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# **The Journey from Interested Spectator to Active Researcher – A Practice-based Case Study on the Development and Support of Early Career Researchers at the University of the Highlands and Islands**

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## **Abstract**

Helping new colleagues make the transition from PhD studies to being a fully-fledged research active academic is increasingly challenging in UK Higher Education, not least in the present day when research-related grants from the Funding Councils and the Research Councils will only normally be released if linked to the work of established, 'Internationally Leading' or 'World Leading' (REF, 2014 a), research excellence. However, add to this the complexity of developing Early Career Researchers (ECR) in the context of a new university, in a widely disbursed geographic setting (largely remote and rural), which is arranged according to a federal model of governance and within a fully tertiary education setting – which thereby encompasses Further Education (FE) as well as Higher Education (HE) engagement – and the task becomes significantly more difficult. This is the challenge facing the development of ECRs at the University of the Highlands and Islands (UHI).

This paper presents a case study of the approaches that UHI has taken to the development of, and support for, ECRs, many aspects of which will find applicability in other HE contexts both in the United Kingdom and internationally. The approach is based on the hypothesis that ECR development can be enhanced and accelerated, and lead to more successful translation into long-term staff engagement with research, through coordinated, time-sensitive, and funded interventions that are managed and deliberate, as compared to bottom-up, organic staff engagement with research without such intervention.

**Keywords:** Early Career Researcher (ECR); rural; institutional strategy; research development; research support; academic development; sabbaticals; curriculum development; Research Excellence Framework (REF).

## **INTRODUCTION**

Many challenges face post-doctoral students and other ECRs in the UK who wish to pursue an academic career in Higher Education and become independent researchers on an ongoing basis. In the current financial climate, it is extremely difficult for ECRs to access grant funding unless associated

with established researchers and acknowledged research excellence projects. As such it is almost impossible for ECRs to obtain funding of their own to research new areas or topics of interest, even where highly relevant to societal needs (Bazeley, 2003). However, allied to the issue of scarce resources, students and staff at UHI who wish to become ECRs also require to contend with the complexity of working in a new university, which is based on a federal model of governance and which is spread over a widely dispersed geographic area that is largely remote and rural.

When UHI was initially established, the main focus was the development and delivery of HE taught curricula, with the development of research and research degrees being of secondary importance. However, as all universities in Scotland are required to engage in both teaching and research, it was understood that UHI required to achieve its research ambitions in order to be considered a fully-fledged university with an international reputation for research excellence.

A core component in achieving this vision was ensuring that lecturers and post-doctoral staff were encouraged and enabled to become ECRs in UHI's unique educational framework.

The research questions that set the context for this case study are:

1. How can Early Career Researcher (ECR) development that is relevant, novel, and effective, be developed and delivered in a largely remote and rural setting?
2. What lessons from this can be translated beneficially into other Higher Education Institution (HEI) contexts?

The purpose of this paper is to outline the measures taken to overcome the obstacles presented; to evaluate the effectiveness of the approaches adopted and the initiatives undertaken; and to determine the relevance of the lessons learned for other HEIs.

## **LITERATURE**

The area of study covered by this paper is a highly important but relatively under-researched aspect of Higher Education in the UK. It is of particular interest at UHI where the vision has been to help ECRs develop from the earliest stages of engagement with research (i.e. from the stage of them 'thinking' about engaging) to become confident as researchers (Åkerlind, 2008). However, Åkerlind somewhat limits her research to academic staff who possess PhD qualifications and are transitioning into posts where research is integral to their roles, which is not necessarily the case in the UHI context. It is recognised that researchers learn their craft largely through praxis (Armstrong, 2001), but the difficulty faced by UHI has not been that individuals do not learn by experience, rather that the opportunity to engage with research has not always been available to them. Early pioneering research in the general area of academic development was conducted by a number of writers including Dalton *et al* (1977), Kolb (1984), and Pratt *et al* (1999), and this has been developed relatively slowly but carefully over

time, with contributions from writers such as Brew (2001), McDonald (2003), Bowden *et al* (2005), Gordon (2005), and Tynan and Garbett (2007), the latter of which identifies the benefit of engaging in collaborative research to the development of female ECRs. While accepting that collaborations of female academics is helpful in order for them to gain a foothold on the academic ladder, this approach to research development is equally applicable to ECRs (and indeed more established researchers) of either gender.

