkin House (partner)

London Doctoral Design Consortium (LDOC)

- Royal College of Art (Lead institution)
- Kingston University
- University of the Arts London

- Aedas (partner)
- British Fashion Council (partner)
- BT (partner)
- London Borough of Camden Communities Division (partner)
- Camira (partner)
- Creativeworks London (partner)
- Design Council (partner)
- Designing Out Crime Association (partner)
- Ford Motor Company (partner)
- Ian Ritchie Architects Limited (partner)
- International Flavours and Fragrances (partner)
- Microsoft Research (partner)
- Sense (partner)
- Sorrell Foundation (partner)
- Textile Institute (partner)
- Topshop (partner)
- TfL (partner)
- United Nations/UNCTAD Responsible Ecosystems Sourcing Platform (partner)
- V&A (partner)

Northumbria-Sunderland Consortium

- University of Northumbria (Lead institution)
- The University of Sunderland
- BALTIC Centre for Contemporary Art (partner)
- National Glass Centre (partner)

The AHRC also supports the EPSRC Centre for Doctoral Training in Media and Arts Technology at Queen Mary, University of London.

Arts and Humanities Research Council (AHRC) – Doctoral Training Partnerships

AHRC Doctoral Programme Scotland

- University of Glasgow (lead)
- Aberdeen Art Galleries and Museums
- Arts and Business Scotland
- BBC Scotland
- Dundee Repertory Theatre
- Edinburgh International Book Festival
- Edinburgh International Festival
- Glasgow Chamber of Commerce
- National Galleries Scotland
- National Library Scotland
- National Museums Scotland
- National Theatre Scotland
- Oxfam Scotland
- Police Scotland
- Royal Scottish National Orchestra
- Scottish Opera

The 3D3 Consortium

- University of the West of England (Lead institution)
- Plymouth University
- Falmouth University

- REACT (partner)

The Design Star Consortium: 'strength in diversity'

- University of Reading (Lead institution) - <http://www.reading.ac.uk/news-and-events/releases/PR540074.aspx>
- Loughborough
- The Open University
- Brighton
- Goldsmiths
- West Berkshire Primary Care Trust
- Milton Keynes Council
- Policy Connect
- Spy Design
- Maybourne Projects Ltd
- V&A
- Design Museum
- Monotype
- Intel Labs
- Microsoft Research

Cambridge Doctoral Training Partnership

- University of Cambridge (lead)
- Norfolk Museums and Archive Service
- Collection Trust
- Social Media Knowledge Exchange Project
- Arts Council

Consortium for Humanities and the Arts South-East England (CHASE)

- University of Sussex (lead)
- Courtauld Institute of Art
- University of East Anglia
- University of Essex
- The Open University
- University of Kent
- Goldsmiths
- University of London
- Intel
- British University Film and Video Council

- British Library
- National Portrait Gallery
- Canterbury Cathedral

London Arts and Humanities Partnership

- University College London (lead)
- School of Advanced Study
- University of London
- National Gallery
- Southbank Centre
- Barbican Centre
- National Theatre
- Museum of London
- Lambeth Palace Library
- Tate Research
- CreativeWorks
- AM Heath
- Routledge

North West Consortium

- University of Manchester (lead)
- Keele University
- Lancaster University
- Manchester Metropolitan University
- Royal Northern College of Music
- University of Liverpool
- University of Salford
- Foundation for Art and Creative Technology (FACT)
- FutureEverything
- Museum of Science and Industry (MOSI)
- Opera North
- Tate Liverpool
- Staffordshire and Stoke on Trent Archives and Heritage Service

Northern Bridge Doctoral Partnership

- Newcastle University (lead)
- University of Durham
- Queen's University of Belfast
- Baltic Centre for Contemporary Art
- BBC Northern Ireland
- Belfast City Council
- Department of Culture, Arts and Leisure NI
- Durham Cathedral
- National Media Museum
- New Writing North
- Newcastle City Council
- Seven Stories: National Centre for Children's Books
- The Bowes Museum
- The Sage Gateshead
- Tyne and Wear Archives and Museums
- Wordsworth Trust

