

<p><b>Institution: University of Cambridge</b></p>
<p><b>Unit of Assessment: Education (25)</b></p>
<p><b>a. Overview</b></p> <p>A significant period of institutional merger and physical relocation to create the new Cambridge Faculty of Education (FoE) was completed in 2005. FoE is located within the School of Humanities and Social Sciences (SHSS) of the University of Cambridge (UoC). FoE's Research Committee (RC) exercises strategic leadership and coordination of its research activity and development, primarily through five Academic Groups (each chaired by a professor or reader), and through a range of cross-cutting activities. All professors and readers in FoE (including HoD <i>Gronn</i>) belong to RC, along with members elected to represent other staff groups involved in research. RC is chaired by the Director of Research (<i>Ruthven</i>) who serves on the FoE Senior Leadership Team. Each researcher in FoE (whether academic staff or research student) is a member of one of the five academic groups, aimed at fostering development around clusters of cognate interests:</p> <ol style="list-style-type: none"> <li>1) Education, Equality and Development (EED);</li> <li>2) Leadership for Learning (LfL);</li> <li>3) Pedagogy, Language, Arts and Culture in Education (PLACE);</li> <li>4) Psychology and Education (P&amp;E);</li> <li>5) Science, Technology and Mathematics Education (STeM).</li> </ol> <p>FoE's submission for RAE 2008 reported on the research of the recently established academic groups. As will be detailed later, all continue to pursue their programmes. Three retain their original names: EED, PLACE and STeM. Two have modified their names: the former Leading Learning for School Improvement group has adopted the name of its longstanding partnership network, Leadership for Learning; and the former Psychology and Neuroscience in Education group has been renamed to reflect transfer of the Centre for Neuroscience in Education from FoE to the School of Biological Sciences under a UoC policy to consolidate neuroscience research.</p>
<p><b>b. Research strategy</b></p> <p>The culture of FoE is one of commitment to conducting research of high quality and practical value. Particular effort is directed towards the improvement of education, with a central focus on teaching and learning, informed by principles of inclusivity and social justice, and valuing the contribution of user groups, especially practitioners, in collaborative research partnerships.</p> <p>RC monitors the quantity, quality and direction of FoE research activity, working closely with the professors and readers who lead each academic group to give feedback and support. Academic groups are important both in fostering research collaboration around central themes and in providing peer support for individual research. Over the course of 2012, each group reviewed its research activity and identified future priorities. Triangulating these internal reviews with findings from annual research audits, RC concluded that the present groups continue to be successful in building research capacity and supporting research activity. It was noted that cross-FoE initiatives had made it possible to develop activities which drew on expertise from several groups, and that, where individuals' research interests had shifted, they had changed group accordingly. On this basis, FoE agreed that maintaining the present group structure represents the best medium-term strategy for this important collegial aspect of the organisation and promotion of research.</p> <p>The following sketches focus on internationally excellent and world leading areas of research in each academic group. They show how the group has developed the research themes identified in FoE's RAE 2008 return, and future lines of development. As an advance contribution to Section d, these sketches also show how external grants have led to high quality research by referring to outputs included in this REF submission, identified in the format <i>Researcher_Outlet_Year</i>.</p> <p><b><i>Education, Equality and Development (EED)</i></b> (Chair: <i>Reay</i>)</p> <p>The EED group brings together History, Philosophy and Sociology of Education with Citizenship Studies, Inclusion and International Development. The research themes identified in the 2008 RAE remain central to the group's research programme. Through <i>Cremin's</i> appointment, EED expertise has been expanded to include Peace Studies and Youth Participation and Democracy.</p> <p><b><i>Social Justice and Inclusion</i></b>: The focus is on social class, gender, ethnicity and disability through cross-disciplinary collaboration, with <i>Reay</i> becoming a co-investigator on the joint MRC/ESRC <i>Life Study</i> project (2011/16), and <i>Dillabough</i> and <i>Gardner</i> working with historians and geographers on the international <i>Youth Exclusion and Global Change</i> project. Other social justice projects include <i>Black-Hawkins'</i> British Academy/Leverhulme Trust project on <i>Perspectives on Diversity and Belonging in Primary Classrooms</i>, and <i>Singal's</i> DfID-funded work on <i>Disability, Education and</i></p>

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*Poverty.* All these areas of research have proved extremely generative and will continue to be pursued. *Kettley's* project on access to Cambridge University, funded by Atlantic Philanthropies (*Kettley\_BJSE\_10*), along with *Reay's* ongoing work on inequalities in access to HE across the UK (*Reay\_Soc\_09*) are continuing research priorities. *Dillabough's* work on disadvantaged youth (*Dillabough\_T&F\_10*) has recently secured additional funding to study youth, security and surveillance in the UK and South Africa. *Cremin* is working with *Reiner* (Judge Business School) as PI on an EPSRC-funded initiative which is investigating youth attitudes to energy and environment.