However, the approach taken by UHI to the development of ECRs has been reinforced and enhanced more recently by reflecting on the deconstructed researcher development model presented by Evans (2012), which emphasises the need for research development to be viewed by research leaders in a practical but holistic way, by taking due cognizance of the component parts that underpin its effectiveness. Of particular interest in the context of UHI is the work of Brotherton (1998), and Cunningham and Doncaster (2002), in respect of the development of a research culture in the FE sector. This addresses an issue that is currently of growing interest in post-school-level education in Scotland, in terms of the role that the FE sector has to play in both the delivery of its own range of courses and programmes and its engagement with the research agenda. This is precisely the context within which UHI operates.

A highly interesting and relevant study, which has many helpful contributions when seeking to understand the translation from PhD study to fully independent research as an academic, was presented by Laudel and Gläser (2007). However this study, by definition, focused on a sample of ECRs who all possessed a PhD having gone through a guided process involving a mentor and hence their contribution is not considered to be that of “an independent scientist” (Laudel and Gläser, 2007, p. 396). As such their study only partially addresses the complexity of the UHI situation as not all staff progress to ECR status via the PhD route, although they all face the same difficulties of time constraints to conduct research, they have often come from a predominately FE-based teaching background and are more mature in age at the outset of the engagement, albeit this demographic has been changing in more recent years as a result of new appointments to posts at UHI.

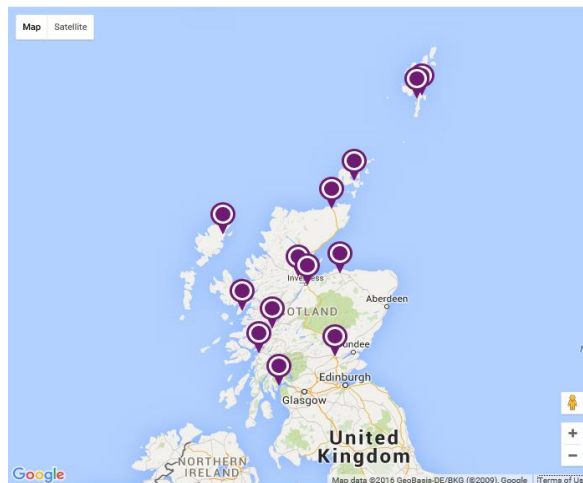
A common issue being faced by all ECRs though, is that of the difficulty in securing access to grant funding to support their research, which is an issue not restricted to UK Higher Education but has been evident in a number of countries, not least as shown in the work of Bazeley (2003) on the challenges facing ECRs in Australia in the early 2000s, the findings from which resonate with UK HE funding today.

A more recent publication by Cantwell and Mathies (2012) has provided one of the few longitudinal studies in respect of the ways universities (in this case universities in the USA) invest in and seek to develop academic research capacity over time, albeit with an emphasis on economic considerations relating to Research and Development contributing to national economic success, and covering a range of strategies for ‘growth’ beyond the development of ECRs. The study covered the period 1990-2005 and incorporated data from 375 US-based universities.

There is a growing interest in research in the area, and this paper seeks to add to the slowly expanding body of literature through a practical contribution in the form of this case study presentation and analysis.

## **BACKGROUND AND CONTEXT**

The University of the Highlands and Islands is unique in the UK and is the only Higher Education Institution that has its core base in the Highlands and Islands of Scotland. The University comprises a federal structure of 13 Academic Partners spread across the entirety of the Highlands and Islands area, together with an Executive Office based in Inverness (UHI, 2016 a) (Figure 1). This means that the UHI campus equates to approximately 1/6<sup>th</sup> the land mass of the United Kingdom (a little over half the landmass of Scotland), but with a population of only 466,112 (HIE, 2014).



