Environment template (REF5)

Institution: University of Bristol
Unit of Assessment: Education (25)
a. Overview The Graduate School of Education (GSoE) is an internationally recognised centre of excellence in a number of important areas of educational research. Our overall aim is to understand the changing conditions, contexts and outcomes of policies, programmes and practices that shape learning and teaching in formal and informal settings and across the life span. To achieve this we undertake distinctive research within a targeted range of research areas with an emphasis on multi- and inter-disciplinary collaboration. Our work is disseminated through publication in peer-reviewed journals and international symposia, and is relayed to policy makers and practitioners through a directed public engagement and impact strategy. We are committed to the well-being of the education sector as demonstrated through leadership in research training, research councils, learned societies, international symposia and collaborative research programmes. The school has a critical mass of researchers in five inter-disciplinary research areas: *international and comparative education*; *globalisation and education; assessment and education*; *science, mathematics, technology enhanced learning and professional development*; *mind, brain, learning and well-being*; and in specialist centres focused on advanced methodological innovations (including Multi-Level Modelling and Narrative Inquiry). Our research excellence is supported by mentoring early career researchers and integrating doctoral and postdoctoral researchers into our research structures. We have undertaken a £3.6 million programme of refurbishment to provide state of the art research facilities for staff and students. In 2012/13 we restructured into three Thematic Groups that provide greater intellectual coherence across the work of the School and act as inclusive academic homes for all staff and doctoral students.
b. Research strategy **b.1 Administration and management**. Research strategy is led in the GSoE by a Director of Research (Tikly). A research committee that includes Thematic Group and research centre leaders and representatives of contract research staff and doctoral students decides strategy. Thematic Groups and research centres report regularly to research committee against objectives. **b.2 Reflection on RAE 2008.** We have achieved the objectives outlined in the 2008 RAE environment narrative that committed the school to addressing: practice-relevant theory; methodological innovation; researcher development for the future; innovation in mathematics, science, technology and assessment; education for socially-excluded young people; and building critical collaboration with policy makers and practitioners. We have achieved these objectives through the work of longstanding research centres and clusters. Our success is evidenced by high levels of research income (section d), targeted capacity building in key areas of research activity, and high doctoral completion rates (section c). We have kept our research strategy under review. **b.3 Thematic Groups.** In 2012/2013 the GSoE refreshed its research strategy through introducing three Thematic Groups, which offer inclusive administrative and disciplinary research homes for staff and doctoral students. Led by senior staff, they provide a strong foundation for the future development of research strategy. They develop intellectual coherence across the work of the school, acting as a base from which to build sustained collaborations with the wider field of social sciences, while restating the importance of education as a substantive site of inquiry within the disciplines. They develop the theoretical and methodological resources of staff and students so as to clarify the distinctive disciplinary contributions that can be mobilised to address contemporary educational challenges. *Learning Societies* (Director Robertson) draws on sociology, politics, geography and development studies to focus on the wider social contexts of learning; *Learning Lives* (Director Facer) draws on insights from cultural studies, including narrative theory, anthropology and social psychology, to examine how different learning identities and knowledges are produced through human cultures; *Learning Inquiry* (Director Erduran) draws upon insights from socio-cultural theory, cognitive psychology, neuroscience, linguistics and philosophy to understand how learning occurs and how best to facilitate the improvement of learning through processes of pedagogical and technological innovation. In the context of a research-led department, themes act as groupings for research mentoring, staff review and workload planning. **b.4 Future aims for next five years.** Our aspiration is to build upon our high standing in distinctive areas of educational research through the further development of our core strengths. The

development of inter-disciplinary work is central to contemporary educational debates. We will pursue this through initiatives drawing upon our own disciplinary strengths as well as those available within the wider university, and through contributing to the growth of the University's Cabot and Elizabeth Blackwell research centres, the Institute for Advanced Studies and other cross-cutting initiatives. We will continue to play a leading role in the ESRC-funded South West Doctoral Training Centre whose success will further enhance our cross-disciplinarity. We plan to further increase and diversify our research funding to fulfil our research ambitions (section d). We aim to recruit 5-6 additional academic staff to facilitate the development of research in key areas we have identified for our future as well as build upon our success in securing highly competitive funding for early career researchers (section c). Our research incorporates well-developed objectives founded on established track records, presented in outline below.

