Environment template (REF5)

Institution: University of Dundee

Unit of Assessment: 25 Education

a. Overview

The Education Unit of Assessment (UoA) is embedded within a multi-disciplinary context. It is located within CRITAL (the Centre for Research and Innovation in Teaching and Learning), a cross-university centre hosted by the School of Education, Social Work and Community Education (ESWCE). The purpose of CRITAL is to enhance research quality, increase research quantity and extend research impact in the field of education in its broadest sense. CRITAL is overseen by a Board with representatives from ESWCE (from the College of Arts and Social Sciences), the Centre for Medical Education (CME) (from the College of Medicine, Dentistry and Nursing), the Life Sciences School of Teaching and Learning (from the College of Life Sciences), and the School of Computing (from the College of Art, Science and Engineering).

The work of the Centre is organised around thematic research networks which are open to active and emerging researchers, students and practitioners: Curriculum, Pedagogy and Assessment; eLearning; Health Professional Education; Science, Technology, Engineering and Mathematics (STEM) Education; and Transformative Change: Educational and Life Transitions (TCELT). The work of CRITAL is planned in collaboration with that of the Resiliency, Risk and Vulnerability Research Group (UoA 22), because Social Work is situated within the same school. The sharing of ideas between the various groups and networks has contributed to many productive cross-college collaborations; examples include writing across professional boundaries, e.g. a recent book on inter-professional ethics (Jindal-Snape & Hannah), shared seminars and presentations and joint supervision of doctoral students.

Due to the nature of the Education UoA, as outlined above, this template will make reference to the wider research environment and provide specific illustrative examples from within the contributing Schools, Centres and Networks as appropriate.

b. Research strategy

The research strategy is based upon a holistic view of the nature of scholarship, and an inclusive perspective on the nature of academic work, which recognises that knowledge is acquired through research, through synthesis, through practice and through teaching. Following Boyer (1990) academic work within CRITAL is conceived as having four separate yet overlapping functions: the scholarship of discovery (or inquiry), of integration, of application, and of teaching (and learning).

In relation to the first, we recognise that scholarly inquiry is at the very heart of academic life and that the pursuit of knowledge must be assiduously cultivated and defended. With regard to the second, we recognise the need through our academic work to help others make meaning from isolated facts by putting them in perspective and by making connections across disciplines. This involves serious and disciplined work that seeks to interpret, draw together, and bring new insight to bear on original research. Thirdly, the scholarship of application is seen as a two-way process since new intellectual understanding can arise out of the very act of application – shaping educational policy and practice through working with a multiplicity of stakeholders in education. Finally, in relation to scholarship in teaching and learning, it is recognised that teaching can be a dynamic endeavour involving all the analogies, metaphors, and images that build bridges between the teacher's understanding and the students' learning.

Against this background, the overall aim of the strategy for education research since RAE2008 has been to enhance research quality, increase research quantity and extend research impact through the advancement of a research culture that is inclusive and continually strives towards seven key goals. In the following section, these seven goals are outlined, accompanied in each case by a summary of progress made since RAE2008.

1. *Achieving the highest possible standards of quality of our research outputs in terms of rigour, originality and international significance.* Since RAE2008, there has been a three-fold increase in the number of quality publications. During the 2008 RAE timeframe, the UoA published 54 journal articles. In the current REF period there have been more than 180 articles in refereed

national or international journals (by August, 2013). The reach of our work is exemplified by the fact that education articles have been published in Dentistry, Accountancy, Psychology and Computing journals, in addition to major education and medical education journals. The quality is exemplified by the number accepted by high impact international journals, for example, *Review of Educational Research* (impact factor 4.229), *Medical Education* (3.546), *Educational Psychology Review* (2.400), *Learning and Instruction* (3.337), *Academic Medicine* (3.292), and *British Journal of Educational Psychology* (2.093). Looking forward, we will continue to encourage this through a variety of strategies as outlined below.

2. *Maximising support for our research activity through the winning of external research funding.* We have made significant progress over the census period; external research income has increased by 75%, from an average of £114K per year during the last RAE period, to an average of over £200K per year in the current REF period. This remains a priority for us; see summary, below, and section d.