*Figure 1: UHI Academic Partnership  
Map data: © 2016 GeoBasis-DE/BKG (© 2009), Google*

Prior to the existence of UHI, any person from the region who wished to undertake university level study had to leave their home area in order to do so. This situation changed to an extent with the onset of the Open University, but there remained an inherent need and desire from within the region's communities for a university to be based in the Highlands and Islands. In 1991, a study was commissioned by the Highlands and Islands Development Board to report on the best way forward for the creation of a University of the Highlands and Islands. The report published in 1992 (reproduced in Hills and Lingard, 2004: 239-254) presented the scope and opportunity for a federal, collegiate university based on existing Further Education colleges in the region, and this provided the genesis of the present UHI structure. As such UHI encompasses all forms of post-school educational provision in a tertiary model that covers FE and HE activity. The UHI Millennium Institute (as UHI was originally named) was established in 2001 with full University Title and status being awarded in February 2011 as the University of the Highlands and Islands. UHI is now seeking its own research degree awarding powers (rDAP) with the support of its three sponsor universities Aberdeen, Strathclyde and Glasgow.

## **METHODOLOGY**

The research questions are addressed primarily in the form of a longitudinal case study of the development of ECR support at UHI, based on ongoing action-based research, which incorporates qualitative and quantitative examination and evaluation of the effectiveness of the approaches taken and initiatives introduced.

The data for this study have been collected from a range of formal and informal engagements. Information has been derived from historical review of UHI archived records, analysis of and reflection on existing data sets, practise based action research and semi structured interviews, records of committee meetings and survey data collection and analysis. All data collected and used have either been publicly available or used with permission. It is acknowledged that prior to 2010, some data sets were incomplete and limited in range and scope. However, these still provide sufficient information in aggregate to allow conclusions to be drawn. Since 2010, data have been collected in a more comprehensive manner, thus providing accurate statistics for many of the initiatives introduced. Opinions of ECRs and prospective ECRs were gathered via a number of means including: personal development and training needs reports; responses to staff surveys; records of relevant UHI committee meetings; applications for research-related travel funding; engagement with the mentoring and sabbatical schemes; and workshops at staff development conferences.

The article is presented in broadly time-sequenced format over an 8-year period, from 2008 until the present. It should be noted that the identification and implementation of new initiatives for the development of ECRs at UHI remains an ongoing priority. This study concludes with a summary of observations and recommendations for translating relevant approaches and practices into other HE and FE contexts in the UK and internationally.

### **IMPACT AND EFFECTIVENESS OF ECR INITIATIVES**

The range of issues facing ECR development at UHI necessitated a variety of approaches to address the challenges. The main initiatives implemented by the University are detailed below and are presented in broadly time sequenced format:

#### **2008/09 Seedcorn funding**

Seedcorn funding was the first substantial intervention aimed at developing and extending an appropriate research culture within and across the institution (Pratt *et al*, 1999). Under the scheme, which ran for approximately 3 years, Academic Partners who wished to engage in the scheme were provided with a budgetary allocation from central UHI resources, but they were also encouraged to contribute to the scheme themselves, primarily in the form of additional local budget resource and time remission for participants from some teaching responsibilities. Staff members within the participating Academic Partners would normally present their ideas for a small research project and these ideas would be assessed by a panel, with decisions then made on which proposals to support.

