Institution: University of Dundee

Unit of Assessment: UoA23 Education

1. Unit context and structure, research and impact strategy

**1.1 Unit context and structure**

UoA23 is an interdisciplinary Unit which significantly contributes to the University's vision of Transforming Lives locally and globally (Figure 1). It brings together Education researchers from the School of Education & Social Work (SESW, 17 staff/15 FTE) and Medical Education in the School of Medicine (SMED, 3 staff/3 FTE), united through focus on excellent and impactful educational research. Since REF2014, UoA23 has more than doubled the number of academic staff with significant responsibility for research (8.8 FTE to 18 FTE) and significantly increased the volume of postgraduate researchers' (PGR) doctoral completions (25 to 45).

The research of all 20 individual staff and research students aligns with one or both of the following interdisciplinary themes (Figure 1). Each theme has a lead and co-leads (underlined), including ECRs (in italics) who enhance UoA23's capacity and ensure the long-term sustainability of our research:

- **The Educational and Life Transitions (E&LT) Research Theme** includes *Candarli*, *Cantali*, *Cunningham*, Hannah, *Gordon*, Jindal-Snape, *Kumwenda*, Mercieca Duncan. This theme focusses on transitions and wellbeing across the life course, including educational transitions such as early years, school and university transitions; professionals' transitions; and holistic life transitions of those with additional support needs and their significant others. Impact Case Study (ICS)1 is aligned to this theme (i.e., Changing policy and practice through re-conceptualisation and theorisation of transitions).

- **The Pedagogy Research Theme** includes *Abdullah*, Asi, *Barrable*, Campbell, *Candarli*, *Cantali*, *Colville*, Hannah, Khan, Jindal-Snape, Mercieca Daniela, Mercieca Duncan, *Nolan*, *Robb*, Topping, Ward, *Watters*. This theme focusses on the nature of teaching and learning within and across the disciplines, including STEM education, peer learning, environment, outdoor learning, educational philosophy, educational psychology, creative and arts-based approaches, additional support needs and social justice, second language learning, and learning analytics and design thinking. ICS2 is aligned to this theme (i.e., Giving voice to people with additional support needs through arts-based approaches).

UoA23 leads on an international University-wide research centre - **The Centre for Transformative Change: Educational and Life Transitions (TCELT)**. This interdisciplinary initiative creates cross-School linkages, with 11 Directors drawn from cognate disciplines including education (**Jindal-Snape**), educational psychology (**Hannah**), nursing, medicine (**Gordon**), social science, social work and humanities. It has international transitions experts as Associate Directors (e.g., Professors Akos, University of North Carolina at Chapel Hill, USA; Eccles, UC Irvine, USA; Yaeda, University of Tsukuba, Japan). The aims of TCELT are to undertake world-leading research, through establishment of collaborative networks with external partners in the statutory, private and voluntary sectors both nationally and internationally, and for this research to have positive impacts on those navigating transitions. It has four themes: Educational transitions and wellbeing, Life transitions and wellbeing, Social change for wellbeing, and Values/approaches/strategies to facilitate successful transitions and wellbeing. TCELT's International Network of Transitions

Researchers (TCELT-INTR) has over 120 academics, professionals and policy makers from over 15 countries. It organises monthly seminars, research methods workshops and writers' retreats, and hosts international academics and students.

UoA23 is a member of the **Institute for Social Sciences Research (ISSR)** which supports and enhances cross-University social science-led staff and research student collaboration (see Figure 1). Four Schools at the University are members of ISSR, namely, SESW, Social Sciences, Business and Health Sciences. Focused on supporting interdisciplinary research, it runs a seminar programme; offers interdisciplinary incubator grants (**Jindal-Snape** CI with Health Sciences, people with learning disabilities reading for enjoyment and wellbeing); hosts an annual research forum; and supports a Global Scholars' programme promoting international academic exchange visits. UoA23 benefitted from the latter and **Khan** hosted Dr VanWynsberghe (University of British Columbia), leading to a masterclass and publication. It supports projects, fora, conference events and research student activities to identify and develop new collaborative links or to expand current relationships across the University.

Figure 1: Research structures and themes.
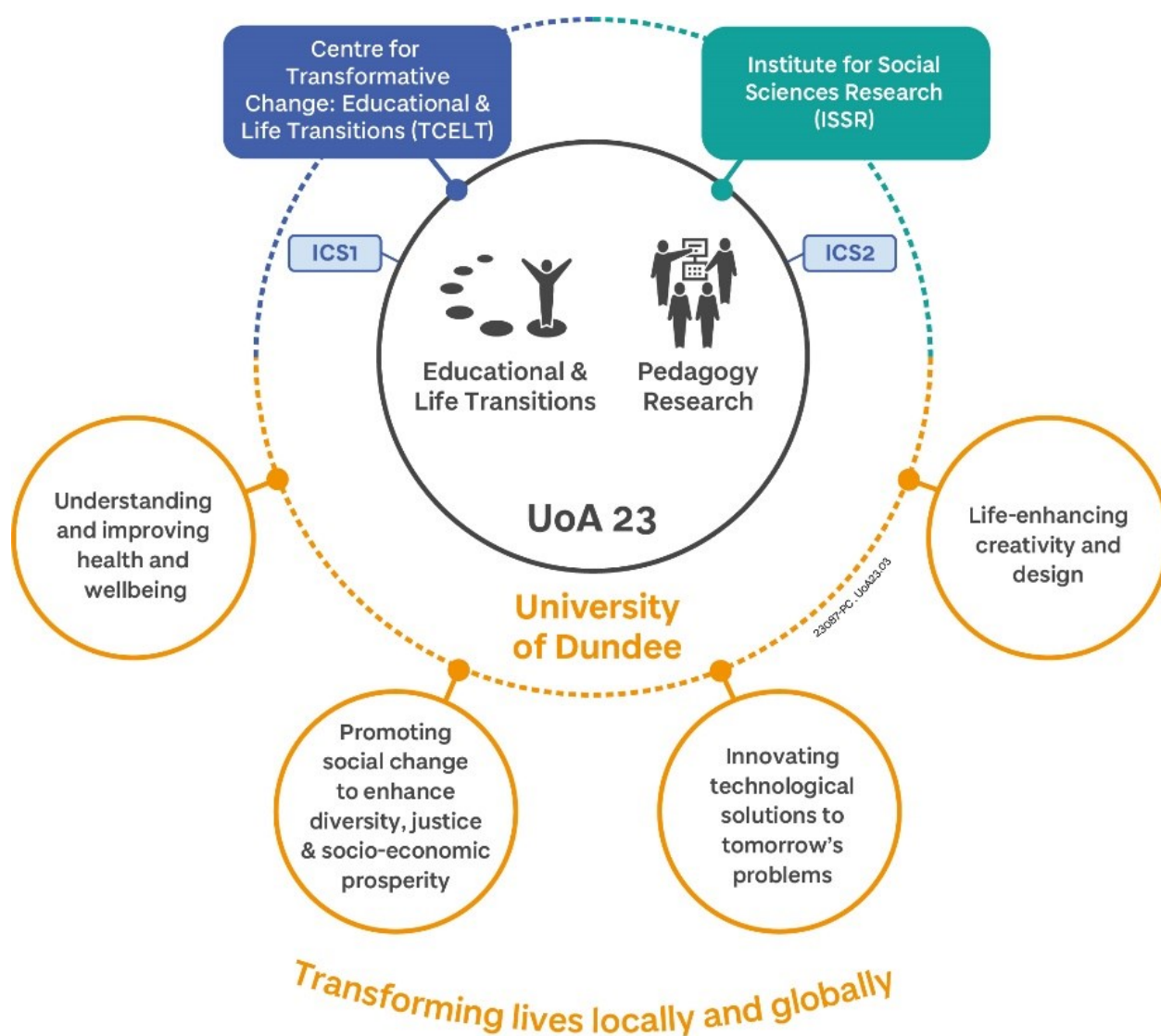
1.2 REF2014 research and impact strategic priorities and achievements