3. *Building our research capacity by progressively increasing the number of established researchers working in education.* A number of strategies have been put in place since 2008 to increase the number of active researchers. These measures start with the recruitment process, through clear expectations of new and current staff in terms of research and scholarship, and the provision of support and resources for all staff (see section c (i) below). By way of illustration, the School of ESWCE is supporting up to 15 staff members a year on doctoral programmes. These strategies have contributed to increased capacity, as evidenced by the numbers of staff publishing during the REF census period; in the previous RAE census period, only 19 members of ESWCE staff had published a journal paper, but since 2008, at least 29 staff members have published peer-reviewed journal articles on educational topics.

4. *Continuing to expand the number of doctoral students, visiting scholars and post-doctoral researchers.* There has been a marked upward trend here. At the time of the 2008 RAE, the UoA had 25 doctoral students, with two completions during that census period; in contrast we currently have in excess of 50 doctoral students within the UoA, and have had 25 successful completions during the REF census period (see table in section c below). More widely in the University, a further 18 from a variety of disciplines (including Medicine, Computing, Dentistry, and Nursing and Midwifery) have successfully completed a PhD with an education focus. Looking forward, we aim to further increase numbers of the most able doctoral students. The most productive avenue currently is the professional doctorate, provided by the School of ESWCE, which is heavily subscribed. However, we also plan to increase numbers of PhD students and we continue to receive numerous applications from overseas.

5. *Optimising the impact of our research on our teaching and on student learning by promoting a culture of scholarship in teaching and learning*. As can be seen from section c below, we have already introduced many strategies to develop a culture of research and scholarship. Although section c focuses on staff and research students, this ethos permeates the whole of the UoA, from undergraduates to CPD programmes. Research conducted by staff members is embedded within curricula at both undergraduate and post-graduate levels, with teaching used to exemplify an ethos of research and systematic enquiry. In addition, colleagues' educational research has influenced changes to practice across many disciplines (e.g. admissions screening in medical school, and literacy assessment in teacher education). Looking forward, we aim, at a minimum, to maintain the frequency of our research network meetings and activities of the Scholarship of Teaching and Learning group as outlined in section c, below.

6. *Extending the wider impact of our research through public engagement and knowledge exchange activities.* Many of our research seminars and research groups are multi-disciplinary in nature, helping to widen impact, stimulate cross-boundary discussions and contribute to the vitality of the research culture. By way of illustration, the TCELT network has members from across the university as well as external partners in health, education and social care settings, some from outside the UK. Staff conferences, established for some years now, have included colleagues from other sectors of the University and, increasingly, from beyond the University. A good example of this is the stakeholders' conference, which has been used to showcase our work and engage with colleagues from different professional groups. At the most recent event, there were external representatives from health, social care and education. The impact

template associated with this submission outlines several strategies employed to extend the dissemination and impact of our work. This remains an area for strategic development.

7. *Contributing to the advancement of the knowledge base and to the sustainability and vitality of our fields nationally and internationally.* Development in this respect is evidenced both by the quality of the published outputs in our submission and by the on-going collaborations and wider engagement roles of staff (evidenced in section e, below). Looking forward, a key emphasis will be to focus on national and international educational priorities; we shall continue to respond rapidly to policy developments and, where possible, to use our existing links (as exemplified in the impact template) to influence the direction of these.

In summary, the most significant achievements resulting from the changes to the research environment over the assessment period have been: a three-fold increase in the number of refereed journal articles; research income from competitive tenders which has almost doubled; and the development of effective structures to facilitate and encourage an active, vital and inclusive research culture, both for staff and research students. Although all seven goals will be carried forward in the next five-year period, two have been identified as specific priorities: increasing external funding awards and strengthening the impact of our research through a clear focus on public engagement and knowledge exchange activities. Strategies in relation to both are described below and in the impact template, and the effectiveness of these will be closely monitored.

c. People:

i. Staffing strategy and staff development

Staff development is a priority for CRITAL and particularly so for the School of ESWCE, where a high proportion of staff have entered academia from school or community education settings. Very few have come with a research background and many are therefore early to mid-career academics; only four of them have more than 20 years academic experience. Consequently, effective support for the research work of staff has been a priority and considerable effort has gone into up-skilling and developing current staff, as well as recruiting and supporting appropriately qualified new staff. This has to be managed in a way that is sustainable, given the teaching and supervision demands on staff (these significant teaching demands are reflected in the fact that the 2013 National Student Survey judged the primary education programme at Dundee joint top in Scotland for quality of teaching). We ensure we operate within the principles of the Athena Swan charter; examples include family-friendly policies on holidays and flexible working arrangements.