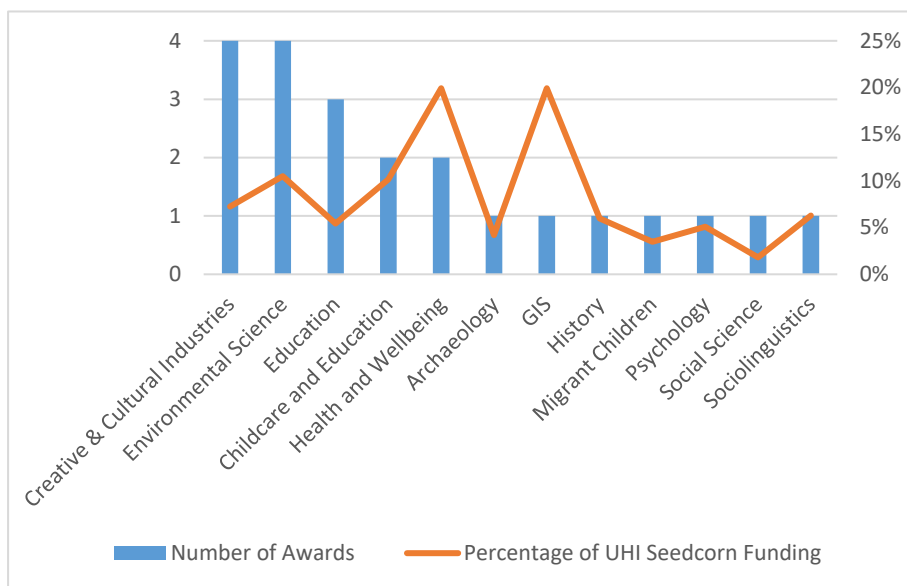


Figure 2: UHI Seedcorn Funding Distribution in Academic Year 2008-094 (UHI a, unpublished)

In 2008/09, 22 seedcorn grants totalling £50,000 were approved and were distributed to various research areas as indicated above in Figure 2. Additional funding totalling £27,300 was contributed by some of the participating Academic Partner organisations.

It was hoped and intended that this approach would help spark participants' interest in continuing their research engagement thereafter, and also that it would help to initiate the creation of a research culture from the bottom-up, which would grow organically as a result of the good and enjoyable experience of the early pioneers. However, the lack of data on ECRs inevitably meant that the University could not target the seedcorn funding towards specific projects but had to rely on staff presenting projects for approval.

Once the projects were selected to proceed, there was only limited advice and help available to the participants in actually developing their research ideas and conducting their projects, which proved to be a serious flaw of the scheme and undermined its longer term effectiveness. Occasionally participants were able to support each other, but their projects and interests were diverse and so their research activities did not lead to the natural formation of a new tightly-knit community of ECRs within participating colleges. Furthermore, although a key intention of the scheme was to help develop research interest and engagement from newly research active staff, some of the resource was allocated instead to small scale pilot studies by existing researchers. In addition, only a relatively small number of Academic Partner colleges took part in the scheme at an institutional level. In view of this, the scheme can be regarded as having been only partially successful; although the scheme did break new ground for UHI and those staff who took part were able to develop a number of research skills, prepare and in some cases publish a research-based output (hence moving towards the 'colleague' stage in the 4 stages of an academic career model presented by Dalton *et al* (1977)), and be exposed to the broader world of advanced scholarship and research.

### **2010 Biennial Staff/Student Research Conference**

An important development to encourage both practising researchers to continue their research activity and would-be researchers to become ECRs, was the introduction of a UHI-wide Staff/ Student Research Conference, in 2010. It was designed to provide an opportunity for staff and postgraduate research students (PGRs) at any stage in their research journey to come together and to learn about the research interests and activities of other staff and students from across the whole University.

The conference attracted 158 registrations, including: 12 ECRs; 23 lecturers; 43 PGRs; and 37 research active staff (UHI, 2010).

All staff and students were able to participate in the conference on the same basis as existing research active staff, benefitting from a range of training and information sessions as well as networking opportunities. No conference fees were charged, and the cost of all accommodation and subsistence was met by the University. In addition, a contribution was made towards travel costs of staff wishing to attend from the Islands.