Based on the outcomes of REF2014, restructuring of Schools at the University in 2015 and changes in staffing, we reviewed and enhanced REF2014 strategic priorities (SP) further. Below sets out what has been achieved against our five SPs:

SP 1. Building our research capacity

In line with the University's strategic research priority of enhancing research excellence, UoA23 focused on increasing the numbers of research-active academics and enhancing the quality of its research environment. To this end, we more than doubled the number of staff with significant responsibility for research (8.8 to 18 FTE), creating critical mass through targeted recruitment into our two research themes.

SP 2. Achieving the highest possible standards of quality

Furthering the University's strategic research priority of excellence, several steps were undertaken to enhance the quality of publications. The following were set up:

    a. A **new writers' group** for those at ideas stage and seeking support for writing for the first time.

    b. A **peer review group** for all staff by providing constructive feedback prior to submission to a journal.

    c. **Thematic writing teams** of ECRs and experienced researchers.

    d. **Writers' retreats** to benefit from the synergies of the research themes for writing high quality papers.

    e. **Monthly thematic literature clubs and research seminars** to enhance methodological and theoretical rigour.

Further initiatives included:

    f. Funding **national and international conference attendance** to act as a springboard for future publications.

    g. **Annual Research and Scholarship Conference** for staff and research students.

    h. University's **Annual Research Review** (ARR) provided feedback to staff on outputs, funding, impact, doctoral supervision, public engagement and esteem, and enabled consistent management of research.

These enabling mechanisms, alongside an increasingly rigorous academic appointment process, have raised vitality and the quality of our research, practice and policy outputs. The thematic writing groups led to several publications co-authored by ECRs with experienced researchers, e.g., *Cantali*, *Gordon* and *Robb* with **Hannah, Jindal-Snape,** and **Rees** *(Category B)*. Greater resilience is also evident by continuity of the research mission despite the pressing challenges of COVID-19, including guest editorial roles on two special journal issues.

SP 3. Continuing to expand the number of research students, visiting scholars and post-doctoral researchers

UoA23 has a vibrant and interdisciplinary **research student community**, achieved by bringing doctoral supervisors from across disciplines (e.g., Dentistry, English). UoA23 provided rich opportunities to engage with an academic and professional community; debate and critique their and others' research ideas; collaborate with staff with national/international reputations; and participate in national and international training and conferences. This strategy led to an increase in PGR **completion rates** (Table 1), compared to the previous REF period. UoA23 had 43 PGRs at REF2021 census date, showing an upward trajectory and healthy pipeline for continuity. We hosted **visiting scholars** and **postdoctoral researchers** from 18 different countries.

SP 4. Maximising support for our research activity and diversifying sources of funding

To enhance and sustain the quality of the research environment UoA23 embraced a collaborative approach to gaining external income through promoting writing skills, joining development consortia and offering seed funding to ECRs. Staff had access to the University's Dundee Interdisciplinary & Innovation Forum (DIIF), pump-priming monies for Global Challenges Research Fund pilot projects, funder visits and grant writing workshops led by Research and Innovation Services (RIS) and Organisational and Professional Development (OPD). These measures achieved an increase in funding applications and diversification of sources of funding and prepared staff to be more responsive to opportunities, including COVID-19 calls.

SP 5. Extending the wider impact of our research

As evidenced in REF5a the University appointed **Impact Champions** in each School, to promote excellent impact and transforming lives. The University also supported the creation of Dundee Children's University, which partnered with other HEs, schools and education charities, to raise aspirations of children living in areas of deprivation to attend college/university in future (**Jindal-Snape** University lead). Further UoA23 **led** and **participated in public engagement events** based on staff research (e.g., Minecraft workshops and competition bringing together children (n=250), teachers and families from 11 Dundee primary schools; resulting in Dundee City Council introducing Minecraft in all schools). UoA23 staff delivered **keynotes** and **lectures to professionals** across the UK and overseas (e.g., keynote at QAA Scotland's 2016 conference attended by vice-principals, academics, academic related and professional staff, HE policy staff, students, student unions from all Scottish universities, n=300). Commissioning and publication funds were sourced to publish research-based educational comics, making them freely available internationally (see ICS2). The creation of university-school-community partnerships for knowledge exchange increased the local impact of research. **Over 100 research seminars** and **four international conferences were hosted**. Together this programme of outreach and engagement was important to the University's attainment in 2020 of a **Gold Watermark** for public engagement from the National Coordinating Centre for Public Engagement.

1.3 Research and impact strategic priorities for the next five years

Building on the achievements of the current strategy and continuing the direction of travel, co-developed with staff and PGRs, UoA23 has identified five SPs in the years ahead. These acknowledge the ongoing impact of COVID-19 on staff, PGRs, and external stakeholders.