*Theoretical and Methodological Frameworks in Education:* EED members are leaders in critical social theory. *Reay's* article and book (*BERJ\_10; Palgrave\_11*) developing Bourdieu's theory were both shortlisted for prizes (BERA article of the year; Society for Educational Studies book award). *Moore* is a leader in critical realism (*BJSE\_13*) and the ideas of Bernstein (*Routledge\_13*). *Arnot* continues to conduct world-leading research on gender, presenting the prestigious John Dewey Society Lecture on *Gender Democracy and Education in a Neo-liberal Age* at AERA (2011). *Gardner* (*PP\_09; DS\_11*) has developed the hermeneutics of historical research, while *Kettley's* monograph (*Continuum\_10*) identifies a new cross-paradigm system of theory building.

*International Development:* The research of the Centre for Education and International Development (CEID) and the DfID-funded RECOUP project (*Arnot\_CE\_12; Colclough\_IJED\_10; CE\_12; Singal\_IJIE\_10*) has been highly influential, producing 6 special issues of leading peer reviewed journals. *Arnot* is an expert member of the DfID-funded *Girls' Education and Gender Equality Literature Review*. New research initiatives include a BAICE grant to establish the Forum on *Disability, Development and Education* (*Singal 2012/13*) and an ESRC knowledge exchange scheme on disabled children's education in four African countries (*Singal 2013/14*). A pump priming FoE research grant plus GTC funding supported *Education, Asylum and the 'Non-Citizen' Child* (*Arnot\_Palgrave\_10*) which won a Society for Educational Studies prize. A new research partnership with the Bell Foundation (*Arnot, Evans & Liu*) focuses on *Educational Achievement, Language Education and Disadvantage*. With *Gelsthorpe* (Criminology), *Arnot* is co-leading the *Cambridge Migration Research Network*, a new interdisciplinary initiative across the social sciences studying the impact of migration on the social fabric.

***Leadership for Learning (LfL)*** (Chair: *Crawford*)

The LfL group's research agenda focuses on school improvement and educational leadership. With three members (*Opfer, Pedder* and *Sugrue*) promoted to professorships elsewhere, professorial (*Gronn*) and readership (*Crawford*) appointments have been made to contribute to research leadership in the group, with further professorial (*Vignoles*) and lectureship (*Antoniou*) appointments as part of a wider strategy to develop use of sophisticated quantitative methods.

*School Improvement:* The group has extended its research on factors which make a difference to school performance. *Gray* (*BERJ\_11*) used a dynamic model to show how increasing expenditure on schools does indeed influence their academic results; this was 'highly commended' in BERJ's annual review of publications. A pioneering study of 'alternative' outcomes of schooling such as wellbeing (as part of the cross-disciplinary Nuffield-funded *Adolescent Mental Health Initiative*) identified the main components of the 'supportive school' (*Gray\_CSP\_11*). *Vignoles* (*OEP\_11*) demonstrated, through an econometric analysis of British Cohort Study data, that literacy and numeracy continue to pay a worthwhile labour market premium to those in their 30's. *Antoniou* (*ERE\_12*) followed up the consequences of attending different schools into higher education whilst *Vignoles* (*JRSS\_12*), in an ESRC-funded project, explored factors affecting widening participation in HE. *Vignoles* has secured funding to explore the extent to which graduates' earnings vary across universities whilst *Antoniou* is working on a study of school effectiveness factors. *James* (*RPE\_11*) has drawn together findings from the TLRP programme to develop a coherent, research-based rationale for principles to underpin pedagogy. Research by LfL members prominent in developing *Assessment for Learning* has analysed challenges to realising such an approach in authentic settings of practice (*James\_T&TE\_09*) and distortions of its essential features in policy and practice (*Swaffield\_AiE\_11*). The *Learning Without Limits* project (funded by Esmée Fairbairn) continues its influential programme of collaborative research with Wroxham School investigating a radical approach to providing an inclusive and enabling learning environment for all pupils (*Swann\_McGrawHill\_12*; Spanish and Japanese translations pending); this project is now developing an international dimension through planned research collaboration with the Ortun School in Norway.

*Educational Leadership:* *Gronn* (*JEA\_08*) has been influential in promoting the notion of 'distributed

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leadership', and he has also mapped the 'hybrid configurations' of leadership which have emerged (*Sage\_11*). Nonetheless, as *Crawford (EMAL\_12)* has argued, much remains to be understood about whether some configurations are more effective than others. Similarly, while the idea of 'critical friendship', fostered over many years by LfL members, has been widely taken up, *Swaffield (EMAL\_13)* has found that its implementation may simply add another layer to the burdens of accountability. In an innovative set of case studies of individual leaders, *Crawford (Sage\_09)* explored the emotional dimensions of leadership, a largely neglected area. She has undertaken a critical evaluation of the government's NPQH scheme for training prospective headteachers (*Crawford\_EdRev\_11*) and is currently leading a (DfE-funded) review of performance management of heads. *Crawford's* work on leadership development will continue through her involvement in the longitudinal International Study of the Preparation of Principals. *Swaffield (with MacBeath)* has led an ambitious project to implement *Leadership for Learning* principles amongst a large group of heads in Ghana (funded by the Centre for Commonwealth Education) and she has been awarded further funding by Cambridge International Education to develop these principles internationally.