b.4.1 International and Comparative Education. We continue to:

- Develop theoretical understanding of education and development (Tikly1,2), international comparisons and policy transfer (Crossley2,3; Tikly3) and learning in low income settings (Mbogo Barrett1,2, Sutherland1).
- Undertake research on education quality in low income countries (Tikly1,2) focusing on language and literacy (Mbogo Barrett2, Olivero1), textbooks, pedagogy, teacher quality and leadership (Mbogo Barrett3; Tikly2,4); education and sustainable development in small states (Crossley1,4); and, the achievement of Black Caribbean and Somali learners (Stockfelt1).
- Develop innovative comparative methodologies (Broadfoot1,3; McNess1), including research ethics (Bond1,2,3) and capacity building in international partnerships (Mbogo Barrett4).

b.4.2 Globalisation, Education and Societies. We continue to:

- Develop theoretical work on the cultural political economy of education (Robertson4, Dale3, Facer4); the politics of cyberspace (Facer2) and of denationalising spaces (Trahar3); identity and cosmopolitanism (Giampapa1,3,4; Trahar 2).
- Conduct research into the role of higher education in the creation of a global knowledge economy (Facer1; Robertson2) in region-building (Dale1; Robertson3; Tikly3) and internationalisation (Trahar3); how globally-competitive world-class universities are defined (Lucas1,3,4); the reworking of cityscapes as sites for learning (Jay4; Facer3; Manchester1).
- Build on innovative methodological work on the co-production of knowledge between researchers and communities (Facer's AHRC Fellowship; Giampapa2).

b.4.3 Assessment and Evaluation Research. We continue to:

- Contribute to conceptual understanding of the effects of large-scale, high stakes assessments on educational policy in the UK (Leckie4) and internationally (Thomas1; Mbogo Barrett1); the implications of a move to on-line assessment for learner outcomes (Yu1,4).
- Research into educational and evaluation systems in the UK, China, Africa and South America (Thomas1,2,4) with a focus on teacher quality and effectiveness (Broadfoot1; McNess2); and, on language assessment in diverse multilingual, professional contexts (Isaacs1,2,3; Yu1,2,3,4).
- Develop methodologies that take account of rater influence on construct validity in test design (Isaacs4; Leckie3), contextual issues in developing and interpreting assessment evidence (Leckie1,2) and capacity building needs in assessment and evaluation research (Thomas3).

b.4.4 Mathematics, science, technology enhanced learning and professional development. We continue to:

- Develop a theoretical focus drawing on enactivism (Brown1,2; Coles1,2,3), sociocultural theory (Olivero2; Sutherland2,3; Jay3; Reed1,4, Timmis2) and argumentation (Erduran1,3,4) to inform professional development (Pollard1) and the co-production of knowledge by academics and practitioners (Brown2, 3; Coles1; Olivero4; Pollard3, Timmis4) using experimental and action research methodologies (Coles1,2; Brown1; Olivero2; Sutherland1,4).
- Conduct research within technology enhanced learning (TEL) to better understand the relationship between digital tools, teachers, students and learning (Timmis2; Gall4; Jay1; Sutherland1,2,4; Wishart2) across a range of subject areas and phases of education.
- Develop methodologies for researching interdisciplinary grand challenge problems in TEL (Timmis2, Jay3) and future directions in TEL (Facer1,4; Sutherland1).

b.4.5 Mind, brain, learning and well-being. We continue to:

- Develop inter-disciplinary understanding of children's educational and social development, well-being (Meadows3) and the enhancement of learning power (Deakin-Crick1,2,3,4).
- Conduct research to better understand the interrelationship between home and school learning (Feiler1,2; Yee1,2); the educational experiences of marginalised groups (Feiler1,3,4; Rose4; Sutton Spence2,3; Washbrook1); parental involvement (Fieler1,2); the aspirations and identities of older adults (Rose4); the use of evidence from neuroscience to inform education policy (Howard-Jones 1,2), pedagogical processes and creativity (Howard-Jones3,4).
- Contribute to building capacity in neuroimaging skills within the education research community.