SP1. Build on research excellence to enhance performance and reputation

UoA23 will continue to recruit, retain and enhance researchers in existing areas of international excellence. Further, UoA23 will strategically build teams of researchers around the newly recruited staff, including ECRs, to develop their research profiles. It will continue with all the support mechanisms and host regular immersive retreats and research methods workshops to share best practice and promote competitiveness. Further, working with the SESW and SMED management, UoA23 will allocate time for research activity through negotiated workload planning, periods of study leave (sabbaticals) and favouring alternating research/teaching-intensive semesters.

An international research centre for excellence in Pedagogy will be established to extend its international research networks and further build critical mass.

SP2. Increased focus on interdisciplinarity across the Unit

Building on the existing strong interdisciplinary profile of its established researchers, UoA23 will support its ECRs in developing stronger interdisciplinary collaborations with external stakeholders

within and beyond academia. There will also be a continued focus on interdisciplinary doctoral projects and supervision, through TCELT, ISSR and the Doctoral Academy.

SP3. Creating a rich environment for research students and visiting scholars

UoA23 will continue to enhance the diversity of its PGR community and realise the benefits of the University-wide **Doctoral Academy**, established in 2019. Recruitment through humanitarian scholarships (e.g., Higher Education Scholarship Palestine, HESPAL) and research council funded studentships will be prioritised, along with attracting a diverse student body. UoA23 will continue to support the creation of a strong PGR community. To enhance employability and research profiles, supervisors/host academics will be encouraged to co-author papers with research students and visiting scholars, adhering to the Vancouver guidelines.

SP4. Sustainability of research

UoA23 will continue to diversify its portfolio of research funding through its themes, and in particular, apply for larger collaborative awards. This will be operationalised through opportunities to access networks and engage in interdisciplinary dialogue, large grant consortia, thematic grant applications from established researchers and ECRs, seed funding to conduct pilot studies, and funder visits.

SP5. Intensify our impact locally and globally through wider engagement

Building on the success of TCELT-INTR, to ensure community engaged, participatory/collaborative research, UoA23 will set up a virtual international Community Hub for a more explicit and strategic ongoing interface between pedagogy and transitions research, practice and policy communities locally and globally. All staff and research students will actively engage with different stakeholder groups to embed impact from the research design stage to its meaningful dissemination.

1.4 Culture of research integrity

As the majority of UoA23s empirical research is with children and young people, and in some cases, vulnerable adults, we are particularly mindful of upholding the highest standards of research integrity. All PGRs complete mandatory research integrity training and staff complete SESW's research ethics training. There is also a rigorous ethical review procedure through School Research Ethics Committees which report to a University Research Ethics Committee (convened by **Hannah**).

Staff and students are provided training as new legislation or protocols emerge, e.g., GDPR. SESW and SMED have Research Integrity Leads who promote a culture of research integrity in their School. These Leads are an independent point of contact and source of advice for research students and staff beyond direct line management or supervisory team responsibilities.

1.5 Open research environment

UoA23 actively encourages a more open research environment. It has organised regular training for staff and research students on issues relating to open data and open access with many also attending the University's Library and Learning Centre's (LLC) **Open Access Week events**. Posters and leaflets about Open Access have been displayed in staff and research student social and office spaces. A number of non-standard outputs have been made open access and assigned Digital Object Identifiers (DOIs) with great success via Discovery, the institutional repository. For example, all of UoA23's educational comics are freely available for download, with two alone reaching **an international audience of 13,904 in 91 countries**, including the general public (see ICS 2).

Staff are making use of the read and publish deals becoming available through publishers such as Wiley, allowing unfunded research to be made open access, where possible. All journal articles and conference outputs are published Gold or Green open access. Open access costs are factored into research funding applications. Publication in pre-print servers, that have only recently become available for Education (e.g., EdArXiv), has been discussed and will be utilised going forward. Staff are involved in reviewing papers for open access journals, such as Frontiers in Education. In line with our commitment to open access, SESW will lead on the establishment of an internal **open access journal,** which will also provide opportunities for ECRs and research students to publish in the field of education, and be involved in its editorial board and peer review panel. TCELT is currently in discussions with its international partners to set up an **open access, multi-media journal,** in the field of transitions.

2. People

Our strategy is to grow our Teaching and Research (T&R) staff and PGR community by attracting world-leading and internationally excellent staff and students and developing and nurturing talent to achieve our strategic priorities.

2.1 Staffing strategy and staff development
To enhance the vitality and diversity of UoA23, our staffing strategy included:

   (a) Investing in existing staff
UoA23 invested in **existing ECRs** through a 'grow your own' strategy by workload allocation and fee-waivers enabling 15 Education academic staff to undertake doctoral studies, including those on Teaching and Scholarship (T&S) contracts. UoA23 staff benefitting include *Barrable* (PhD by publication), *Cantali* (DEd) and *Robb* (PhD), while *Cunningham*'s doctoral research is ongoing.

Those on T&S contracts with high research potential and interest had options to move to a T&R contract through a criteria-based transition. This involved granting additional time for research through workload planning and mentoring, as well as support with funding applications and conducting collaborative research with established researchers resulting in joint publications (e.g., *Cantali, Robb* published with **Jindal-Snape**). *Cantali and Robb* transferred to a T&R contract in 2019. Three further staff are currently being supported on this pathway.

The majority (80%) of UoA23 staff are on permanent contracts with 20% on fixed term contracts for various reasons when appointed. All are now in the process of being made permanent. Four have chosen to work part-time; of these, three work part-time for Educational Psychology Services (EPSs) and one as a consultant, providing an excellent interface between research, practice and policy. All staff are supported through dedicated workload allocation, state-of-the-art hardware and software, and can access funds to attend national and international conferences. In addition to internal **mentoring**, staff have participated as mentors and mentees in the cross-institutional **Teaching, Research and Academic Mentoring Scheme** (see REF5a).