Highly positive feedback was secured from attendees through feedback forms and in subsequent discussions in forums such as the University's Research Practitioners' Group (RPG). (The RPG is one of the UHI's practitioner groups, which provides a forum for research active staff across the University to meet to discuss relevant issues and sector developments. It has become an actively engaged self-help community of researchers from which has emanated a number of the research-related developments introduced in the University.) This feedback noted the following as some of the key benefits for ECRs (and would-be ECRs) from the first conference (paraphrasing):

- The opportunity to share and engage with more established researchers
- Excellent networking opportunity, and a good chance to get everyone together
- Positive encouragement to undertake research
- Encouragement to consider undertaking higher degree study
- Learning about the range of research across the University
- Excellent and relevant training

Due to the success of the event it was agreed to run the conference on a biennial basis, and therefore further conferences have taken place in 2012, 2014 and 2016. This was part of the University's deliberate plan to increase research capacity, which differs from Cantwell and Mathies' (2012) research in that UHI was primarily concerned with the development of the academic capacity and reputation of the University, with any economic benefits being an additional bonus rather than the primary factor.

The November 2016 conference attracted 209 registrations, including: 13 ECRs; 23 lecturers (who specifically state that they are interested in developing their own research); 49 PGRs (including 7 who



are also lecturing staff); and 96 research active staff (including 2 formerly registered as lecturers in 2010). All those who registered as ECRs in 2016 are different individuals from 2014, and 2 of the ECRs from the 2010 conference now designate themselves research active, with a number of other former ECRs having moved to academic roles in other institutions. The figures demonstrate the growing importance of the conference to the research community at UHI and the growth and development of the University's research culture.

### **2010 The UHI Graduate School**

In 2010, UHI extended the staffing and activities of its existing Graduate School Office into an overarching UHI Graduate School with responsibility for all aspects of PGR student life and for the support of the growing research supervisor community. In developing the Graduate School to provide training and networking opportunities for PGR students, it was able to extend its provisions to give would-be researchers and ECRs access to training that would help them develop their own research skills and competencies. In effect, this was unknowingly delivering an aspect of holistic researcher development that was described by Evans (2012). In addition, staff who had already secured a Doctorate or Research Master's degree, but who had not thereafter been able to undertake much personal research, were able to take courses to refresh their knowledge base and build confidence for re-engagement as active researchers (Åkerlind, 2008). Furthermore, support was provided to enable ECRs who held their doctoral degree to grow their research degree supervisory skills, by linking them to more established researchers in supervisory teams.

### **2011 Research Staff Stocktake, and Introduction of a Research Information Management System**

Soon after the arrival of the Dean of Research in 2010, it was apparent that communications with research active staff and would-be researchers were piecemeal and relatively limited. This was mainly because there was no institution-wide HR system in operation, and the University's governance structure meant that staff were employed by their host academic partner and not by the 'University' *per se*. Therefore, there was no consistent, current, or routinely updated list of research active staff or email addresses for them. In the light of this, the Dean undertook a UHI-wide stocktake survey of research interests in early 2011, and this revealed some stark information when put into the context of the 2014 Research Excellence Framework (REF) descriptions of research areas, as shown in Table 1:

*Table 1: Results of UHI REF survey (2011), showing the association of research interests of staff mapped onto REF 2014 Units of Assessment*

<b>UoA Number</b>	<b>UoA (Unit of Assessment) Title</b>	<b>1<sup>st</sup> Choice (head count)</b>	<b>2<sup>nd</sup> Choice (head count)</b>	<b>Total 1<sup>st</sup> and 2<sup>nd</sup> Choices</b>
7	Earth Systems and Environmental Sciences	61	10	71
17	Geography, Environmental Studies and Archaeology	21	11	32