**Pedagogy, Language, Arts and Culture in Education (PLACE)** (Chair: *Nikolajeva*)

Since 2008, PLACE membership has changed due to retirements (including *Esch*, now replaced in the area of second language education by early-career researcher *Liu*) and external professorial promotion (*Wyse*, recently replaced by early-career researcher *Maine* in the area of literacy and primary education). Leadership in the group has been reinforced by the appointment of *Nikolajeva* and the promotion of *Styles* to professorships, and by the promotion of *Burke*, *Burnard* and *Evans* to readerships. In the 2008 RAE, PLACE identified its main areas of research as cultural-historical analysis, creative arts, and language in education. Although more formal subgroups have now developed, focusing on Arts and Culture in Education, Second Language Education, and Children's Literature, collaboration across these subgroups creates a strongly cross-disciplinary community: for example, in the FoE-funded project *Exploring place-based identities through reading and writing (Cliff Hodges\_BERJ\_12; Taylor\_BJES\_11)*, which has strong links to *Taylor's* research on children's geographies and education (*CG\_09; BERJ\_11*).

Arts and Culture in Education: *Burke's* research on school design (*BERJ\_10; Ashgate\_12*) has received AHRC support for *The decorated school* network, and now for three collaborative doctoral training awards jointly funded by SCABAL architects. *Burnard's* research on creativity (*OUP\_12; TSC\_10*) has been funded by HEFCE, ESRC and Esmée Fairbairn. *Styles* and *Whitley* lead a large-scale international project in collaboration with the University of West Indies, *Teaching Caribbean poetry*, funded by the Commonwealth Education Trust and Poetry Archive. *Whitley* led the British Academy-funded Cambridge Teaching Poetry Project and has received a grant from Leverhulme to develop the study of poetry in education.

Second-Language Education: *Evans* and *Fisher's* DCSF-funded project on *Language Learning at KS3* has been influential (*Evans\_RPE\_10; Fisher\_LLJ\_12*), speaking to important issues of policy and practice in teaching modern foreign languages. *Evans* now co-directs a project supported by the Bell Foundation on language education and social disadvantage (with *Arnot* and *Liu*).

Children's Literature and Culture: Both theoretical (*Nikolajeva\_T&F\_09; Whitley\_Ashgate\_13*) and empirical (*Styles\_Trentham\_09*) research produces internationally acclaimed books. Subgroup members collaborate on edited volumes (e.g. *Whitley\_Ashgate\_12*) that involve the group's early career researchers and doctoral students. Further interests are reading and literacy (*Cliff Hodges\_EiE\_10; ET:PC\_12; Nikolajeva\_CJE\_10*) and visual literacy (*Nikolajeva\_CLE\_12; Styles\_LaurenceKing\_12* which won the UKLA academic book award).

The group's plan for new research areas to be explored includes environmental education, cross-disciplinary childhood and adolescence studies, and interdisciplinary links with psychology and neuroscience. Many of the research priorities for this group are attractive to research students, notably Second Language Education and Children's Literature. PLACE hosts the joint Homerton College/FoE Centre for Children's Literature and, with two professors (*Nikolajeva* and *Styles*) specialising in the subject, it dominates the world market in graduate study in Children's Literature.

**Psychology and Education (P&E)** (Chair: *Mercer*)

The P&E group brings the perspectives of cognitive psychology and socio-cultural theory to key issues in education. Its research employs a range of methods to generate results that can inform both professional educational practice and theoretical accounts of cognitive development, reasoning, communication and learning. In the light of recent and approaching retirements, a

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proleptic professorial appointment (*Vermunt*) has been made to ensure continuity of research leadership, and two early-career researchers (*Baker, Ellefson*) have been recruited. Since 2008, the group has attracted external research funding from sources including ESRC, MRC, EEF, EU Framework Programme 7, British Academy, Nuffield Foundation, Leverhulme Trust, Healthcare Trust, Esmee Fairbairn Trust, Lego Foundation and British Association for Counselling & Psychotherapy. Group members have strong international links through carrying out collaborative studies and organising seminars and conferences. Funded collaborations have been undertaken with researchers in Chile, The Netherlands, Hong Kong, Mexico, Singapore and the USA.

*Children's Play, Learning and Development*: Research covers the early and school years, including the study of children with special needs (e.g. those on the autistic spectrum). Recent projects have examined how children's beliefs about the world change as a result of experience, and how children's reasoning about cause and effect influences how they think about scientific phenomena (ESRC-funded *Children's Tacit and Explicit Understanding of Object Motion: Howe\_JECP\_12*; also *Baker, Ellefson*). Another strong focus is development of children's metacognition, self-regulation and executive functioning, and the influence these have on learning (Cambridgeshire County Council-funded *C.IND.LE: Whitebread\_M&L\_09*; also *Baker, Ellefson*).