   (b) Attracting and recruiting new staff
UoA23 selectively recruits staff with extant international track-records or with great potential to develop into research leaders. Consistent with our global ambitions senior appointments were made in the persons of **Khan** (University of British Columbia), **Asi** (Ege, Turkey), **Mercieca Duncan** (University of Malta) and **Ward** (Western Sydney). Lecturer appointments included *Campbell* (Edinburgh), *Abdullah* (IT sector), *Barrable* (Mediterranean College Athens), *Cunningham* (Dundee alumna), *Candarli* (Leeds), *Colville* (Strathclyde), **Mercieca Daniela**

(University of Malta), *Nolan* and *Watters* (EPS), *Kumwenda* (Aberdeen) and *Gordon* (St Andrews). Combined with T&S staff transitioning to T&R roles these appointments created a major boost in research capacity. Twelve of the 20 are ECRs.

Based on the **University workload allocation model**, all staff who have significant responsibility for research are allocated 30% time for research activities plus additional time that feeds into interdisciplinary research and impact activities. Additional time is allocated for doctoral supervision.

The University's **promotion routes** for T&R and T&S staff are clear and transparent. In the current REF period, *Gordon* gained promotion to Senior Lecturer, with *Cantali,* just after the census date*.* Promotion is awarded in recognition of work which demonstrates a high standard of achievement in alignment with the University's core values and strategic priorities.

Staff development processes are embedded in two review systems across the University: the annual Objective Setting and Review (OSAR) and an Annual Research Review. The ARR panels, in line with the Declaration on Research Assessment (DORA), assess individual research performance to inform reward and development processes. These are supportive processes where staff can discuss their career aspirations and indicate support they consider desirable to meet their development needs to achieve their career aspirations, which are actioned by the Associate Dean Research (**Jindal-Snape**, then **Khan**) through the staff development budget. Regular professional development programmes are provided through the OPD programme, mapped to Vitae's Researcher Development Framework that UoA23 staff at all career stages have been accessing during this REF period. UoA23 invests in future leaders through participation in national programmes, such as the Aurora leadership development initiative for women.

2.2 Research students

UoA23 offers a range of doctoral programmes, inclusive in style and well-suited to the diverse needs of our applicants, including PhD, DEd, DSW, DCLD, DEdPsy and PhD by publication. UoA23 was a pioneer of the University's Professional Doctorate programmes (Prof Docs). The PGR programme is led by a senior Professor from SESW (Smith) and a programme administrator and benefits from the contribution of two proactive student representatives. All PGRs have a monthly group meeting and access to the institution-wide Doctoral Academy Forum, a PGR-led and owned initiative discussing opportunities and community-wide matters of concern.

Over the census period 45 PGRs completed their research projects, inclusive of 26 PhDs and 19 ProfDocs (Table 1).

Table 1: Completion rates per year

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total
PhD	3	5	3	0	2	6	7	26
Prof Doc	2	2	2	5	2	2	4	19
Total	**5**	**7**	**5**	**5**	**4**	**8**	**11**	**45**

On 31st July 2020, UoA23 had 43 doctoral students showing a healthy pipeline for continuation and an upward trajectory of completions. These students have been funded through a range of sources: the ESRC and AHRC Doctoral Training Partnerships, international ministries of education (e.g., Saudi Arabia, Malaysia), employers, humanitarian scholarships and self-funding.

Supervision

Two supervisors support each research student, usually one experienced and one ECR, to promote the development of supervisory skills of ECRs and grow supervisory capacity. Supervisors are allocated 5% research time/student in their workload. Annually all students have two **Thesis Monitoring Committee** meetings to monitor progress. An independent panel meets to assess their readiness to move on to a doctoral student registration (Upgrade Review), along with evidence of successful completion of research integrity training. Additional group supervision sessions (e.g., Exploring Voices group) are provided which provide opportunities for peer support and discussing academic issues; one-off research inputs as requested by the students; and rehearsal of presentations prior to a conference/Viva.

Research methods training

Regular research methods workshops are hosted by **TCELT** and **ISSR**. As UoA23 is part of the Scottish Graduate School of Social Science (SGSSS, ESRC Doctoral Training Partnership, DTP) and the Scottish Graduate School of Arts and Humanities (SGSAH, AHRC DTP), research students have access to a range of external research methods and employability training opportunities. UoA23 staff have actively contributed to summer schools and hosted a funded Advanced Research Methods Day attended by 60 PGR students drawn from across Scotland.

Humanitarian Scholarships

The University offers **HESPAL scholarships in partnership** with the British Council to academics as well as **discounted doctorates** to staff from An-Najah University (Palestine; **Jindal-Snape** is academic lead). UoA23 currently has one An-Najah student, and another was offered a place in this REF period. The University also offers five Humanitarian Scholarships to refugee applicants on postgraduate taught programmes and one on the PhD programme.

Employment and Employability

UoA23 supports the ambitions of the Concordat to Support the Career Development of Researchers and has been working in line with the Concordat as part of the University's HR Excellence Award (since 2011). We are fully committed to preparing our RPG graduates for professional careers as well as more conventional academic routes. UoA23 involves its alumni as post-docs on externally funded projects, e.g., *Gordon* recruited as postdoc RA, became lecturer and subsequently senior lecturer. Two other postdocs worked on three charity funded projects and set up research consultancies. Teaching opportunities are also recognised as enhancing the appointability of our doctoral graduates to enter into lecturerships at other universities.

Research students have access to the University's careers advice, the extensive range of transferable skills courses run by the University's OPD unit and have opportunities to co-author publications with staff (in line with the Vancouver protocol).

2.3 Equality, Diversity and Inclusion (ED&I)

The contributing Schools (SESW and SMED) to UoA23, consistent with the University's progressive values-based culture, are committed to ED&I for all protected characteristics. Both Schools received the **Athena SWAN Bronze Award** in 2018 and 2014 respectively. All staff complete mandatory Equality, Diversity and Inclusion (ED&I) online modules: *Diversity in the workplace*; *Disability*; *Stress in the workplace*; and a *Manager's guide to stress*.

Formal systems are in place to promote ED&I across the University and are supported by a range of work-life balance policies for all staff with diverse needs (e.g., flexible working to accommodate for child care responsibilities and disability), phased return after long term ill health with access to

Occupational Health, and provision of ergonomic IT equipment and furniture. There is an ED&I committee in each School and matters are discussed openly in a collegiate manner in a range of fora. ED&I is a standing item on School Board agendas and Athena SWAN champions are present on all committees including the respective School Executive Groups. Commitment to ED&I is also reflected in the composition of the recruitment and promotion panels. The promotion system is fair and equitable to staff on all types of contracts. There is diversity in staff recruitment (see Section 2.1); and staff are from different nationalities and ethnic backgrounds.