South, West and Wales Consortium: Ground-breaking research training in the Arts and Humanities

- University of Bristol (lead)
- Cardiff University
- University of Exeter
- Aberystwyth University
- University of Bath
- Bath Spa University
- University of Reading
- University of Southampton
- Arnolfini Contemporary Art Gallery
- English Heritage
- National Trust
- BBC Drama (Cardiff)
- BBC Factual (Bristol)
- Watershed and Pervasive Media Studio
- Bristol City Council and Mayoralty
- CyMal (Museums, Archives and Libraries Wales)
- National Library of Wales
- National Museum of Wales
- Royal Commission on the Ancient and Historical Monuments of Wales
- Welsh National Opera
- Centre of British Studies, Humboldt Universität, Berlin
- Kyoto University's Graduate Schools of Letters and Institute for Research in Humanities
- University of Texas at Austin
- Virginia G Piper Centre for Creative Writing, Arizona State University
- Record Offices (SW&W regions)

The London and South-East Doctoral Research Consortium (TECHNE)

- Royal Holloway (lead)
- University of London
- University of Brighton
- Kingston University
- University of Roehampton
- Royal College of Art
- University of Surrey
- University of the Arts London
- Museum of London
- National History Museum
- Science Museum
- National Maritime Museum
- Barbican Centre
- Rose Theatre
- Brighton Festival and Dome
- Cultural Capital Exchange
- Drawing Room
- English PEN
- Wired Sussex

The Midlands Three Cities Consortium

- University of Nottingham (lead)
- Birmingham City University
- De Montfort University
- Nottingham Trent University
- University of Birmingham
- University of Leicester
- Central Conservatory for Music (Beijing)
- British Museum
- Cinema Museum
- National Army Museum
- Broadway Media Centre
- Creative Hinckley
- Creative Leicester
- City Museum Services (Birmingham, Leicester, Nottingham)
- Derbyshire County Council
- Leicester County Council
- Leicester Curve
- Nottingham Contemporary
- Phoenix Square, Leicester

The White Rose College of the Arts and Humanities (WROCAH)

- University of York (lead)
- University of Leeds
- University of Sheffield
- British Library
- National Railway Museum
- Royal Armouries
- Arts Council
- English Heritage
- CidaCo
- Continium
- Marks & Spencer
- Microsoft
- Maney Publishing
- Opera North
- Carm Productions and Strategy
- Reel Solutions
- Sheffield Health and Social Care NHS Foundation Trust
- Young Foundation

University of Oxford AHRC

- University of Oxford (lead)

Biotechnology and Biological Sciences Research Council (BBSRC) – Doctoral Training Partnerships

<http://www.bbsrc.ac.uk/web/FILES/PreviousAwards/dtp-allocations-2015-19.pdf>

University of Bristol (Lead institution)

- Cardiff University
- Rothamsted Research
- University of Bath
- University of Exeter

University of Cambridge (Lead institution)

- Animal Health Trust
- Babraham Institute
- EMBL-EBI
- National Institute of Agricultural Botany
- Wellcome Trust Sanger Institute

University of Edinburgh (Lead institution)

- Scotland's Rural College
- University of Aberdeen
- University of Dundee
- University of St Andrews
- Scottish Universities Life Sciences Alliance (partner)
- The James Hutton Institute (partner)

Imperial College London (Lead institution)

- Natural History Museum
- Royal Botanical Gardens at Kew
- Royal Holloway

- University of London
- Research Complex at Harwell (partner)

John Innes Centre (Lead institution)

- Institute of Food Research
- Sainsbury Laboratory
- The Genome Analysis Centre
- University of East Anglia
- Plant Bioscience Ltd (partner)
- The Norfolk and Norwich University Hospital (partner)
- The SAW Trust (partner)

University of Leeds (Lead institution)