28	Modern Languages and Linguistics	19	2	21
33	Theology and Religious Studies	8	2	10
30	History	6	9	15
27	Area Studies	6	2	8
20	Law	6	1	7
5	Biological Sciences	5	15	20
34	Art and Design: History, Practice and Theory	6	1	7
29	English Language and Literature	4	4	8
25	Education	3	5	8
6	Agriculture, Veterinary and Food Science	3	2	5
2	Public Health, Health Services and Primary Care	3	1	4
23	Sociology	1	4	5
36	Communications, Cultural and Media Studies, Library and Information Management	1	2	3
4	Psychology, Psychiatry and Neuroscience	1	2	3
9	Physics	1	1	2
10	Mathematical Sciences	1	1	2
15	General Engineering	1		1
35	Music, Drama, Dance and Performing Arts	1		1
12	Aeronautical, Mechanical, Chemical and Manufacturing Engineering	1		1
8	Chemistry		4	4
24	Anthropology and Development Studies		3	3
32	Philosophy		3	3
11	Computer Science and Informatics		3	3
22	Social Work and Social Policy		2	2
26	Sport and Exercise Sciences, Leisure and Tourism		2	2
19	Business and Management Studies		1	1
1	Clinical Medicine		1	1
16	Architecture, Built Environment and Planning		1	1
31	Classics		1	1
14	Civil and Construction Engineering		1	1
21	Politics and International Studies		1	1
TOTALS		159	98	
Number of UoAs Covered (out of 36 possible UoAs)		21	30	

While the survey revealed a widespread engagement with research at a notionally REFable level, many of the college-based staff's engagement was modest in scale and limited in terms of the number of

outputs individuals had published since the 2008 Research Assessment Exercise (RAE). However, the survey indicated that pockets of research excellence had emerged in most of the FE-based colleges in a number of discipline areas, even though these tended to involve relatively low numbers of staff and the activity in most specific discipline areas was normally spread across 2 or more Academic Partners – although in the case of research allied to Unit of Assessment (UoA) 17, this involved 8 Academic Partners in respect of the 1<sup>st</sup> choice association of 21 staff (see Table 1). In the light of this, the issue of sustainability was raised, noting that support for established researchers in such a context was challenging and this was exacerbated for ECRs.

On analysis of the data, and in discussion with senior colleagues and members of the RPG, the Dean made a case for aggregation of the wide spread of research effort into a reduced number of research areas, which would then be sufficiently large to enable research-related support (financial and other) to be made available in an effective and efficient way. This process led to the aggregation of virtually all staff who supplied information for the survey into 8 key discipline areas, with the intention of developing a REF submission from among those areas. The approach was also intended to facilitate the development of research in strategically important new areas for UHI, such as Creative Industries and Education/Pedagogy. This method proved to be highly effective as UHI's performance in the 2014 REF demonstrates (REF, 2014 b).

### **2011 Research Information Management**

An important development in the provision of support for UHI's ECRs was the introduction of an institution-wide Research Information Management System (RIMS). The case for the RIMS was developed by the Dean and supported by the members of RPG in early 2011. Not only would this facilitate tracking of the research activity of staff at all levels but the system would also act as the institutional repository for research publications and PhD Theses. Following successful negotiation, and careful options appraisal, UHI procured the PURE system by Atira in 2011. (PURE was subsequently taken over by Elsevier in 2012). Thereafter, PURE was implemented across the entire Academic Partnership.

Once PURE was in place, communications with staff, and updating of relevant researcher personal information, was possible. In a sense, a community of researchers was then able to be identified clearly for the first time and kept up to date with a range of information and research-related opportunities, in real time. To this community, new and aspiring ECR colleagues could be added, and they were able to use the system to look for potential collaborators in relevant discipline areas both within and out-with UHI. They were also able to create a personal profile of their own research engagements, activities and outputs, which could be viewed by a worldwide audience of academics, businesses, and other interested parties.

The development was further enhanced by the updating of the University's research web pages, through specific additional investment, as a result of which ECRs could readily access information about the support available to them.

### **2011 Mini-Sabbaticals Scheme**

Historically, UHI had operated a centrally funded sabbatical scheme as part of its staff development portfolio across the University. This had sufficient budgetary resource to enable several 6-months to 1-year-long sabbaticals to take place annually, both for research-oriented activities and for other staff development needs, such as programme and curriculum development. However, by 2011 the financial pressure on UHI's central budget was such that it was possible to support only 1 full-time sabbatical of 1-year duration.