*Talking, Thinking and Learning Collaboratively*: Research examines these processes with the aim of providing guidance for teachers on developing children's spoken language skills and improving the productivity of group-based activity in the classroom (*Ellefson\_JSET\_12*; *Hargreaves\_CJE\_09*; *Howe\_Blackwell\_10*; *Mercer\_Routledge\_13*; also *Warwick, Kershner*). This includes how interactive technology can contribute to teaching and learning processes (ESRC-funded *Interactive Whiteboards and Collaborative Pupil Learning in Primary Science: Warwick\_C&E\_10*). Over the review period, a significant achievement was to use a BJEP sponsored international conference to bring together research on collaborative learning and on development of children's self-regulation.

*Teachers' Professional Skills and Identities*: This includes studies of how teachers interact with students in the classroom, how teachers learn and develop their practice (*Vermunt\_L&I\_10*).

Other research interests within the group include promoting the wider participation and wellbeing of students and making effective use of counselling and therapy (*McLellan, Holliday, Winter*).

Promising lines of enquiry being pursued include application of cognitive principles to classroom learning, creation of a toolkit to enable teachers to assess children's spoken language skills, and use of a collaborative 'lesson study' approach to enable teachers' professional learning.

### **Science, Technology and Mathematics Education (STeM)** (Chair: *Taber*)

The STeM group focuses on the teaching and learning of mathematics and science at all levels of schooling, on the use and integration of digital technologies in these and other subject areas, and on the professional education and training of teachers of science and mathematics. In the review period, following several retirements and an external professorial promotion (*Andrews*), three early-career researchers have been appointed (*Stylianides* from 09/2008 and *Alderton* and *Watson* from 09/2013). In the RAE 2008 return, the group identified three main areas of research; these have evolved as follows, maintaining the group's strong record of external funding.

*Effective Teaching and Learning in Science and Mathematics: Effecting Principled Improvement in STEM Education (epiSTEMe)*, part of the ESRC's Targeted Initiative on Science and Mathematics Education, devised and evaluated a research-informed pedagogical intervention designed for implementation at scale. Although main outputs will appear after 2013, available publications report and synthesise research that contributed to scoping the intervention (*Ruthven\_ER\_09*; *IJSME\_11*; *Howe\_BJDP\_10*; *Mercer\_JLS\_08*; *Taber\_IJSE\_11*; *JLS\_10*). This project represents an important step within the group towards integration of research strands, firstly on teaching and on learning, and equally on mathematics and on science. A continuing interest within the group is teaching mathematical proof, pursued through the ESRC-funded *Enhancing Students' Proof Competencies in Secondary Mathematics Classrooms* and the Spencer-funded *Preservice Teachers' Challenges in Beginning to Teach... Reasoning and Proving* (*Stylianides\_ESM\_09*; *JRME\_09*).

*Curricular and Pedagogical Aspects of Technology Integration*: Two ESRC-funded projects, *Bridging Practice and Research into Teaching and Learning with Technology* (*Hennessy\_JCAL\_11*, *Mercer\_TPE\_10*) and *Interactive Whiteboards and Collaborative Pupil Learning in Primary Science* (see P&E), have investigated how digital technologies can support the development of collaborative and dialogic pedagogies. The preceding ESRC-funded *Teacher Mediation of Subject Learning with ICT* reported studies of professional development through use of multimedia case

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studies of expert teaching (*Hennessey\_TCR\_09; T&T\_09*). The earlier ESRC-funded *Situated Expertise in ICT-integrated Mathematics and Science Teaching* generated a framework for analysing the teaching expertise underpinning successful technology integration (*Ruthven\_E&D\_09; ESM\_09*). These provide promising avenues for research in coming years.

***Subject-related Teacher Knowledge, Thinking and Practice:*** An important component of all the preceding projects has been analysis of teachers' subject-related thinking and practice. In a Nuffield-funded project, *Ruthven* and *Rowland* (now retired) led a national research network, involving doctoral students as well as established researchers, which produced an overview of the field of *Mathematical Knowledge in Teaching* (published by Springer in 2011). The recent appointments of *Alderton* and *Watson* will contribute to future development of this theme, as will *Winterbottom's* current EU-funded research on inquiry-based science teaching.

### Cross-cutting initiatives

An important cross-cutting research initiative has been the Esmee Fairbairn-funded *Cambridge Primary Review* (CPR) to which a wide range of FoE members have contributed to produce an authoritative research-based analysis of the state of English primary education (*Hargreaves\_T&F\_09*). The ensuing Cambridge Primary Review National Primary Network has been based at FoE. From mid-2013, with the creation of the new CPR Trust sponsored by Pearson and the move of project director *Alexander* to another institution, FoE's stewardship of this initiative is complete.