- University of Sheffield
- University of York
- Food and Environment Research Agency (partner)
- Research Complex at Harwell (partner)

University of Manchester

Newcastle University (Lead institution)

- Durham University
- University of Liverpool

- **University of Nottingham (Lead institution)**
- Diamond Light Source
- East Malling Research
- Rothamsted Research
- Research Complex at Harwell (partner)
- Centre for Process Innovation's (partner)
- National Industrial Biotechnology Facility (partner)
- Crops for the Future Research Centre (Kuala Lumpur) (partner)
- **University of Oxford (Lead institution)**
- Diamond Light Source
- ISIS Neutron Source
- Oxford Brookes University
- STFC Central Laser Facility
- The Pirbright Institute
- Research Complex at Harwell (partner)

- **University College London (Lead institution)**
- Birkbeck College
- King's College London
- Royal Veterinary College
- London School of Hygiene and Tropical Medicine
- Queen Mary University of London
- **University of Warwick (Lead institution)**
- University of Birmingham
- University of Leicester

- **Lancaster University**
- Doctoral Training Centre in Statistics and Operational Research
- High Wire Doctoral Training Centre
- **University of Leeds**
- Doctoral Training Centre in Technologies for a Low Carbon Future
- Doctoral Training Centre in Tissue Engineering and Regenerative Medicine
- Doctoral Training Centre in Basic Technologies for Molecular-Scale Engineering
- **Loughborough University**
- Industrial Doctorate Centre for Innovative and Collaborative Construction Engineering
- Doctoral Training Centre for Regenerative Medicine

- **University of Sheffield**
- Doctoral Training Centre in Advanced Metallic Systems - Challenges in Global Competitiveness
- Doctoral Training Centre in Interdisciplinary Energy Research (E-Futures)
- Industrial Doctorate Centre in Machining Science
- **University of Southampton**
- Industrial Doctorate Centre in Transport and the Environment
- Doctoral Training Centre in Complex Systems Simulation
- Doctoral Training Centre in Web Science
- **University of St Andrews**
- Doctoral Training Centre in Condensed Matter Physics

Engineering and Physical Sciences Research Council (EPSRC) – Doctoral Training Centres

<http://www.epsrc.ac.uk/skills/students/centres/pre2013/byuni/>

- **University of Bath**
- Doctoral Training Centre in Sustainable Chemical Technologies
- Industrial Doctorate Centre in Digital Entertainment
- **University of Birmingham**
- Doctoral Training Centre in Hydrogen, Fuel Cells and their Applications
- Industrial Doctorate Centre in Formulation Engineering
- Doctoral Training Centre in Structural Metallic Systems for Gas Turbine Applications
- Doctoral Training Centre in Physical Sciences of Imaging for the Biomedical Sciences
- **University of Bristol**
- Doctoral Training Centre in Complexity Sciences
- Doctoral Training Centre in Chemical Synthesis
- Advanced Composites Centre for Innovation and Science (ACCIS) Doctoral Training Centre
- Industrial Doctorate Centre in Systems
- Doctoral Training Centre in Functional Nanomaterials
- Doctoral Training Centre in Future Communications: People, Power and Performance
- Industrial Doctorate Centre in Composites Manufacture (lead university)
- **University of Cambridge**
- Doctoral Training Centre in Analysis
- Doctoral Training Centre in Assembly of NanoMaterials and NanoDevices

- **Cranfield University**
- Doctoral Training Centre in Skills Technology, Research, and Management (STREAM): An Industrial Doctorate Centre for the UK Water Sector
- **Durham University**
- Multidisciplinary Centre for Doctoral Training in Energy
- **University of Edinburgh**
- Industrial Doctorate Centre for Offshore Renewable Energy (IDCORE)
- Doctoral Training Centre in Neuroinformatics and Computational Neuroscience
- **University of Glasgow**
- Doctoral Training Centre in Cell and Proteomic Technologies
- **Heriot-Watt University**
- Industrial Doctorate Centre in Optics and Photonics Technologies
- **Imperial College London**
- Doctoral Training Centre in Controlled Quantum Dynamics
- Doctoral Training Centre in Theory and Simulation of Materials
- Doctoral Training Centre in Science and Application of Plastic Electronic materials
- Industrial Doctorate Centre in Non-Destructive Evaluation
- Doctoral Training Centre in Chemical Biology
- Energy Futures Doctoral Training Centre