UoA23 includes a higher number of academics who identify as female (80%), which is not unusual for Education, but somewhat more unusually two out of three professors are also female. **Jindal-Snape** and then **Khan** occupied a key role as Associate Dean Research over the REF period and sat on School Executive Group and University Research and Knowledge Exchange Committee; **Jindal-Snape** also provided leadership through membership of the University's REF2021 Steering Group and in multiple external senior fora, such as the Scottish Government's Educational Research Strategy Advisory Group, Universities' Council for the Education of Teachers' Research and International Forum. Four staff identify as BAME and two staff disclosed that they are disabled. There is a good mix of age groups; majority of staff are in the age range of 40-49 years (50%), with 20% in 50-59, 15% between 30-39, and 15% over the age of 60. Internal seed grant funding is available to ECRs and all staff have access to funds to access at least one conference per year and external CPD. All staff have the option of working part-time and flexible hours.

The PGR community has global provenance (e.g., UK, Europe, Indonesia, Malaysia, Nepal, Nigeria, Oman). The ethnicity of our 45 completions, is mostly white (61%) indicating scope to increase our diversity during recruitment. Of the graduating cohort in this REF period, 60% identified as female and two individuals disclosed a disability. There is a good spread of age groups; 18-30 years (25%), 31-40 (32%), 41-50 (27%) and 51+ years (16%). We recruit significant numbers of part-time research students who are education professionals (e.g., teachers, educational psychologists, HE lecturers); their needs are recognised in the organisation of research methods workshops and seminars with online access and recording of sessions. Supervisors are encouraged to undertake training in understanding cultural sensitivity and unconscious bias.

The impact of COVID-19 was considered in the annual review processes for all staff and progress review of research students. Support systems were put in place to take cognisance of home schooling, isolation during lockdown, concerns about family members' health, enhanced impact of the virus on BAME families, and mental health.

Construction of REF submission
UoA23's REF2021 submission was prepared in line with the University's REF Code of Practice, maximizing the quality of the submission giving full consideration to ensuring transparency of process and no bias against representation of any staff within the submission. Consistent with the gender ratio, 81% of the submitted papers were attributed to female staff. All staff members were invited to submit impact case studies. All Planning Group members completed the online EDI module and REF-specific Equality and Diversity training which included Unconscious Bias training. The Planning Group was diverse in terms of gender, ethnicity and age, as well as including a disabled staff member.

3. Income, infrastructure and facilities

3.1 Research Income

The *research income* of UoA23 was £699,590 over the assessment period. Sources of income included Medical education, NHS Education for Scotland (*Gordon*, **Jindal-Snape**, **Rees**); Active learning approaches in HE for developing soft skills for life, Commission of the European Communities (**Jindal-Snape**, **Ward**) and additional *consultancy/evaluation income* of £204,195 achieved in service of, for example, BERA-funded systematic review of structures and processes influencing education research in the UK (**Jindal-Snape**) and evaluation of Dundee City Council's Scottish Attainment Challenge project (**Hannah**). There are several reasons for lower *research income* in this period; reduction in T&R staff soon after REF2014 due to retirement and turnover; the majority of newly recruited staff started in 2019, five of whom are from outside the UK with no experience of the UK funding landscape; and 60% of staff are ECRs who focussed on publications to develop their research profile.

UoA23 is highly responsive to calls from government bodies and NGO service-providers for research and development activities. Although this has inevitably resulted in small sums of research and research-related funding, reach and impact can be substantial. For example, the Scottish Funding Council's Innovation Voucher scheme provides funding for academics to work with SMEs and charities. One of these resulted in the creation of educational resources for a bespoke training programme for education and social care professionals working with Syrian refugee children in Lebanon and those severely affected by poverty in India (**Jindal-Snape**). The programme led to substantial improvements in children's wellbeing (see ICS1 and Section 4 for more examples).

UoA23 is on an upward trajectory and additional research grants were awarded towards the end of the REF period of a value of £138,911 which will contribute to the future sustainability of research and impact in the two themes, e.g., Chief Scientists Office (E&LT, *Gordon*), Sistema Scotland (Pedagogy, **Asi**, *Barrable*, **Jindal-Snape**, *Robb*). Several large research applications were submitted at the end of the REF period, including two research council (**Jindal-Snape, Khan**), two EC Horizon 2020 (**Jindal-Snape, Khan**) and one Erasmus Plus (*Candarli*, **Jindal-Snape**) which demonstrates our ambition for larger collaborative grants.

The diversity of our funding portfolio increased, through effective interdisciplinary networks created by the two research themes, TCELT and ISSR. Further, UoA23 purposively created international networks to enhance the reach and impact of its research. These strategies led to applications to diverse national and international funding bodies, charitable and public sector organisations. Examples of successful awards include: Association of Medical Education in Europe (AMEE; E&LT, *Gordon*, **Jindal-Snape**, **Rees** with team from the Netherlands and Canada); Erasmus Plus x 3 research and development programmes (e.g., Pedagogy, **Jindal-Snape** with teams from Romania, Germany, Cyprus; **Ward** with France, Italy); Education Scotland (Pedagogy, **Khan** with team from Thailand, Vietnam and Indonesia); National Institute for Health Research (Pedagogy); Scottish Government (E&LT, *Cantali*, **Hannah, Jindal-Snape**); Carnegie Trust for the Universities of Scotland (Pedagogy, *Robb*); Sistema Scotland (Pedagogy, **Asi**, *Barrable*, **Jindal-Snape, Robb**); Children's Hospices Across Scotland (CHAS; E&LT, **Jindal-Snape).**

3.2 Infrastructure and Facilities

The Schools and University have invested in facilities and estates for a number of years, to support a **well-founded, vibrant and sustainable research environment,** and to ensure its physical and social spaces are **inclusive**. Staff, PGRs, visiting scholars and post-doctoral researchers have

access to substantial **bespoke space** in the same or connected buildings which has led to rich academic and social integration. The Library's recent refurbishment led to the development of a number of fully equipped individual/group study spaces. It offers tea/coffee facilities with a microwave, extended opening hours, as well as offering one to one support, e.g., with literature searches.