A FoE review of teaching provision and research capacity in quantitative methods has led to a strategic initiative across FoE, underpinned by the appointment of *Vignoles* to a professorship, supported by an associated post-doctoral position and a new lectureship. FoE intends to build further capacity in analysing large-scale secondary data and in evaluating educational interventions and policy, and to substantially increase the proportion of doctoral students using quantitative methods. A FoE-wide training programme for existing staff is increasing quantitative capacity amongst existing researchers, rather than simply drawing in specialists from elsewhere. This forms part of a broader multi-disciplinary strategy to increase expertise in quantitative research across the social sciences at Cambridge, with other key appointments made in Sociology, Geography and Politics. This development of quantitative research capacity will enable FoE to extend its outstanding school-based research on curriculum, pedagogy and leadership, drawing on strong school networks, to include impact evaluation (as illustrated by the current EEF-funded evaluation of the Mathematics Mastery intervention and the ESRC-funded *epiSTEMe* project).

FoE is also developing its research in the area of International Education with the creation of a professorship in that field: this will be filled, from 2014, by *Rose*, joining UoC from her previous role as Director of the *Education For All Global Monitoring Report* at UNESCO. She will be involved in a review of the relevant FoE development and research activity, particularly that taking place under the aegis of the Centre for Commonwealth Education and the Centre for Education and International Development, with a view to scoping future research in international education, developing supporting structures for it, and building links with cognate activity elsewhere in UoC.

Very recently too, UoC has approved the creation of cross-University strategic research initiatives in Public Policy (led from SHSS) and in Big Data to which researchers from FoE will contribute.

### c. People, including:

#### i. Staffing strategy and staff development

#### Staffing strategy and staff development

A fundamental part of FoE's strategy for producing top-class research is to appoint staff of the highest calibre, and then to encourage their originality and productivity by providing excellent facilities and a supportive research culture. Each academic group receives an annual grant of £2K plus dedicated administrative/secretarial support to maintain at least one regular research seminar series, to carry out developmental activities, and to run occasional conferences. In addition, FoE provides an annual development allowance of £400 to every member of staff, and further funds for conference attendance and professional development are available from UoC or sought within external grants. Key support for intensive engagement in research is the entitlement of established staff to sabbatical leave for one term in seven, subject to FoE approval of their research plans.

Insights into how, at both FoE and academic group levels, succession planning, staff development and staffing decisions support specific goals of FoE research strategy have already been given in Section b when discussing new appointments and initiatives. At senior levels, research leadership has been relatively stable with 11 professors and readers in post throughout the review period

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(*Arnot, Colclough, Dillabough, Gray, Hargreaves, Hickman, Howe, Mercer, Reay, Ruthven, Styles*). Each of 5 new appointments at these levels has met an important strategic goal explained in Section b (*Crawford 2011; Gronn 2008; Nikolajeva 2008; Vermunt 2012; Vignoles 2013*). UoC has conferred 4 promotions to readership (*Burke 2013, Burnard 2012, Evans 2012, Taber 2012*). Projected professorial retirements to 2019 will give FoE a significant opportunity to consider future activity, particularly in the light of changing patterns of external support for, and regulation of, its current areas of research, development and teaching, so as to plan for longer-term development.

FoE's policy is to recruit to lectureships only candidates with a doctorate (or equivalent research accomplishment) and to provide mentoring by senior researchers aimed at such colleagues becoming independent researchers of international standing by the end of their probationary period, typically set at 5 years. Both early-career appointments completing probationary periods during the review period have proved very successful: *Stylianides* (appointed 2008) won the 2010 Early Career Award of the American Educational Research Association's Special Interest Group on Research in Mathematics Education, while *Ellefson* (appointed 2009) gained a \$1M research grant from the US Institute of Educational Sciences in 2011. A criterion of international standing in research is applied for recruitment to senior lecturer positions, with an expectation that staff will develop their research profile further, with support through FoE and UoC mentoring schemes. New appointments at this level have been *Burke* and *Cremin*. All the resignations from senior lectureships over the review period, and the only one from a readership, have been to take up external professorial positions: *Andrews* (Stockholm 2013), *McLaughlin* (Sussex 2012), *Opfer* (RAND 2011), *Pedder* (Leicester 2011), *Sugrue* (University College Dublin 2010), *Wyse* (University of London Institute of Education 2011).

Externally-funded research projects are normally staffed by postdoctoral research-associate appointments or by research-assistant appointments often undertaken by graduate students. FoE follows UoC's Probationary Arrangements and Career Management Scheme for research staff. Each research officer has a supervisor within FoE who is responsible for supporting their academic and career development, and who has undertaken appropriate training provided by UoC Personal and Professional Development Office. FoE also provides funds for research officers themselves to organise a thriving group which provides mutual support for development. Elected representatives of the research staff participate in all relevant FoE committees. UoC is strongly committed to the *Concordat to Support the Career Development of Researchers* and has received the European Commission's *HR Excellence in Research Badge* in recognition of this. UoC's recently created Directorate of Postdoctoral Affairs will develop a strategy for the postdoctoral community across the university. Recognising accommodation as a critical issue, a major new UoC development in NW Cambridge will include housing for over 600 postdoctoral researchers and their families.