- **University of Manchester**
- Nuclear Fission Research, Science and Technology Doctoral Training Centre (Nuclear FIRST)
- Industrial Doctorate Centre in Nuclear Engineering
- The North West Nanoscience Doctoral Training Centre
- Doctoral Training Centre for Integrative Systems Biology
- Doctoral Training Centre in Computer Science
- **University of Newcastle**
- Industrial Doctorate in Biopharmaceutical Process Development
- **University of Nottingham**
- Industrial Doctorate Centre in Efficient Fossil Energy Technologies
- Horizon Doctoral Training Centre for the Digital Society
- From Targeted Therapeutics to Next Generation Medicine: Doctoral Training Centre
- Industrial Doctorate Centre in Manufacturing Technology
- **University of Oxford**
- Doctoral Training Centre in Systems Approaches to Biomedical Science
- Doctoral Training Centre in Systems Biology
- Doctoral Training Centre in Healthcare Innovation
- Doctoral Training Centre in Bio-nanotechnology, Medical Imaging and Bioinformatics
- **Queen Mary, University of London**
- Doctoral Training Centre in Digital Music and Media for the Creative Economy
- **University of Reading**
- Doctoral Training Centre in Technologies for Sustainable Built Environments

- **University of Strathclyde**
- Doctoral Training Centre in Wind Energy Systems
- Doctoral Training Centre in Medical Devices and Related Materials
- Industrial Doctorate Centre in Advanced Forming and Manufacture
- Doctoral Training Centre in Next Generation Accelerators
- **University of Surrey**
- Industrial Doctorate Centre in Micro and Nano Materials and Technologies
- Industrial Doctorate Centre in Sustainability for Engineering and Energy Systems
- **Swansea University**
- Industrial Doctorate Centre in Manufacturing Advances Through Training Engineering Researchers (MATTER)
- **University College London**
- Doctoral Training Centre in Security Science
- Industrial Doctorate Centre in Urban Sustainability and Resilience
- Industrial Doctorate Centre in Molecular Modelling & Materials Science
- Doctoral Training Centre in Financial Computing
- Industrial Doctorate Centre in Bio processing Engineering Leadership
- Doctoral Training Centre in Photonic Systems Development
- Doctoral Training Centre in Energy Demand Reduction and the Built Environment
- Industrial Doctorate Centre in Virtual Environments, Imaging and Visualisation
- Doctoral Training Centre for Mathematics and Physics in the Life Sciences and Experimental Biology (CoMPLEX)

- **University of Warwick**
- Doctoral Training Centre in Complexity Science
- Doctoral Training Centre in Mathematics and Statistics
- Doctoral Training Centre in Systems Biology
- Doctoral Training Centre in Molecular Organisation and Assembly in Cells (MOAC)
- Industrial Doctorate Centre in High Value, Low Environmental Impact Manufacturing
- Doctoral Training Centre in Magnetic Resonance Basic Technology

- **University of York**
- Fusion Doctoral Training Network
- Industrial Doctorate Centre in Large-Scale Complex IT Systems

Wales - <http://www.walesdtr.ac.uk/>

- University of Cardiff (Lead institution)
- University of Aberystwyth
- University of Bangor
- University of Swansea

White Rose

- University of Sheffield (Lead institution)
- University of Leeds
- University of York

Economic and Social Research Council (ESRC)

http://www.esrc.ac.uk/_images/DTC-Contacts_tcm8-27906.pdf

• Birmingham (Lead institution)