The University's 'Global Room' provides informal meeting space for staff and students (and their families), free tea/coffee facilities and informal hubs which have led to effective interaction. Multiple cultural events are hosted (e.g., Burns Night, Diwali) and the Global Room is also used for university-wide meetings of ECRs from all disciplines. In that space, dedicated international student services staff are present to give advice and support to international students. During the COVID-19 lockdown, the Global Room has hosted online events (e.g., Bollywood dancing, Quiz nights, virtual coffee breaks) to provide multiple opportunities for social networking, especially to international students who could not return to their home country and might feel isolated.

Staff and PGRs are provided **bespoke hardware and software**. They have access to state-of-the-art video conferencing facilities, supported by dedicated IT staff, that have enabled UoA23 to make its research and social activities inclusive for staff and research students who are at a distance, as well as opening some of these (e.g., Literature Club, Research Seminars) to research students and academics from other national and international institutions. This infrastructure has also been effective in generating national and international networks for staff and students and numbers at these online events have almost doubled. All staff and research students have access to RESEARCHconnect, have been trained to use it and thematic research group alerts have been created to highlight research opportunities relevant to them. All have access to online/in-person library facilities

UoA23's research activities are overseen primarily by SESW's Research and Knowledge Exchange Committee (RKEC) augmented with additional support from SMED. In SESW, for instance, the membership of RKEC includes all staff with significant responsibility for research and PGR representatives. It is also attended by the University's LLC and RIS staff. The Associate Dean Research (ADR) leads on research for the School, chairs each School's RKEC and engages with University research strategy via the University RKEC. The ADR is supported by a Research Admin Lead, Impact Champions, Research Integrity Lead and Director of Doctoral Studies. The School research office supports academics and PGRs with the organisation and dissemination of research activities (e.g., monthly research newsletter), funding opportunities (e.g., weekly research funding opportunities via RESEARCHconnect) and governance (e.g., research ethics approval).

Open drop-ins are available with the ADR for staff and Director of Doctoral Studies for PGRs to discuss research ideas and feedback on the infrastructure and facilities for ongoing improvement. A monthly electronic newsletter highlighting the successes of staff and research students was made available internally and to relevant personnel, with an annual digest being shared with external non-academic partners and collaborators. The ADR leads on hosting research grant workshops and peer review of applications. An Internal Seed Grant Funding initiative for ECRs was offered. *Barrable* and *Robb* received this funding in 2019-2020 and their awards led to external funding applications.

UoA23 organises impact workshops, complemented by the activities organised by the Impact Champions and the University's Public Engagement and Knowledge Exchange team. **Annual awards** are given to staff to promote excellence in research impact, for example: University-wide Stephen Fry Public Engagement Award for ECRs-*Barrable* commended, established researchers

and teams-**Jindal-Snape** and colleagues commended; embedding research into teaching (SESW award), celebration of excellence in research and innovation (University-wide Discovery Days, various UOA23 staff) and Dundee University Students' Association's (DUSA) eight student-led teaching awards, including 'Best Postgraduate Supervisor award' (nominated **Jindal-Snape**).

With the start of **COVID-19**, a specific Teams group was set up for SESW **PGRs** with fortnightly online social networking sessions and staff regularly communicating with the students to ensure their health and wellbeing. Further, all research seminars and writers' retreat sessions became online so PGRs could not only engage with the content but were also able to network with staff and peers. PGRs were provided with resources to support the continuation of their research online and their supervisors and the Director of Doctoral Studies made them aware of flexibility in their timeline due to the impact of the pandemic. UoA23's award winning, ongoing research on the transitions of international and home research students and their families, feeds into PGR support.

The University and SESW/SMED have robust infrastructures that promote PGRs' **health and wellbeing** and **academic development**, e.g. through DUSA and Student Services. DUSA's excellent support has been recognised through numerous national awards. Student Services created two in-depth resources (Learn Smart and Live Smart) to support students with academia and mental health. PGRs have a standing agenda item on the Research and Knowledge Exchange Committees to raise any matters and provide feedback related to the infrastructure and facilities, along with representation through the SESW Student Forum. They are also supported by the Research Student Development Officer from OPD and have confidential access to Disability Services and Counselling along with prayer spaces and breast-feeding facilities. The University and SESW/SMED also provide hardship and conference funds to the research students.

The University provides support from RIS and Research Finance Services (RFS). RIS provide **proposal development support** including 'Write it Right' grant writing workshops, DIIF events including funder visits and workshops to respond to large calls and seed funding for projects working with Low- and Middle-Income Countries for GCRF. RFS manage the application and submission process and awards, monitoring the budget and financial reporting. The support mechanisms make applying for research funding accessible to all staff.

4. Collaboration and contribution to the research base, economy and society

4.1 Effective collaboration at national and international level
UoA23 has an open and collaborative culture with successful collaborative grants with academics from *other universities* in the UK (e.g., University of Exeter, The Open University) and internationally (Maastrict University, University of Paderborn, Monash University), *consortia funding* (e.g. through The Scottish Medical Education Research Consortium, SMERC), and with *public and third sector partners* (e.g., NHS, ScotCen, WithScotland). Some examples include:

Jindal-Snape and colleagues lead on transitions research internationally through collaborations with academics from over 15 countries; writing edited books (e.g., China, New Zealand, Nigeria); winning funding (UK, Canadian and European universities); conferences, symposia; and mentoring ECRs researching transitions (e.g., Finland, Germany) and inclusion (e.g., Japan, Spain). The theme members have collaborated with leading names in the field of transitions and inclusion world-wide.

Khan and colleagues set up an international research group on STEM education called mii-STEM which has conducted research on a new STEM teacher education programme in Vietnam,

Thailand, and Indonesia; established the Science Education Research in Scotland Group (SERIS) which led to three European conference symposia; led an initiative at the University of Rwanda to explore STEM education and a Centre for the Study of Higher Education; STEM research and curricular methods taught in initial teacher education; in-service teacher education in Canada, the UK, Vietnam, Germany, Indonesia, and Thailand; and contributed to the All-Party Parliamentary Group on Equity and STEM Education.

TCELT's International Network of Transitions Researchers (TCELT-INTR), launched in January 2020, has a membership of over 120 national and international transitions academics, doctoral students, professionals and policy makers (https://www.dundee.ac.uk/tcelt/transitionsresearchers/). They have contributed internationally through research related to the impact of COVID-19 (e.g., Australian member-led study), and Transitions and COVID-19 blogs written by, e.g., school teachers, HMIe, NHS consultant, students and academics (https://learningspaces.dundee.ac.uk/esw-tcelt/). TCELT hosts online monthly research seminars (each attended by 20-40 international professionals, policy makers, academics, students and wider community) and writers' retreats, leading to cross-fertilisation of ideas.