b.5 Methodological innovation.
b.5.1 Centre for Multilevel Modelling. We continue to:

- Develop new statistical methods that better represent the complexity of educational and social processes (Goldstein1,2,3,4; Leckie1; Steele1,2,4).
- Construct software tools that implement these new methods including refining and developing the MLwiN and Stat-JR software systems.
- Investigate the application of new methods to address research questions in education and build capacity in secondary data analysis including longitudinal data sets through developing further on-line training materials including interactive e-books.

b.5.2 Methodological fora. Methodological fora draw on both qualitative and quantitative expertise and are open to staff and students in the GSoE and the University. They develop capacity in the use of advanced statistical techniques including multilevel modelling, mixed methodologies, discourse analysis, narrative inquiry, and the co-production of knowledge.

b.6 In the pipeline. Since 2012 staff have been awarded grants worth over £1.9 million that will reach fruition after 2013, leading to international journal publications, books, symposia and public engagement events (section d).

b.7 Priority areas for development
b.7.1 Research topics. Our overarching agenda is to build the intellectual and practical leadership amongst policy makers, practitioners, learners and the wider research community that is urgently required to enable education to adapt and thrive in a time of local and global change. Significant here are changes to teacher education; the impact of the financial crisis and increasing global and local inequalities; opportunities for collaboration with emerging economies including China and India; the increasing significance of digital technologies in managing big data and supporting on-line learning; the impact of demographic trends in the UK and internationally, environmental risk and uncertainty and increased migration. Developing an educational response requires an inter-disciplinary approach and collaborative working (section e). Education must lead however. For example, we intend to:

- Draw on our expertise in teacher education (the GSoE is rated 'excellent' by Ofsted) and on research and methodological expertise to further develop our model of co-producing knowledge that can inform the professional development of teachers, and a programme of comparative teacher education.
- Build on our strengths in higher education to consider the role of universities in relation to knowledge economies, widening participation and supporting lifelong learning.
- Work with partners in government and the third sector to develop research in the area of raising aspirations and improving learning outcomes for disadvantaged groups of learners in the UK and in the low-income world.
- Work through the University-wide Cabot Institute for environment research to develop research into education for sustainable development; and, through the Elizabeth Blackwell Institute for health research to better understand the role of education in promoting health and well-being across the life span.

b.7.2 Funding streams. Whilst agenda-led our priorities respond to a changing environment for research funding. The ESRC, Nuffield Foundation and British Academy now prioritise funding for quantitative methods including secondary data analysis. The Centre for Multilevel Modelling is unique in having been successful in three successive rounds of ESRC funding as a National

Centre for Research Methods node. Our large portfolio of grants and expertise make us well placed to take advantage of new funding streams including in the areas of education and development (e.g. DfID/ ESRC) and higher education (e.g. ESRC, EU). As traditional funding streams become more competitive we will continue to diversify. For example, Facer's Leadership Fellowship and Manchester's two recent projects are with the AHRC, and we have a growing portfolio of EU funded projects. Other funders that will be targeted include: Education Endowment Fund, alumni, foundations, China National Institute for Education Sciences, overseas research councils that allow UK universities to apply jointly with home universities (e.g. NSF, Hong Kong research council). We will continue to respond to the shift towards larger, inter-disciplinary calls (section e) and to support consultancies linked to research and research-related entrepreneurial activities (section d).

c. People:

c.1 Staffing strategy and staff development. To ensure that academic staff allocate dedicated time to research, we have a work load model that guides managerial decisions. All staff can apply for an annual financial allocation of £1500 to support research dissemination and network building. This funding is particularly helpful for early career staff who may not have access to larger grants. All staff are assigned a research mentor who they meet with regularly to discuss research plans.