The University is recognised by the European Commission for its "HR Excellence in Research" as an environment that supports excellence and increases focus and impact. Within the UoA, we fully support the Concordat to Support the Career Development of Researchers. Informed by these principles, many procedures have been developed within the unit during the period of the REF. The school of ESWCE is illustrative. Clear expectations for actively engaging in research and scholarship are communicated to staff and support structures have been created to further develop the research and scholarship culture The recruitment strategy has been reviewed with a focus on applicants providing evidence of systematic inquiry and postgraduate qualifications. Similarly, for promotion purposes, emphasis has been placed on evidence of publication and income generation in addition to excellence in teaching and administration. Two members of staff have been internally promoted to the rank of Professor during the REF census period and another has been promoted to Reader. All members of academic staff have protected time for research and professional and public engagement activities. Additional initiatives have targeted specific areas; one example is the provision of additional Research Investment Time (160 hours per individual) to support capacity building. Applications are supported when based on clear research action plans that demonstrate achievable targets in terms of outputs at potential 3* level within a clear time frame. Further research time is available from funded research projects. All members of staff have a research mentor with an associated time allocation for the mentor role, They can access conference attendance and staff development budgets to support associated activities and are supported through a fee waiver and time allocation within a workload model to pursue doctoral studies.

These examples are taken from one part of the UoA in order to illustrate a current strategic priority, but the underlying principles of staff development are shared across CRITAL, for example in

relation to expectations, support for conference attendance, and an annual objective setting and review process which emphasises research activity. The UoA organises regular events that help to sustain and develop a supportive research culture. All research networks (see section a, above) run seminars and workshops over the course of the year, often with invited speakers with national and international reputations. In addition, the School of ESWCE runs a *Staff Seminar Programme* focusing on research and scholarship in teaching and learning, open to all academic staff. The aim is to promote scholarly discussion in areas of shared interest, provide opportunities for peer feedback, academic discussion and review, and the presentation of research papers in a critically constructive and supportive environment. The School has recently established an annual *Staff Research and Scholarship Conference* early in each academic year. The first conference addressed the nature of scholarship and the relationship between research, teaching and application, contributing to our current research strategy. The second focused on a strategy for enhancing research quality as a central aspect of the process of advancing scholarship in our academic work. The third focused on strengthening the relationship between research outputs and impact through professional and public engagement.

Staff from the Centre for Medical Education participate in the *Annual Research Symposium,* run by the College of Medicine, Dentistry and Nursing (CMDN). This is a high-profile event within the College and the University, and CME staff regularly present papers or contribute symposia on educational topics. The School of ESWCE runs a *School Research Conference* at the end of each academic year, mainly for staff and research students, at which emerging researchers in particular are encouraged to submit their work in the form of papers and symposia. Staff and research students from CME contribute to an annual *Postgraduate Student Symposium,* whose aim is to encourage presentational skills and help disseminate research findings. The Scholarship of Teaching and Learning (SOTL) Network within the School of ESWCE has a programme of events for the academic year based on contributions to the Staff Seminar Series, the School Staff/Student Research Conference, a Reading Group and seminars involving external speakers. This seeks to further develop the connection between research and teaching. The *Medical Education Seminar Series* is run by CME with the purpose of enhancing research capacity and capability, and has included contributions from leading national and international figures in medical education.