4.2 Engagement with, and contribution to, policy and legislation
UoA23's transitions research (*Cantali, Gordon*, **Hannah, Jindal-Snape, Rees**) has informed proposed new legislation [Disabled Children and Young People (Transitions to Adulthood) (Scotland) Bill]. The proposed bill, the consultation process and explanatory notes all draw directly on UoA23's research and notably, has prompted a shift towards the provision of transition support as an ongoing statutory requirement. Similarly, transitions research has informed organisational policy of Children's Hospices Across Scotland (CHAS) and contributed to ARC Scotland's Principles of Good Transitions which provide a framework for several Scottish organisations' transitions policy (see ICS1).

Staff influence national policy through leadership and membership of the Scottish Government's Educational Research Strategy Advisory Group (*Campbell,* **Hannah, Jindal-Snape, Khan**) and the Scottish Government's Children's Rights and Participation research group (**Jindal-Snape**, *Robb*). *Cantali* chairs the Scottish Universities Inclusion Group and *Colville* a local authority-wide multiagency group of senior education, health and social work professionals. **Ward** is a member of New South Wales (NSW) Early Childhood Teacher Education Council, and the Technical and Further Education NSW External Advisory Committee. **Topping** is Scientific Advisor for the Lena Foundation (a non-profit foundation developing early language for disadvantaged families) in the US and his research on reading achievement and implementation fidelity in book reading was submitted to the UK All-Party Parliamentary Group for Social Mobility. He worked with the Scottish Government on the development of the Primary One Literacy Assessment and Action Resource for pre-school children.

4.3 Engagement with, and contribution to, practice
UoA23's research, with a focus on multi-sector collaboration, has influenced practice nationally and internationally. For instance, transitions research led to co-creation of bespoke educational resources in partnership with a charity, designed for professionals working in challenging contexts in the UK, Lebanon and India. Similarly transitions research fed into CPD provision and changes in service provision across the UK (see ICS1). **Jindal-Snape**, for instance**,** has influenced practice through articles for education professionals in TES Scotland, contributed to textbooks for future and in-service teachers (e.g., Learning to teach in secondary school, Scottish Education), and has captured a large body of transitions research relevant to professionals in a book with bite-size entries and implications for professionals after every entry (A-Z of Transitions). UoA23 also

undertakes *pro bono* research for local schools, community organisations and local authorities alongside building research capacity in these organisations.

UoA23 staff were nationally and internationally acknowledged for their contributions to supporting COVID-19 related transitions practice: 20 blog posts with over 10,000 views; four comics (***Barrable***, **Jindal-Snape**); co-creation of resources to support children and young people, professionals and families with the reopening of schools (***Colville,* Hannah,** British Psychological Society (BPS), respectively 3500 and 2408 downloads, 31st July 2020; **Jindal-Snape** Education Scotland; ***Nolan,*** Local Authority); **Mercieca Daniela** and **Mercieca Duncan** for research on Scottish teachers' perceptions of the impact of COVID-19 on teaching, learning and support in schools.

4.4 Contribution to the economy
UoA23 has actively sought to work in partnership with industry and SMEs (e.g., through SFC Innovation Vouchers which match-fund pilot projects with Scottish SMEs) and charities, community organisations and public bodies to enhance those organisations' commercial success and future funding. For example, **Hannah** partnered on two projects and **Robb** on one with Paragon Music; the latter formed the basis of the charity's funding applications. **Jindal-Snape** partnered with *For the Love of a Child* charity to create a bespoke educational resource which is now being used both in Scotland and overseas and is a source of funding for the charity (see ICS1). Transitions research led to the creation of a Transitions unit, and the appointment of one Transitions Manager and two transitions workers, in CHAS (see ICS1). The Unit's research on additional support needs and arts-based approaches (ICS2) has led to the creation of jobs for comics artists and enhanced their employability.

4.5 Engagement with, and contribution to, the community and community organisations
UoA23 proactively contributes to communities through accessible dissemination of their research, open lectures and Bright Club (stand-up comedy for dissemination of research). UoA23's research about additional support needs and arts-based approaches (**Jindal-Snape, *Robb,*** ICS2) led to the development of educational comics that have continued to give voice to people living with invisible disabilities and complex health conditions. As an example, the '***Fibromyalgia and Us'*** comic had over 12,627 unique downloads in 86 countries between 29th November 2017 and the census date. It was included in various issues of The Fibromyalgia Magazine, led to wide media attention and paper copies were placed in 64 GP surgeries in Tayside to raise awareness of patients and the community, and received cross-party support in a UK Parliament Early Day Motion. These comics involved productive partnerships with charities and community organisations (CHAS, Richmond's Hope, FMA UK) as well as communities (e.g., bereaved children, children and adults with coeliac disease and fibromyalgia, their families).

Similarly, UoA23 invests in partnering with community members and organisations in knowledge exchange projects (e.g., four Scottish Universities Insights Institute funded projects in this REF period: ***Cantali, Gordon,* Hannah, Jindal-Snape**, ***Robb***). An example includes the 'Future transitions of palliative care' project with The Glasgow School of Art which involved those receiving palliative care and their families**,** along with partnerships with CHAS, Scottish Care, NHS Tayside Palliative Care Network, Hospice UK, Marie Curie, Together for Short Lives and Scottish Transitions Forum. Similarly, research was undertaken with local authorities to support children and young people's social, emotional and behavioural well-being during lockdown and the recovery process (***Nolan***), and supporting children in care (**Mercieca Daniela**).

4.6 Contribution to, and recognition by, the discipline and research base

All UoA23 staff are making a substantial contribution to education research. Three have been highlighted as examples here; an existing professor, a new professor, and an ECR.

(a) **Topping** (educational psychology) holder of the American Educational Research Association's Lifetime Achievement Award, continues to be world-leading in his research on peer learning. His work on computer-assisted assessment of reading and mathematics has led to continuing international media attention. According to PLOS 2020, he is the 8th most cited researcher in Education in the UK (in Top 100 Education researchers in the world).