At Bristol, Lecturers 'progress' to Senior Lecturer status, negating the need for lengthy and potentially disruptive promotion bars. Reviews are conducted annually to ensure expectations are fulfilled and to identify issues to be dealt with. During the REF period 6 staff members have progressed from Lecturer to Senior Lecturer and 3 have secured 'accelerated' progression. Promotions to more senior grades examine all forms of contribution to establish evidence of 'excellence'. Since 2008, 6 staff members have been promoted to Reader and a further 4 awarded Personal Chairs.

c. 1.1 Staffing policy and evidence of its effectiveness. We have used the departure of 12 senior staff mainly through retirement as an opportunity to recruit new early career staff and to streamline and refocus our research efforts. Since the last RAE we have recruited 8 new Lecturers (Leckie, Washbrook, Cole, Isaacs, Yu, Barrett, Jay, Timmis), one Reader (Sutton-Spence) and three Professors (Broadfoot, Facer, Pollard). These appointments have been carefully targeted in areas of strategic importance (Leckie and Washbrook have significant expertise in advanced social statistics; Barrett in international development; Facer in community development, Timmis in technology enhanced learning; Jay in psychology; Cole in mathematics education; Broadfoot in assessment and Pollard in teaching and learning). All have bought in important new funding streams and have developed or are developing prominent international careers.

Our five-year plan is to grow staffing numbers by 5 FTEs between 2013 and 2018, as permitted by school finances, to exploit the research opportunities identified above (section b). Our policy is to build and retain critical staff mass in targeted research areas. We will continue to target funded research fellowships, and offer proleptic positions to fellows where appropriate. The University operates an 'Exceptional Talent' scheme, by which research leaders can be attracted to Bristol, and we will use this scheme where appropriate to enhance our research agenda.

c.1.2 Early career researchers. Junior members of academic staff and contract research staff are assigned a research mentor who they meet regularly, and an annual staff review process to discuss ambitions for publishing, research funding and teaching, and to ensure that barriers to progress are identified and managed. The Developing Inquiring Communities in Education (DICE) network offers targeted support for early career researchers (including CRS) in proposal and paper writing. We offer advice to early career researchers about the ethics of publishing and to all staff about the need to recognise the contributions of early career staff where there is joint authorship. The school has been successful in winning competitive fellowships to support 4 early career researchers (Jay, Leckie, Washbrook and Stockfelt).

c.1.3 Prestigious/competitive personal research fellowships. Colleagues have held 13 individual research fellowships during the assessment period, including a highly competitive 3 year ESRC Professorial Fellowship (Hughes); a 4 year AHRC Leadership Fellowship (Facer); an ESRC Future Leader Fellowship (Leckie); a *EU Marie Curie* -TUBITAK Fellow (Erduran); a Russell Sage Visiting Fellowship, Columbia University, NY (Washbrook); Dutch Foreign Affairs Visiting

Fellowship, IS Academe, Amsterdam (Robertson); externally-funded professorial fellowships at the University of Bergen (Dale, Sutherland); three World University Network-funded research fellowships (Robertson – Wisconsin; Eagle - Bergen, Giampapa – Penn State); a British Academy Fellowship (Stockfelt); and, a CAPES Brazilian Ministry of Education award (Sutton Spence).

c. 1.4 Equality of opportunity. The School is committed to ensuring staff equality and diversity. 66% of all academic staff and 59% of Professors and Readers are female. We continue to ensure our commitment to gender equality through supporting female staff needing to complete advanced doctoral degrees, scheduling meetings and seminars for school-friendly times, and enabling staff with caring responsibilities to schedule lectures that avoid problematic timings. In accordance with the Concordat to Support the Career Development of Researchers, contract research staff participate fully in all research-related activities including access to seed and conference funding and periods of study leave to ensure that they are able to develop their employability.

C 1.5 Research quality and integrity. The School conducts its research to high standards which are fully consistent with RCUK and BERA ethical codes of practice. The Schools Ethics Committee, chaired by Bond (an international expert on ethics) assesses and feeds back ethics advice on research proposals and post graduate projects. Ethicnet (Yee, Giampapa) was established in the School to provide capacity building activities around developing research ethics. Given that much of our research involves schools and young learners, we require that staff and students understand the importance of the Disclosure and Barring Service (DBS) processes. The GSoE operates a rigorous and supportive system of peer review for grant applications (section d).

c. 2 Research Students. The School is a vibrant and growing centre for PGR with a high level of success in securing competitive funding. The GSoE has a PhD programme (Director Timmis) and an EdD programme (Director Crossley) that is run in Bristol and in Hong Kong. The Bristol EdD programme was the first such programme in the UK with most EdD students being mid-career professionals, and the programme aims to equip them with the skills and knowledge necessary to design, commission, evaluate and apply research in their professional settings. The EdD programme delivered in Hong Kong complements work in Bristol and strengthens the Asian dimension of our research. During the period of assessment 328 doctoral students have joined the GSoE doctoral community, of which 99 have registered for the MPhil/PhD, 93 for the EdD Bristol programme and 136 for the EdD Hong Programme. Completion rates are high with 77 PhD and 99 (64 Bristol and 35 Hong Kong) EdD completions.