- **Bloomsbury** - <http://bloomsburydtr.ac.uk/>
- Institute of Education (Lead institution)
- Birkbeck College
- London School of Hygiene and Tropical Medicine
- School of Oriental and African Studies

• Cambridge (Lead institution) -

<http://www.admin.cam.ac.uk/students/studentregistry/fees/funding/councils/esrc/>

• Essex (Lead institution) -

<http://www.essex.ac.uk/dtr/>

• Kings College London (Lead institution) -

<http://www.kcl.ac.uk/study/pg/funding/sources/esrc.aspx>

• London Business School (Lead institution) -

<http://www.london.edu/education-and-development/phd/scholarships-and-support#.VLft60esV8E>

• London School of Economics (Lead institution) -

<http://www.lse.ac.uk/study/graduate/enquirer/typesofstudy/esrcdtr.aspx>

North East - <http://www.nedtr.ac.uk/>

- University of Durham (Lead institution)
- University of Newcastle

North West - <http://www.nwdtr.ac.uk/>

- University of Liverpool (Lead institution)
- University of Lancaster
- University of Manchester

• University of Nottingham (Lead institution) -

<http://www.nottingham.ac.uk/esrc-dtr/index.aspx>

• University of Oxford (Lead institution)

- **Queen Mary University London and Goldsmith (Lead institution)** - <http://www.qmul.ac.uk/media/news/items/hss/42447.html>

Scottish - <http://www.socsciscotland.ac.uk/pathways/overview>

- University of Edinburgh (Lead institution)
- University of Aberdeen
- University of Dundee
- University of Glasgow
- Heriot-Watt
- Robert Gordon
- University of St Andrews
- University of Stirling
- University of Strathclyde

South East

- University of Surrey (Lead institution)
- University of Kent
- University of Reading
- Royal Holloway

South West - <http://www.swdtr.ac.uk/prospectivestudents/>

- University of Bristol (Lead institution)
- University of Bath
- University of Exeter

• **University of Southampton (Lead institution)** - <http://www.southampton.ac.uk/esrcdtr/>

• **University of Sussex (Lead institution)** - <http://www.sussex.ac.uk/doctoralschool/esrc>

• **University College London (Lead institution)** - <http://www.ucl.ac.uk/shs/esrc>

Medical Research Council (MRC)

<http://www.mrc.ac.uk/skills-careers/studentships/how-we-fund-studentships/associated-studentships/>

<http://www.mrc.ac.uk/skills-careers/studentships/how-we-fund-studentships/doctoral-training-partnerships-dtps/>

<http://www.mrc.ac.uk/documents/pdf/doctoral-training-partnerships-allocations-2015-competition-2016-2017-2018-intakes/>

Cardiff University (Lead institution)

University of Bath
University of Bristol
University of Exeter

Imperial College London (Lead institution)

Kings College London (Lead institution)

Liverpool School of Tropical Medicine (Lead institution)
Lancaster University

London School of Hygiene and Tropical Medicine (Lead institution)

St George's University of London

The University of Manchester (Lead institution)

University College London (Lead institution)
Birkbeck College

University of Birmingham (Lead institution)

University of Leicester
University of Nottingham

University of Cambridge (Lead institution)

Babraham Institute

University of Dundee (Lead institution)

University of Edinburgh (Lead institution)

University of Glasgow

University of Oxford (Lead institution)

University of Sheffield (Lead institution)

University of Leeds
University of Liverpool
Newcastle University

University of Southampton (Lead institution)

Queen Mary, University of London

University of Warwick (Lead institution)

Natural Environment Research Council (NERC)

Centre for Doctoral Training in Oil and Gas

Core academic partners

- Heriot-Watt (Lead institution)
- University of Aberdeen
- University of Durham
- Imperial College London
- University of Manchester
- University of Oxford
- British Geological Survey

Associate academic partners

- University of Birmingham
- University of Cardiff
- University of Dundee
- University of Exeter (Camborne)
- University of Glasgow
- University of Keele
- University of Newcastle
- University of Nottingham
- Royal Holloway