These examples do not constitute a comprehensive list, but provide an indication of the range of events designed to further enhance the career development of staff and students. It is noteworthy that in the academic year 2012-13 alone, staff across the UoA had access to more than 40 such events, all focusing on research and scholarship in education. Finally, although the support and development activities identified above have focused on staff and research students, an emphasis on research is increasingly reflected in taught programmes within the Unit. Following on from the points made earlier (in section 5, above) examples include the M.Sc. Educational Psychology programme, which runs a research conference each December, and the B.Ed. (undergraduate) programme, where final year students share their research projects each May at a conference. Such examples point to an inclusive ethos of research within the UoA that develops researchers from the very earliest stages and helps integrate them into a wider, supportive research culture.

ii. Research students
There are three main Research Degree Programmes within CRITAL: the PhD and two professional degrees: the Doctorate in Education and the Doctorate in Educational Psychology. Within the UoA there has been significant growth both in the number of doctoral students and in completions (see section b above, point 4). Doctoral awards during the REF period were as follows:

	2008/09	2009/10	2010/11	2011/12	2012/13	total
PhD degrees	8	0	3	1	7	19
Professional Doctorates	0	1	0	3	2	6
total	8	1	3	4	9	25

Each doctoral programme is overseen by a Programme Director who is given a time allocation related to student numbers. The expansion in PhD numbers in particular is due to the significant increase in the number of international students who are supported by prestigious scholarships by their governments and, increasingly, by externally-funded scholarships. Other sources of funding

are being exploited also, a notable example this year being when **Rees** was a recipient of a prestigious Higher Education Academy (HEA) Doctoral Programme award, allowing CME to fund a doctoral programme to undertake research to develop pedagogical knowledge and evidence-based practice in higher education. The wider research culture is enhanced through the encouragement of visiting scholars and post-doctoral researchers. In recent years there have been 8 Visiting Scholars supported by a range of international agencies including the Higher Education Commission of Pakistan, Al Baha University in Saudi Arabia, Umeå University and the Swedish Programme for ICT in Developing Regions, the Eduko Foundation, Estonia and UNESCO, in addition to visiting professors from Canada and the Netherlands in CME, funded by a NES grant.

Across the UoA, mechanisms are in place to support individual doctoral student research development. Full-time students have two Thesis Monitoring Committee meetings per annum and all part-time students have one. There are dedicated rooms for research students and all students have the use of a desk and computer, full access to a range of library and other resources, e.g. digital audio and video recorders, data handling software, and any other resources relevant to their area of research. In addition, there are other support and monitoring mechanisms; examples within ESWCE include a Research Student Forum, organised on a monthly basis and co-ordinated by a member of staff with a time allocation for this activity. All research students are expected to present their work at a seminar once a year and especially prior to the Transfer of Ordinance to doctoral-level studies. A variety of approaches have been adopted to training in research methods. For example, in ESWCE, a dedicated Research Methods Training programme is offered in blocks of two days on four occasions over the academic year with contributions by active researchers from across the School. This course is open to all emerging researchers in education and is regularly attended by members of staff. Several members of staff submitted to this UoA (**Miller, Jindal-Snape, Topping, Hannah**) teach on this programme. Recently this has been supplemented by an online research methods module which is an integral component of the Professional Doctorate programme. In the CME, students undertake a 15-credit Masters module in medical education research methods at the start of their PhDs; **Rees** and **Ajjaw**i teach this programme. All of the examples above run in tandem with generic courses offered to all doctoral students at the University.

d. Income, infrastructure and facilities

Support for research activity is provided at various systemic levels. Centrally, Research and Innovation Services (RIS) play a pivotal role, advising on the pre-award administration of research funding, handling costings, advising on proposals and negotiating contracts prior to projects starting. Other central services include the Organisational and Professional Development unit (OPD), the University's training and development unit. This provides workshops and opportunities to all staff and postgraduate researchers via an online portal. Further support is available at both College and School levels, e.g. advice on external funding applications provided by various College Offices.

The School of ESWCE provides an example of the structure and processes at School level. Research is coordinated by the Associate Dean for Research, who holds a research investment budget to fund strategic developments. Support is provided by an Administrator based in the School Office, and research student administration is managed by a second member of the administrative staff. ICT support is provided by the University, and by two dedicated ICT support colleagues within the School. Software required for research is primarily supplied through the University (e.g. SPSS) and the School purchases specialist software not centrally provided (e.g. N-Vivo). A supply of equipment for interviews, focus groups and other data collection techniques is available to staff and students. Although there are some variations in provision across different elements of the UoA which reflect organisational factors or preferences (for example, in the CME, Atlas-ti is preferred to N-Vivo as a qualitative data analysis tool), in general the provision of support to doctoral students is quite uniform. Funding applications and awards have increased in the UoA since the RAE time period, (see section b(2) above). Most of the income is awarded through external bodies and primarily through charities, quangos, local and national and EU governmental bodies. Examples of funders include Education Scotland, Scottish Government, DfID (the Department for International Development) and NES (NHS Education for Scotland).