Student award summary (01/08/08-31/07/13)	2008/09	2009/10	2010/11	2011/12	2012/13
PhD	17	14	11	22	13
EdD Hong Kong	7	7	5	6	10
EdD Bristol	13	9	18	13	11
Co-supervision of PhD students based elsewhere in Faculty	0	1	1	2	2
	37	**31**	**35**	**43**	**36**

We intend to strategically grow our already high numbers of doctoral students and postdoctoral fellows through attracting the brightest and ablest candidates from the UK and internationally so as to contribute to capacity building in our core areas of research strength including quantitative methods and more widely within the discipline. We will sustain our existing high completion rates through a focus on the quality of teaching and supervision; develop our inter-disciplinarity through continuing to contribute to all pathways of teaching within the ESRC South West Doctoral Training Centre; strengthen our masters programmes in line with our substantive and methodological foci and facilitate easier progression between our masters and doctoral programmes. We will continue to integrate all doctoral students within research themes and centres.

c.2.1. Prestigious/competitive studentships. Over the REF period, 25 full time students gained competitive scholarships (including 17 ESRC scholarships; 8 University of Bristol Studentships; 2 ITN Marie Curie Fellows). Added to these numbers, the GSoE hosted the DifD-funded EdQual research programme which attracted a total of 14 linked PhDs (10 funded directly by EdQual) all of

whom contributed to projects within the programme and publications arising from the programme. In the assessment period we enrolled students with competitive scholarships from a wide range of countries including Malaysia, Syria, Saudi Arabia, Mexico, Chile, Kazakhstan and China.

We also host doctoral and post doctoral researchers who have won competitive grants to enable them to work for short periods of time with us (from 1 term to 1 year) as part of their studies. This not only enriches our research culture, but is indicative of the high esteem that our research groups have in attracting such students. This has involved research students from China, Brazil (3), Turkey, Mexico, Norway (2), and the United States of America (3).

The School led the setting up of the ESRC South West Doctoral Training Centre (Bristol, Bath, Exeter) which offers 41 studentships per annum. Members of the GSoE teach on four pathways of the SWDTC, contributing to the DTC's Education pathway, and the Advanced Quantitative Methods and Global Political Economy inter-disciplinary pathways.

c.2.2. Training and supervision of PGR students. All students have two advisors, and meet regularly to ensure progress. We operate a formal bi-annual reporting schedule involving students, supervisors and Heads of PGR. The procedure ensures that we record issues quickly and provide early and effective intervention measures should they be needed. Students are expected to make formal presentations of their work in the second and third year of their studies at national and international conferences and to begin writing for publication. We also offer opportunities for teaching (through a formal application and interview process) as a contribution to career development. We have protocols in place to ensure that this activity does not obstruct completion. The School's Annual Doctoral Conference which began in 2003 is an important focus for building research capacity and is now run in both Bristol and Hong Kong. In Bristol this conference is open to graduates from around the UK. The students organise the conference, chair and act as discussants of other students' work, as well as present their own work.

C2.3. A strong and integrated PGR culture which contributes to capacity building. A graduate school representative at the Masters and the Doctoral levels is selected by the student body to represent their interests at Research and Teaching and Learning Committee. PGR students are invited to participate in initiatives to improve their graduate experience, including specialised workshops on ethics, publishing, visual analysis, presenting their work in conferences and workshops, and in specific forms of data analysis. Research groups also open their activities, such as seminars, reading groups and workshops, to students from across the Faculty (especially sociology, politics, geography, law and social policy) to ensure that their postgraduate experience is enhanced by these inter-disciplinary encounters. PGR also meet with researchers in their respective fields when they present at conferences and workshops. The vast majority of our PGR students secure employment or gain promotion on completion of their studies (42 graduates of our doctoral programmes from the last 6 years are now employed in University departments around the world). The Martin Hughes and John Rasbash Memorial Bursaries support local teachers to engage in doctoral research and capacity building in quantitative social sciences respectively.