FoE has maintained its excellent record of supporting progression of research officers into more established positions in universities or similar research organisations, (some, as shown by \*, recent PhD graduates of FoE): *Fosker* (Queen's Belfast 2009), *Filmer-Sankey* (NFER 2008), *Fox* (Leicester 2011), \**Guardia* (Catholic U. of Chile 2013), \**Hart* (Sheffield Hallam 2012), *Kleine Staarman* (Exeter 2009), *Kotob* (UNICEF 2012), *Levine* (Liverpool Hope 2013), *Mason* (Loughborough 2011), *Mertkan* (Eastern Mediterranean 2011), *Oliver* (Oxford 2012), \**Pino Pasternak* (Murdoch 2011); *White* (Queensland U. of Technology 2010), \**Wolfe* (Leicester 2011).

UoC follows a proactive approach to equality of opportunity that supports and encourages all under-represented groups, promotes an inclusive culture, and values diversity. FoE subscribes fully to this approach, underpinned by UoC's Equal Opportunities Policy and Combined Equality Scheme. UoC is committed to ensuring that no applicant for a post or member of staff is treated less favourably on grounds of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, gender, or sexual orientation. UoC policies give flexibility in relation to employment according to personal circumstances. In FoE, for example, academic staff have taken 9 blocks of maternity leave since 2008, ranging from 132 to 363 days, and averaging 218, with one opting for a change of working pattern. UoC has received a number of awards for the provisions made for its staff, including being ranked 11<sup>th</sup> (the highest for a UK HEI) on the Stonewall Work Equality Index list (for 2012 and 2013) and winning the inaugural Employee Engagement award from the Employers Network for Equality and Inclusion (2012).

**Research quality and integrity**

UoC's guidelines on Good Research Practice emphasise the importance of integrity and rigour in

all research. Within FoE, research at all levels from undergraduate upwards is subject to a Faculty procedure for ethical review and approval which explicitly requires projects to attend to the BERA ethical guidelines, or to the BPS guidelines if more appropriate. The procedure is periodically updated in the light of developing experience and new thinking. Complex cases and appeals can be referred to the Research Ethics Committees at SHSS and ultimately UoC levels.

### Research students

FoE's research student community is among the largest in Education in this country. Currently 150 PhD and 26 EdD students are enrolled. Those in residence during 2012/13 came from 50 countries, including 42% from the UK. Over the review period, students in FoE have been awarded 13 ESRC and 3 AHRC research studentships (now associated with UoC's respective Doctoral Training Centre/Block Grant Partnership), and 8 of the prestigious Gates scholarships open to applicants from outside the UK. Each year, several other candidates, UK and overseas, gain other internal awards after fierce competition across SHSS and UoC. Many other FoE students from overseas hold prized studentships awarded by organisations in their home country.

FoE's student body brings a rich diversity of educational background, many being experienced practitioners in their own country. FoE's Degree Committee has oversight of research degree programmes; the Director of Postgraduate Programmes is responsible for co-ordination across and between the Masters programme routes and the doctoral programmes, supported by separate coordinators for each full time and part time route to attend to specific needs. Academic groups provide an intellectual home for students, many of whom are actively involved in group projects.

Full-time research students generally follow a standard 1+3 pattern through a one-year MPhil which provides core research training and develops expertise in the area of the proposed thesis topic, followed by the PhD itself which incorporates further specialised training tailored to the student's project. There is an equivalent part-time route to the PhD on a 2+5 model, and a recently established route to the EdD on a 2+5 model, aimed at professionals in education. Progression to the doctoral phase of all these routes depends on strong performance in the earlier research-based master's phase. Since the very first cohort of students was admitted to the EdD in 2011/12, the earliest completions are not scheduled during the review period; hence it has not been necessary to disaggregate figures for doctoral completions: all are PhD.

The formal programme of research training in FoE is organised at 3 levels, permitting the tailoring of specialised educational electives to the needs of particular groups of students taught by experts on the topic. Other electives, drawing on expertise well developed in other disciplines, are available through the UoC-wide Social Sciences' Research Methods Centre (SSRMC) Training Programme. Of the 39 staff whose research has been included in this submission, currently 20 contribute to the research training programme and 36 are involved in supervision of doctoral students. Co-supervision enables highly experienced supervisors to mentor less experienced; every research student also has at least one further advisor chosen to provide complementary expertise.