In line with the priorities identified in section b above, several approaches have been adopted by CRITAL and its constituent members in order to increase research income. Funding workshops have been organised and facilitated by the University's Research and Innovation Services. Several research groups and networks have started joint grant-writing activities. Staff have been identified to attend University-wide research funding events (e.g. Pollinate, a series of workshops that bring together researchers from across the University). As noted in the impact template, increasingly, members of staff are engaging with charities, professional bodies and governmental departments and are using these links to identify potential funding opportunities. In order to increase the success rate of research bids, all applications are reviewed internally prior to submission.

e. Collaboration or contribution to the discipline or research base

A fundamental principle of CRITAL is that all staff will contribute to extending the wider impact of research in education through public and professional engagement and knowledge exchange activities, and contribute to the sustainability and vitality of the field nationally and internationally. Staff members are actively involved in professional and public engagement activities. For example, several are advisors to, or are consulted by, national and local government bodies, and statutory or voluntary agencies. **Muschamp** is Chair of the Sub-Group on the Early Phase of Professional Learning of the National Partnership Group for Teaching Scotland's Future, an invited member of the Accreditation Panel of the General Teaching Council for Scotland (GTCS) and was consultant to The Primary Review, directed by Robin Alexander, Cambridge University. **Topping** is a member of the Research Review Board of the LENA Foundation (USA). **Jindal-Snape** has worked for Barnardos Bereavement project, Dundee City Council Additional Support Needs research and support group and PAMIS bereavement project. **Jindal-Snape** leads an online international cross-sector community of practice 'Transitions', and was invited panellist to UNESCO and MEXT (Japanese Government) at Japan Education Forum VII, 2010. **Muschamp** was Convenor of a Research Symposium at the European Conference on Education Research, Helsinki 2010 and has been a Research Award holder for the Joseph Rowntree Foundation. In 2011, **Topping** received the "Outstanding Contribution to Cooperative Learning Award" by the Cooperative Learning Special Interest Group of the American Educational Research Association, for significant contributions to the theory and research underlying cooperative learning. **Miller** is a member of the Executive Committee of the Scottish Educational Research Association (SERA). **Rees** is Chair of the Medical Education Research Executive for the Scottish Medical Education Research Consortium.

Several staff members are involved in international research collaborations. These include **Topping,** who has international collaborations with the University of Maryland, the State University of New York at Albany, Argosy University (Hawaii, US), Monash University (Australia), University of Ghent (Belgium), University of Cyprus, Autonomous University of Barcelona and University of Cadiz (Spain) and Charles University (Czech Republic). He has recently been involved in an EU Social Fund project with the government of Malta and a Grundtvig project with five European partners, both on parental involvement in education. **Jindal-Snape** has published and is conducting research with colleagues from the field of transition, inclusion and well-being from USA, New Zealand, Australia, Nigeria, Japan, Finland and Netherlands. **Rees** is currently working on a cross-cultural project on professionalism dilemmas with partners in Taiwan and Sri Lanka, and is a member of the Ottowa International Working Party for Professionalism Assessment, an international collaboration involving 17 professionalism scholars from 8 different countries. **Baldacchino** has active collaborations with institutions in several countries, including the University of Malta, the School of Fine Arts at Massey University, New Zealand, the School of Fine Art at Melbourne University, Southern Polytechnic State University, Georgia, the School of Art Institute of Chicago and the Faculty of Fine Arts at University of Porto. **Ajjaw**i is collaborating with colleagues in Australia looking at feedback practices in postgraduate online distance learning.