d. Income, infrastructure and facilities
d.1 Research funding. Overall income from research grants since 2008 has been £6,474k (£3,442k or 53% RCUK). Annual income from grants has fluctuated during the assessment period as the funding environment has become more competitive. We have successfully responded by strengthening support for grant applications, diversifying the range of funders we make applications to (e.g. AHRC, EU) and targeting larger inter-disciplinary grants (e.g. recent awards Sutherland, Facer and Manchester). This strategic approach has contributed to an increase in the value of awards from £388.4k in 2011/12 to £1,906k in 2012/13. The 2012/13 figures represent a 67% success rate (17.5% RCUK) and we expect recent success to be reflected in higher annual income from grants in coming years. Examples of grants won since 2012 include: (1) a five year ESRC Connected Communities research programme with Law, Arts and Geography (Sutherland); (2) a four year EC-funded Marie Curie ITN project on Universities in the Knowledge Economy researching the role of universities in developing knowledge economies and emerging regions; (3) two sister projects on language supportive textbooks and pedagogy in Rwanda (Mbogo Barrett, Tikly); (4) two AHRC grants on cultural value (with youth organisations) and on tangible memories (with care organisations, computer science and history) (Manchester); (5) three projects theorising engaged universities (with NCCP), and on knowledge co-production and co-design (AHRC)

(Facer); (6) four related projects in the area of widening participation to higher education (Thomas, Goldstein, Sutherland, Coles, Jay, Timmis, Yee, Rose, Tikly). The GSoE also supports consultancies linked to research and a range of research-related entrepreneurial activities which in the assessment period made a £350k contribution to the budget, together with annual revenues from the MLWin Software (around £100k).

d.2 University investment and policies to support the research environment. The University's Research and Enterprise Development (RED) group consists of >80 staff working with academics and contract researchers to sustain and grow research activities. This includes identifying funding opportunities, advising on development of research proposals, coordinating large collaborative bids, negotiating research and consultancy contracts, project management of large projects, and improving impact and commercialisation of our research by working with business.

University Research Institutes (Cabot and Elizabeth Blackwell) provide strategic funds to develop new research opportunities, particularly in those subjects which cross traditional subject boundaries. Similarly, Bristol's Institute of Advanced Studies funds research workshops (e.g When postgraduate research encounters the social/natural science divide (2009); Complexity in the real world, 2010; Philosophy & methodology of Interdisciplinary research for sustainability (2011); Exploring the internet of things (2012)) and visiting research fellowships (e.g. Paul Cobb, Bronweyn Davies, Suresh Canagarajah).

The University offers a very active staff development programme, which provides support and training for all levels of academics. Courses range from grant writing, and managing a small research group, to advanced management and leadership programmes. Additionally, the University's Centre for Public Engagement provides help and support in developing "pathways to impact" in research proposals and ensuring research is communicated to a wide audience.

d.3 Strategies for generating grant income appropriate to the discipline. Research centre co-ordinators discuss funding opportunities in relation to research priorities on a termly basis with a senior member of staff (Pollard). Plans are then recorded and monitored on a spreadsheet and progress against plans is reported to research committee. Other discipline-specific strategies to generate research income include bespoke support and feedback for staff on draft applications from two internal reviewers and access to seed money on a competitive basis for pilot research. The Developing Inquiring Communities in Education (DICE) network also offers targeted support for early career researchers in proposal and paper writing.

d.4 Evidence of infrastructure and/or facilities.
d.3.1 Major Infrastructure Funding. The GSoE has undertaken a significant refurbishment programme of £3.6 million during the assessment period that has improved the research environment for staff and students and supported our research ambitions. This includes a total refurbishment of the Ground and 1st Floors to incorporate the creation of new, dynamic learning spaces, a new education library, new staff offices and a new research student room.