FoE has devoted considerable attention over the review period to nurturing its research student community through support from senior staff and a reasonable budget. The student association (FERSA) is a vibrant and largely self-organising community. For example, its most recent annual conference, KALEIDOSCOPE, attracted 150 students from across the UK and even other European countries. FERSA members organise a weekly seminar series, convene reading groups, and run workshops to assist their peers in their research trajectories. FoE offers students personal funding for fieldwork expenses and conference presentation, often supplemented by Colleges. SHSS provides an induction programme as well as bursaries for language learning. UoC's Graduate Development Programme offers support for career development as do many College events. Students are encouraged to participate in FoE and SHSS seminars and other activities (as summarised in Sections d and e). In consultation with their supervisor(s), students keep a progress log through which they identify and record relevant research-related activities.

Timely completion rates in FoE are excellent, and have shown consistent improvement over recent years: to 80% in 2010/11 and 84% in 2011/12. The quality of the best research undertaken is demonstrated by the awards garnered by FoE doctoral students. These include the BERA dissertation award itself (*He* 2011) and two high commendations (*Hart* 2011; *Dudley* 2013).

Among the prestigious postdoctoral fellowships that our graduates have gained are two Royal Society Education Research Fellowships (*Feng* 2009; *Bowker* 2011) and a Newton International Fellowship awarded by the British Academy (*Tereshchenko* 2012).

#### **d. Income, infrastructure and facilities**

##### **Trends and strategies in research income generation**

During the review period, FoE attracted research income of around £6M, including large awards (single grants in excess of £0.5M) from DfID, ESRC, MRC, and the US Department of Education. Details of a range of significant grants and high quality output from them have been indicated in Section b. Nationally, from 2010 onwards, there was a sharp fall in commissioning of educational research by the DfE and its dependent bodies. Locally, transfer of the Centre for Neuroscience in Education moved 2 large MRC grants elsewhere in UoC. While these factors affected research income from 2010/11, FoE continued to attract significant external funding. In response to the changing environment, FoE directed mentoring and administrative support towards increasing the number of academic staff applying for research funding, and the number serving as PIs on external grants rose from 21 during 2008/10 to 27 during 2011/13, with income rising sharply in 2012/13. Administrative support for research proposals and projects comes from dedicated FoE and UoC offices. Peer support and review within FoE's academic groups, and further peer review within SHSS, help in developing proposals of high academic quality. Competitive schemes within SHSS (Newton Trust Small Research Grants Scheme and Cambridge Humanities Research Grants Scheme) offer pump-priming funds, particularly for early-career researchers. Several developing FoE researchers currently benefit from such awards (*Baker, Black-Hawkins, Ellefson, Maine, McLellan, Nicholl, Warwick, Winterbottom*). Recently, SHSS has established capacity to support development of substantial proposals for collaborative multidisciplinary research in the social sciences, notably by appointing two full-time research facilitators: resulting initiatives already mentioned in Section b include those on migration and on large-scale quantitative research.

##### **Infrastructure and facilities supporting research**

In 2005, a £13.7 million investment by UoC rehoused FoE in purpose-designed buildings on a single campus. Over the review period, FoE has invested £95K to create a Video Analysis Lab and an Observation Lab to enable researchers (mainly from the P&E group) to carry out projects on interactional analysis and child development. FoE's library services provide over 50,000 books and access to 1300 journals, the former still mostly in print, the latter now mostly digital, plus special collections of psychological tests and school curricular resources. Researchers benefit from UoC-wide amenities including outstanding online electronic resources, a national copyright deposit Library, and approximately 100 college and departmental libraries. As well providing personal computer facilities to academic staff, and generous open access provision for research students and academic visitors on a 'hot desking' basis, FoE's IT & AV service maintains and advises on a substantial loan collection of equipment to support diverse types of data collection and analysis. As noted earlier, FoE also provides not inconsiderable financial and administrative/secretarial support for the developmental research activities of academic groups and of individual staff and students. Most notably, current research is presented and discussed through the open seminar series run by each of the academic groups. These seminars operate to a guideline whereby roughly half of the presenters in each series are internal to FoE and the other half external, often visiting scholars or external collaborators in research. In recent years, the following series have run consistently, each typically offering 6 sessions per year: Leadership for Learning; Psychology and Education; Education, Equality and Development; Children's Literature; Arts and Education; Second Language Education; Mathematics Education; Science and Technology Education; Centre for Commonwealth Education. Staff and students also participate in the extensive programme of events run by UoC's Centre for Research in the Arts, Social Sciences and Humanities (CRASSH).