- University of Southampton
- University of Strathclyde
- National Oceanography Centre

Industry sponsors

- BG Group
- BP
- ConocoPhillips
- E.ON

- OMV
- Shell
- Total
- Statoil
- Maersk Oil

Centre for Doctoral Training (CDT) in soil science

- University of Lancaster (Lead institution)

University of St Andrews School of Mathematics and Statistics
 University of St Andrews School of Physics and Astronomy
 University of Strathclyde Physics
 University of Surrey Physics
 University of Sussex Department of Physics and Astronomy
 Swansea University Department of Physics

University College London Department of Earth Sciences
 University College London Department of Space and Climate Physics – MSSL
 University College London Department of Physics and Astronomy
 University of Warwick Department of Physics
 West of Scotland School of Engineering & Science
 University of York Department of Physics

Science and Technology Facilities Council (STFC)

http://www.stfc.ac.uk/files/2510/2510_res_1.pdf

<http://www.stfc.ac.uk/1834.aspx>

<http://www.stfc.ac.uk/files/stfc-phd-studentship-allocations-for-2015-2016/>

STFC PHD Studentship Allocations for 2015/2016

Aberystwyth University Institute of Mathematics and Physical Sciences
 Armagh Observatory Astronomy
 University of Birmingham School of Physics and Astronomy
 University of Bradford School of Informatics
 University of Brighton School of Computing, Engineering & Maths
 University of Bristol School of Physics
 Brunel University College of Engineering, Design & Physical Science
 University of Cambridge Applied Mathematics and Theoretical Physics
 University of Cambridge Institute of Astronomy
 University of Cambridge Department of Physics
 Cardiff University School of Physics and Astronomy
 University of Central Lancashire Jeremiah Horrocks Institute
 City University School of Engineering & Mathematical Science
 University of Dundee Department of Mathematics
 University of Durham Department of Mathematical Science
 University of Durham Department of Physics
 University of Edinburgh School of Physics and Astronomy
 University of Exeter School of Physics and Astronomy
 University of Glasgow School of Physics and Astronomy
 Heriot Watt University School of Engineering & Physical Science
 Heriot Watt University School of Mathematical & Computer Sciences
 University of Hertfordshire School of Physics, Astronomy and Maths
 Imperial College London Earth Science and Engineering
 Imperial College London Department of Electrical & Electronic Engineering
 Imperial College London Department of Physics

Keele University Institute of Environmental Physical Sciences and Applied Mathematics
 University of Kent School of Physical Sciences
 Kings College London Department of Mathematics
 Kings College London Department of Physics
 Lancaster University Physics Department
 University of Leeds Department of Applied Mathematics
 University of Leeds School of Physics and Astronomy
 University of Leicester Department of Physics and Astronomy
 University of Liverpool Cockcroft Institute
 University of Liverpool Department of Mathematical Science
 University of Liverpool Department of Physics
 Liverpool John Moores University Astrophysics Research Institute
 University of Manchester School of Earth, Atmospheric and Environmental Sciences
 University of Manchester School of Physics and Astronomy
 Natural History Museum Mineralogy
 University of Newcastle Mathematics & Statistics
 University of Nottingham School of Physics & Astronomy
 Open University Department of Physical Sciences
 University of Oxford Department of Earth Sciences
 University of Oxford Department of Physics
 University of Portsmouth Institute of Cosmology and Gravitation
 Queen Mary, University of London School of Physics and Astronomy
 Royal Holloway, University of London Department of Physics
 University of Sheffield Automatic Control & Systems Engineering
 University of Sheffield School of Mathematics and Statistics
 University of Sheffield Department of Physics and Astronomy
 University of Southampton School of Mathematics
 University of Southampton School of Physics and Astronomy

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http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2013/state_of_the_innovation_union_report_2013.pdf

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http://ec.europa.eu/euraxess/pdf/research_policies/Researchers%20Report%202014_FINAL%20REPORT.pdf