d.3.2 Laboratory provision, IT, AV and specialised equipment/ technical support. The GSoE has invested a Second Language Speech Lab providing facilities for conducting high calibre pronunciation and fluency research (£6k). This is in support of the strategic growth of language assessment (section b). IT support at the University is provided on a zonal basis and the GSoE also has the services of a dedicated Education specialist. The School has invested in significant equipment including the Clinical Research Imaging Scanner used in neuroscience education, and a Video Methods Lab and Editing Suite that supports research and video-podcasting of key lectures. The School has invested in a Senior Advanced-Skills Science Technician, an IT Education specialist, and a software developer to develop and manage MLWiN software.

d.3.3 Space/facilities available for PGR students and research groups. The recent refurbishment has resulted in the creation of six dedicated, fully equipped rooms for postgraduate students, postdoctoral fellows and research staff, state of the art teaching rooms, a mini conference facility which is widely used by the university and the wider educational community and open plan meeting spaces. Doctoral students are given dedicated access to desk space and computing facilities in three rooms within the School available 24/7. PCs and monitors have been replaced in the majority of teaching rooms and staff offices and in all research student rooms.

d.3.4 Education library. The fully refurbished GSoE Library (partially funded by the Wolfson Foundation) opened in April 2010, provides space for silent individual study and a collaborative study space for group working and discussion with access to PCs, printers and photocopiers and to scanning and video viewing facilities. The foyer immediately outside the Library also has additional computers, tables and a refreshment area, and is used as a collaborative working space. The newly refurbished Arts and Social Sciences Library nearby, provides an extensive, multi-disciplinary subject book collection. This Library also has longer opening hours (24/7 in the summer term) hundreds of study spaces, 4 Group Study Rooms, Group Multimedia Viewing facilities, a designated Postgraduate Study Room and access to PCs, printers and photocopiers. Staff and students can access 60,000+ full text e-journals, UK research theses, e-books and research databases, including a number of specialist education resources.

e. Collaboration or contribution to the discipline or research base
Our research is characterised by strong national and international collaborations. Over half of the publications submitted to this REF have co-authors from other institutions, with 40% of these being international co-authors. Since 2008 we have made a major contribution to the research base of education both within the UK and internationally, by for example contributing to:

- UK-based research councils, funding agencies and Academies. Goldstein is advisor to the ESRC on research assessment techniques; Pollard continued in his work as Director of ESRC/TLRP finishing in 2009; Broadfoot is Chair of the ESRC funded Understanding Society Longitudinal Household Survey; Robertson, Thomas and Tikly advise ESRC/DfID on funding calls; 9 senior staff are members of ESRC peer review colleges; Goldstein and Broadfoot are Fellows of the British Academy.

- Overseas-based research councils and funding agencies including peer review colleges in Australia (Dale and Robertson), Hong Kong (Crossley, Robertson, Tikly, Thomas), Italy (Sutherland) and Singapore (Erduran); Hong Kong REF panel (Sutherland); Canadian SSHRC and EC SSH FP7 awards (Robertson).

- The wider discipline through major editing roles. Dale and Robertson are founding Chief Editors of *Globalisation, Societies and Education* and Erduran is editor for the *International Journal of Science Education*. Crossley was chief editor for *Comparative Education* and Brown for *For the Learning of Mathematics*. 18 staff are executive editors for a total of 15 international journals.

- Strategic Forum for Research in Education, emanating from Pollard's stewardship of the ESRC/TLRP programme and the strategic development of teacher education (e.g Broadfoot's contribution to review of teacher education in Ireland and Pollard in Scotland).

- Organising and participating in 4 ESRC Seminar series (e.g. Challenging the orthodoxy of school effectiveness and school improvement; Theory and methods of educational futures).

e.1 Inter-disciplinary research. We have continued our strong engagement in inter- and multi-disciplinary research through a range of initiatives. For example,