##### **e. Collaboration or contribution to the discipline or research base**

FoE contributes to the national infrastructure for educational, and more broadly social scientific, research in many ways. Seven members are Academicians of the Academy of Social Sciences (*Arnot, Colclough, Gronn, Howe, James, Reay, Ruthven*) and one is a Fellow of the British Academy (*Gray*). *James* is immediate past President of the British Educational Research Association (BERA); *Reay* has served on both RAE2008 and REF2014 subpanels in Education; *Colclough* on the RAE2008 subpanel in Development Studies; *Gray* chairs the British Academy's Section for social studies; *Burke* is incoming President of the History of Education Society. During the period under review, *Crawford* has completed a term as Chair of the British Educational Leadership and Management Society; *Howe*, a term as Chair of the British Psychological Society's Developmental Section; and *Ruthven*, a term as Chair of the British Society for Research into

Learning Mathematics. FoE members have served on the committees of BERA (*Hennessy*), Society for Educational Studies (*Cremin*), European Association for Research on Learning and Instruction (*Vermunt*), United Kingdom Literacy Association (*Cliff Hodges*), British Association of Comparative and International Education (*Arnot* and *Singal*); and as convenors of the BERA Inclusive Education SIG (*Black-Hawkins*), the BERA Social Justice SIG (*Cremin*), the ECER Histories of Education Network (*Burke*), and the EARLI Metacognition SIG (*Whitebread*).

Members of FoE are active in the work of the Research Councils, serving in the Peer Review Colleges of the AHRC (*Burke*) and ESRC (*Arnot, Burke, Evans, Gray, Gronn, Hennessy, Howe, Mercer, Ruthven, Stylianides, Taber, Vignoles, Whitebread*). *Vignoles* is a member of the ESRC Evaluation Committee, chairs the ESRC/MRC LifeStudy scientific steering committee, and is on the executive of the ESRC Initiative on Cohort and Longitudinal Studies Enhancement Resources; *Reay* has chaired the ESRC Professorial Fellowships panel (on which *Gray* also served); *Howe* chaired the ESRC Post-doctoral Fellowships and Case Awards panels while on the ESRC Training and Development Board; *James* was a member of the RCUK Schools-Universities Partnership Initiative panel; and *Ruthven* serves on the advisory committee for the ESRC Targeted Initiative on Science and Mathematics Education. FoE members have served on equivalent research advisory and evaluation committees in Finland (*Vermunt*), France (*Ruthven*), Greece, Israel and Switzerland (*Howe*), the Netherlands (*Howe, Mercer*), the Nordic countries (*James*), and Sweden (*Arnot*).

As well as the *Cambridge Journal of Education*, journals currently or recently edited by FoE members include the *British Educational Research Journal* (*Cremin, Gronn*), the *International Journal of Educational Research* (*Mercer*), the *British Journal of Sociology of Education* (*Arnot*), *Frontline Learning Research* (*Vermunt*), *Social Development* (*Howe*), *Learning, Culture and Social Interaction* (*Mercer*), *Chemistry Education Research and Practice* (*Taber*). FoE members serve as associate/advisory editors or board members for over 70 further research journals.

FoE has a well-established visiting scholar programme which attracts researchers at all career stages from around the world. Moreover, every FoE researcher in this submission is involved in some form of national and international research collaboration: far too extensive to try to list here. However, compelling evidence of the success of such collaborations is provided by the number of outputs in this submission which have been jointly authored with colleagues from other institutions. Of the 85 outputs with multiple authors, 39 include authors affiliated to other institutions within the UK, and 30 include authors from institutions in 16 other countries.

FoE members are active at the interface between educational research and national policy-making in England. *James* was a member of the Department for Education's (DfE) *Expert Panel for the National Curriculum Review*, and others have been consulted about specialist aspects of this review and of similar official examinations of curriculum, pedagogy and assessment over the review period (*Evans, Fisher, Howe, Mercer, Ruthven*). *Gray* acted as specialist adviser to the House of Commons Select Committee's enquiry into *School Accountability*, and *Evans* gave oral evidence to its enquiry into *Recruitment, Training and Retention of Teachers*. FoE contributes to a wider range of policymaking on educational and social matters through *Vignoles'* roles as deputy director of the DfE-funded *Centre for the Analysis of Youth Transitions*, and as member of the Cabinet Office *Social Mobility Transparency Board* and the BIS *Skills Advisory Group*.

As evidenced in our impact submission, much of FoE's research is commissioned by a wide range of user organisations and/or involves close collaboration with users, ensuring that it remains well connected to their needs and interests, and has strong potential for user impact. The many open events held at FoE, notably the seminar series, attract an audience from across UoC, from FoE's partner schools, and by external visitors with academic and professional interests in Education.

Conferences held at FoE include the 2011 Children's Capabilities and Human Development Conference, the 2012 BAICE conference on Education, Mobility and Migration; annual symposia on Student Voice (2011/12/13) facilitated by a leading American scholar (*Cook-Sather*); conferences on *The Future of the Teaching Profession* supported by the Open Society Foundation, the OECD and Education International, and serving as preludes to Global Summits in New York (2012) and Amsterdam (2013); the 2010 EARLI Advanced Study Colloquium on *Interpersonal Regulation of Learning and Motivation*, and the 2011 BPS conference on *Psychological Aspects of Education Current Trends*; an ESRC-supported international conference in 2009 on *Teaching with Whole Class Technologies* (2009), and a joint conference in 2012 of the British Society for Research into Learning Mathematics/Nordic Society for Research in Mathematics Education.