Within the UK, many of our current and recent research projects have had a strong practitioner focus, involving collaboration with national and local partners. Examples include the *Fife Peer Learning Project* (**Topping**) which was a collaboration with Durham University and schools throughout Fife Council; *The Nintendo Maths Project* (**Miller** & **Robertson**) which involved working with schools and education authorities across the country; the *Nintendogs in the Early Years*

Project (**Miller**), working with Aberdeenshire schools and Learning and Teaching Scotland; the *Global Citizenship Project* (**Miller, Wakefield** & **Moran**), in association with Fife Council schools and the One World Centre; the *Guitar Hero Project* (**Jindal-Snape**) in Perth and Kinross schools; *Early Years Transition Research* in East Dunbartonshire (**Jindal-Snape** & **Hannah**); and *Developing Mathematical Thinking in the Primary Classroom* (**Henderson**) working with Angus, Fife and Dundee Councils, supported by the Scottish Government. In addition, the STEM Education Research Network has recently been established to provide a focal point for building a critical mass of active researchers in STEM education research and innovation within the University and with local partners including Dundee Science Centre. This development builds on a successful partnership agreement that has seen the launch of a jointly-organised Science Learning Institute which has received favourable comment from the Cabinet Secretary for Education and has involved several recent research funding applications.

In medical education, **Rees** is Principal Investigator for a medical education research programme about healthy workforce and healthy workplace, a national collaboration between all 5 Scottish medical schools and NHS Education for Scotland. **Dowell** has recently been invited to help develop a Medical School Outcomes Database on behalf of the General Medical Council (GMC), and collaborates extensively with the Medical Schools Council, GMC and via UKCAT (UK Aptitude Test for Medical and Dental Degrees) with many medical and dental schools in the country. **Ajjawi** is a member of the NHS Health Education England, Technology Enhanced Learning working party set up to oversee the effective evaluation and validation of identified technologies, and is collaborating with colleagues at Cardiff University in a research study exploring triadic interaction in bedside teaching encounters.

Staff contribute to the research base through their activities on editorial boards, review panels, or fellowships. For example, **Muschamp** is British Council Expert Reviewer for the *International Strategic Partnerships in Research and Education*, member of the Editorial Board for *Teaching and Teacher Education*, and reviewer for several journals, including the *British Educational Research Journal, Journal of Research in International Education* and *Assessment and Evaluation in Higher Education*. **Baldacchino** is a Member of the National Society for Education in Art and Design, the Philosophy of Education Society (USA), and the College Art Association (USA) and is a Research and Dissemination Grants External Assessor for the Social Sciences and Humanities Research Council of Canada. He is on the editorial boards of *Interactive Discourse*, *Visual Enquiry: Learning and Teaching in Art*, and the *Malta Review of Educational Research*, and has reviewed papers for *Studies in Philosophy in Education and Contemporary Political Theory*. **Jindal-Snape** is an Editorial Board member of *Creative Education and Open Journal of Rehabilitation*, a reviewer for 12 other journals, ESRC and EU, and consultant to research projects for the University of Surrey.

Topping is a member of the Editorial Boards of *Educational Psychology* and *Mentoring and Tutoring*, and has been reviewer for many journals, including *Review of Educational Research, Educational Psychology Review*, and *Learning and Instruction*. He has also reviewed for various research councils, including the ESRC, the Research Council of K.U. Leuven, the Israel Science Foundation and the Committee on Research and Development of the Hong Kong Institute of Education. **Ajjawi** is an Editorial Board member for the *Australian and New Zealand Journal of Health Professions Education* and a reviewer for five other journals, including *Academic Psychiatry*, *BMC Medical Education* and *Medical Education*. **Miller** is a member of the reviewer panel for *British Journal of Educational Technology,* a member of the Editorial Board and Reviews Editor for *Scottish Educational Review*, and has reviewed for many journals, including *Educational Psychology*, *Cambridge Journal of Education*, *Information Sciences*, and *Educational Research*. **Dowell** is a member of the UK Medical Schools Electives Council, Scottish Medical Schools Admissions Group and UKCAT, and currently Chair of UKCAT research panel. He has reviewed for nine journals, including *Medical Education* and *Academic Medicine*. **Rees** is Deputy Editor of Medical Education and has reviewed for 20 different journals. She has also been a member of the organising or scientific committees for international conferences, including Ottawa International Conferences on Clinical Competence, in 2008 in Melbourne, and in 2010 in Miami, and 5th International Clinical Skills Conference, 2013, in Tuscany.