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Published titles – all available from the UKCGE website, <http://www.ukcge.ac.uk>

ISBN	Title
0-9525751-0-8	Graduate Schools (1995)
0-952-5751-1-6	The Award of the Degree of PhD on the Basis of Published Work in the UK (1996)
0-9525751-9-1	Quality and Standards of Postgraduate Research Degrees (1996)
0-9525751-2-4	Practice-Based Doctorates in the Creative and Performing Arts and Design (1997)
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THE UK COUNCIL FOR GRADUATE EDUCATION

About

UKCGE is the UK Council for Graduate Education. It was founded in 1994 under the Chairship of Professor Robert Burgess to champion the interests of graduate education.

UKCGE was granted Charitable Status in 1997 by the Charity Commission for England and Wales (Registered charity number 1061495). UKCGE's Non for Profit (NFP) model permits a drive to develop Postgraduate Education for the Postgraduate Education sector by the Postgraduate Education sector. To its members UKCGE communicates valuable information and research, facilitates networking through events and forums, provides an influential lobbying function and produces relevant publications.

Mission Statement:

"UK Council for Graduate Education is the leading independent representative body for Postgraduate Education in the UK. Its mission is to be the authoritative voice for postgraduate education in the UK, providing high quality leadership and support to its members to promote a strong and sustainable postgraduate education sector."

UKCGE Executive Committee 2013

The Council is:

- an authoritative voice for the HE sector on postgraduate activity in the UK
- a developer and communicator on policy relating to postgraduate education
- a developer and promoter of best practice in the delivery of postgraduate programmes
- a developer and promoter of best practice in the administration of postgraduate programmes
- a provider of appropriate information, services and publications for these issues

UKCGE promotes:

- the interests of graduate education across all disciplines
- a distinct identity for graduate education and research in Higher Education
- quality measures for graduate education and research conducted in HEIs
- the effective leadership and management of postgraduate students
- the effective provision and funding of graduate education
- the status, education and training of postgraduate students
- effective infrastructural provisions for graduate education (including funding)
- equal opportunities for students in graduate education
- the professional development and status of staff and supervisors in HEIs

Membership

The majority of the UKCGE membership is made up of UK Higher Education Institutions. However, UKCGE is keen to extend its membership to include all organisations that have an interest in postgraduate work both domestically and internationally.

UKCGE helps its members contribute to the development of the UK's postgraduate education sector by systematic enquiry into, creative thought about, and critical analysis of issues relating to tertiary education. Council activities underpin the organisations overarching mission statement, while membership of UKCGE gives people involved in post graduate education (whether as students, academics, administrators or managers) regular opportunity to participate in special interest networks.

Special Interest Networks and Groups

UKCGE facilitates a selection of role related networks and special interest groups heavily focused on bringing member institutions together to share experiences, overcome challenges and develop new practice for the benefit of the postgraduate sector. Each formalised UKCGE network has a Chair and Vice Chair who are responsible for holding an annual meeting and providing ongoing quarterly updates for the network. Each network also benefits from a symposium at the Council's Annual Conference. The Council currently manages the following formalised networks;

- Deans and Directors of Graduate Schools
- Graduate School Managers

The Council also facilitates the following less formalised theme and discipline based Special Interest Groups. The following Groups form the foundations of the UKCGE events calendar, and continued areas of interest for the community. Members and Supporters are encouraged to share relevant topics, reports, events and associated articles that may be of interest to other colleagues in the group.

Theme based Special Interest Groups

- Research Ethics and Integrity
- International Students and Collaborations
- Part time and Distance Learning
- PGR Administration (General)
- PGR Supervision
- Skills, Training and Employability
- Access and Inclusion
- Postgraduate Taught (General)
- Professional Doctorates
- Marketing, Recruitment and Engagement

Discipline based Special Interest Groups:

- Arts and Humanities
- Health and Social Care
- Social Sciences
- Science, Technology, Engineering and Mathematics (STEM)



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