- The Learning Environment for Multilevel Methodology and Applications (LEMMA) and Structures for Building, Learning, Applying and Computing Statistical Models (LEMMA II) projects (Steele et al, (GSoE)) are with colleagues in Veterinary and Geographical Sciences.
- Steele and Goldstein's work on the Impact of Family Socio-Economic Status on Outcomes in Late Childhood and Adolescence is a collaboration with colleagues in economics.
- ESRC *Productive Margins* programme (Sutherland) works across education, law, geography, drama and history, and nine community organisations to design new regulatory processes.
- EU funded STELLAR network of excellence brought together computer scientists, psychologists and educationalists to develop an inter-disciplinary approach to TEL.
- Our EC-funded projects, such as *Governing Education Transitions in Europe* (GOETE) have involved economists, social workers, sociologists and anthropologists; the IRSES project brought anthropologists, sociologists and political economists together to better understand globalisation, regionalisation and higher education (Lucas, Trahar, Dale, Robertson).
- Howard-Jones and Deakin-Crick were co-applicants for a successful DCSF Centre for Understanding Behaviour Change with the Bristol Centre for Market and Public Organisation.

e.2 Collaborations that build capacity/share expertise. We have continued to collaborate in ways which strengthen the research base in our partner institutions, particularly internationally, e.g.

At an international level:

- Our work in the DfID-funded EdQual (Tikly, Barrett, Thomas, Sutherland, Yu) which engaged with researchers in South Africa, Rwanda, Tanzania, Ghana, Pakistan and Chile.
- Crossley's ongoing collaboration with UNESCO/IIEP and the Commonwealth Secretariat on small states.
- The STELLAR Network of Excellence (EC-FP7) (Sutherland, Timmis, Howard-Jones, Wishart) built capacity around technology enhanced learning in the partner institutions.
- The EC-Commenius-3-Network on Music Education (Gall) aimed to strengthen the research base for teacher and music educators from 26 institutions and 11 European countries.
- Dale (2008-11) was the Scientific Coordinator for the EC-funded Network of Experts on Social Science and Education which bought together experts in sociology, pedagogy, politics and economics to advise the EC's DG-Education and Culture on its framing for Horizon 2020.
- Robertson was the lead on two World University Network (WUN) initiatives on constructing knowledge spaces and global regionalisms and higher education that bought together collaborators from USA, South Africa, Australia, and Hong Kong.

At a local level:

- Science and mathematics education research projects that involve partnership with teachers and leaders from across the local authority (Erduran, Coles, Brown, Jay, Sutherland, Wishart).
- The Supporting Learning in Transition from Primary to Secondary School project (Sutherland, McNess, Harris and Yee), identified models of primary/secondary school partnerships that has impacted on the development of soft and hard federations.
- Feiler's projects on Schools Disability Data Collection for Children's Services (DFE) has involved collaboration with expertise in the University of Bath.
- The Ethnicity and Achievement in Bristol Schools project (Tikly, Rose) worked closely with headteachers and the Bristol LA to identify barriers to achievement facing Black and Minority Ethnic Learners.

e.3 Seminars/Visiting Fellows/Festival of Education. We offer a rich programme of seminars, as well as hosting distinguished Visiting Fellows e.g.

- The GSoE have hosted seminar series funded by Bristol's Benjamin Meaker award to support distinguished visiting fellows including Davies (2011) and Canagarajah (2010).
- We regularly host visiting follows from all over the world, including USA, Canada, Brazil, Mexico, China, Malaysia, Taiwan, New Zealand, Norway and Turkey.
- We maintain a weekly set of departmental seminars, as well as specialised workshops and seminars open to the rest of the university and the wider public, attracting international speakers (e.g. Bransford, Engestrom, Perkins, Rogoff) as well as policy makers (e.g. Oates).
- We showcase our research in an annual Festival of Education which is open to the public.
- Graduate students run an annual conference that is open to graduate students from around the UK and internationally so that they can meet and present their work.

e.4 Collaboration in PGR training.

- The School contributes to the ESRC South West Doctoral Training Centre (Bristol, Exeter, Bath). In addition to the Education pathway, we contribute to the interdisciplinary pathways on Global Political Economy and Advanced Quantitative Methods.
- We have developed innovative learning environments and virtual seminars with colleagues in Europe (through the STELLAR NoE), the US, Australia, and Hong Kong (Lucas, Trahar, Robertson), including providing opportunities for graduate students to present their work.
- We contribute to doctoral training programmes hosted elsewhere, e.g. through the EC-funded ITN Universities in the Knowledge Economy project, which involves collaboration with Aarhus, Oporto, Lyon, Ljubljana and Roehampton universities.