(b) **Khan**'s (teacher education) work has been utilized by international scientific organizations such as CERN, American Chemical Society, National Science Teacher Organization, and the Next Generation Science Standards Resources Web.

(c) *Gordon* (medical education) has published 10 peer reviewed articles, has four nationally and internationally funded research projects (e.g., CSO; AMEE) and one knowledge exchange project. She holds an honorary appointment at Monash University (Australia) and is Associate Editor for the journal Medical Teacher.

UoA23 staff are making contributions in the context of methodologies; only four highlighted here:

(a) **Theory-led research** that critically examines pedagogy and practice (*Campbell*, **Mercieca Daniela, Mercieca Duncan**); development of novel transition theories and testing these in different contexts (*Cantali, Gordon,* **Hannah, Jindal-Snape, Rees**).

(b) **Systematic literature reviews and realist reviews** (*Cantali,* **Hannah, Jindal-Snape, Rees***, Robb*) with cutting-edge syntheses that highlight research strengths and gaps to inform future research. All reviews have informed policy and practice at national level, e.g., CPD for Curriculum for Excellence (Education Scotland, **Jindal-Snape**); policy focus on primary-secondary transitions (Scottish Government, *Cantali*, **Hannah, Jindal-Snape**).

(c) **Longitudinal and cohort studies** based on analysis of large scale datasets such as **UKMed** to understand, e.g., the relationship between sociodemographic factors and entry into chosen PG medical programmes (*Kumwenda*); and analysis of the **Growing Up in Scotland** dataset to understand primary-secondary transitions (**Jindal-Snape** with ScotCen and NatCen).

(d) **Health research priorities setting** exercise such as for Medicine and Dentistry in Scotland (**Rees**) and in Canada (**Khan**) which have become the focus of research and funding, e.g., the former led to NHS Education for Scotland's ongoing funding of medical education priorities research through SMERC.

Participation in keynotes and organising conferences and seminars

UoA23 has delivered *103 talks*, of which *43* were national and international *keynotes and invited lectures* in this REF period. The latter include: **Asi**, invited lecture in Belgium*; Barrable*, TEDx Limassol Cyprus, invited lecture The Therapeutic Forest UK; **Hannah,** 3 invited talks in the UK and one in Brazil; **Jindal-Snape**, 13 keynotes and invited talks in the UK and internationally (e.g., Palestine, Republic of Ireland); **Topping**, six international keynotes (e.g., Russia, South Africa); **Ward**, three international keynotes (e.g., China, USA).

In this REF period, TCELT and ISSR have *organised over 100* research seminars and lectures with high profile international and national academics as well as ECRs and PGRs presenting at these. UoA23 has *hosted four international conferences*; Teacher Education Policy in Europe (May 2015), Promoting Inclusion: Transforming Lives (June 2017, keynotes by those with lived experiences), World Community Development Conference (June 2019) and Collaborate Action Research Network (2020) for academics, policy makers and professionals.

Editorial roles and peer review (Open access journals are underlined; others have a hybrid open access model). Staff have been involved in editing various special issues: **Mercieca Duncan**, Malta Review of Educational Research (Inclusive Education: listening to disabled students' voices); **Hannah** and **Jindal-Snape**, *Frontiers in Education* (Transitions through education); **Jindal-Snape,** *Studies in Comics* (Comics and Education).

UoA23 members have reviewed articles for over 50 national and international journals. Some examples include: ***Barrable***, *International Journal of Early Childhood Environmental Education (Consulting Editor), International Journal of Environmental Research and Public Health*; ***Campbell***, *Studies in Philosophy and Education*; ***Cantali***, *British Educational Research Journal;* ***Colville***, *International Journal of Social Pedagogy;* **Mercieca Daniela,** *International Journal of Inclusive Education,* **Mercieca Duncan,** *Journal of Philosophy of Education*; ***Gordon***, *BMJ Open;* **Hannah**, *Advances in Autism;* **Jindal-Snape**, *Health Research Board (HRB) Open Research;* **Khan**, *Curriculum Journal;* ***Robb***, *British Journal of Educational Psychology;* **Topping**, *Journal of Peer Learning;* **Ward***, Children and Society.*

Review for grant bodies
UoA23 staff review **nationally and internationally for a range of funding bodies**; e.g., ***Gordon***, NIHR Large Grants, SMERC Research Grants; **Jindal-Snape**, three national bodies, e.g., ESRC, Public Health Agency (Northern Ireland), and seven international, e.g., The Millennium Science Initiative (Chile), Social Sciences and Humanities Research Council of Canada; **Khan,** five international, e.g., Canadian Research Chair Grants, Canadian Foundation for Innovation (CRC Tier I) Grants; ***Robb,*** Carnegie Trust; **Topping**, Hong Kong University.

Contribution to academic and professional bodies
All staff are members of relevant academic and professional bodies and contribute to their executive and academic groups, e.g., Scottish Educational Research Association (SERA, ***Cantali,*** conference organisation); British Association of Applied Linguistics - Linguistics and Knowledge about Language in Education (***Candarl****i*), BPS (***Colville,*** **Mercieca Daniela, Hannah,** ***Nolan,*** **Topping** and ***Watters,*** e.g., contributed to the development of educational resources; **Hannah**, Chair BPS Scottish Branch); **Ward**, Senior Fellow Higher Education Academy, Nature Action Collaborative for Children (World Forum Foundation: Asia Pacific Leader), International Association of Nature Pedagogy.

Awards and external recognition
ECRs' contribution is being recognised nationally and internationally. In recognition of her contribution to arts education research, ***Robb*** was made a Fellow of the Royal Society of Arts in 2019 and contributed to *The International Encyclopaedia of Art and Design Education*. Similarly, ***Barrable***'s study on using Self-Determination Theory (SDT) as a framework for nature connectedness was mentioned by the world-leading theorist Richard Ryan in an interview on the applications of SDT in education, and featured on the Centre for SDT website, under Environment. ***Barrable*** received the Scottish Educational Research Association's Estelle Brisard award (2019), given to an ECR in recognition of their excellence and promise in research. ***Gordon*,** **Jindal-Snape**, **Rees** received an award for their poster at the NHS Education for Scotland conference and **Jindal-Snape** (with collaborators from The Open University) received a UK Council for International Students Affairs' Innovation in International Education Award for research on international doctoral students' transitions.