In the light of this, and based on research conducted by the Dean of Research, which indicated that a number of UHI colleagues would not be able to be submitted to the REF because of a lack of quantity (not quality) of research outputs, the Dean developed a proposal to introduce a targeted mini-sabbaticals scheme. This would allow researchers to access funding of up to £5k each to support mini-sabbatical leaves of between 2 – 3 months, either to write-up and publish the results of research that had already been conducted, or to translate and extend an original piece of intended research output into a REFable submission in a high quality journal. 15 staff benefitted from mini-sabbaticals over the next 2-year period, and this enabled 5 ECRs to be included in the University's 2014 REF submission who otherwise would have been excluded.

The use of mini-sabbaticals as a contributor to staff preparations for inclusion in the 2014 REF was necessarily time-limited. However, the philosophy underpinning the scheme, and the ability to award smaller scale sabbatical opportunities to a larger number of staff, was highly successful and popular. The mini-sabbatical approach was therefore retained but the scheme itself revised in order to provide opportunities for a broader range of staff, including ECRs. The fund has also been used to stimulate interest in would-be researchers by supporting them to engage in formative research work, or to translate the findings of modest scale research projects into curriculum offerings at undergraduate level. In total, 44 mini-sabbatical awards have been made over 6 years since the scheme was introduced (as detailed in Table 2), at an average total annual cost of £35k.

Information on the benefits derived from mini-sabbaticals, and the tangible outputs delivered (including publications), is secured in the form of an 'End of Sabbatical Report,' which provides a helpful digest of the actual achievements secured against the original aims and intentions of the sabbatical leave request.

An indication of the variety of activities supported by the scheme can be given by reference to the following examples of successful applications:

- Comparing and contrasting land use planning and management within and outside national parks in Scotland and Norway;
- The completion of a monograph on Viking Parliament sites;
- Research into long term ecology and application to conservation management; and
- A pilot study to identify indicators of power in the Doctor/patient relationship and to consider the democratisation of health information in this context.

*Table 2: UHI Mini-Sabbatical awards 2011-12 – 2016-17*

Academic Session	Total No. Awards	No. Awards to ECRs (% of total)
2011-12	12	4 (33%)
2012-13	3	1 (33%)
2013-14	7	1 (14%)
2014-15	8	2 (25%)
2015-16	7	1 (14%)
2016-17	7	3 (43%)
<b>Total</b>	<b>44</b>	<b>12 (27%)</b>

### **2011 Curriculum for the 21<sup>st</sup> Century (C21C), and the Learning and Teaching Academy**

In early 2011, the University embarked on an ambitious curriculum development programme known as C21C (Curriculum for the 21<sup>st</sup> Century) under the leadership of the Dean of Learning and Teaching. This was intended to help improve efficiency and effectiveness of HE-level teaching activity across the Academic Partnership and thereby free-up time for staff to engage in a range of other activities, including research. However, the teaching efficiencies secured by an Academic Partner meant that individual staff could take on an increased amount of teaching activity and thereby still not have sufficient time available for the development of their research. Therefore, the initiative was only partially successful from the perspective of the research-related aims and objectives of UHI.

Building on the ethos and intention of the C21C initiative, and reflecting on comments from the 2011 Enhancement-Led Institutional Review<sup>1</sup>, the University decided to investigate the development of a Learning and Teaching Academy (LTA). This was intended to ensure that innovations in educational practice across UHI were developed for use in broader contexts, shared, and properly researched and written-up in their own right, in-house. With this in mind, the University subsequently invested in the appointment of a Professor of Pedagogy in 2014, to lead the initiative and to coordinate the broad interests that exist in pedagogic research and teaching practice in HE and FE. The LTA itself sponsors small scale research projects, which are frequently undertaken by ECRs in partnership with more experienced researchers, aimed at underpinning strategically focussed innovative approaches to teaching delivery and practice-based engagement with learning. In doing this, the University has tapped

into a wellspring of new research interest and activity. The LTA has also become a focal point for staff development funds and a range of professional development opportunities.

It is also worth noting that the conscious development of this aspect of UHI's research interests has made it easier for the senior management within the Academic Partnership to visualise more clearly the benefits that engagement with research can bring, because the impacts and outcomes of the effort are readily translatable directly into the classroom.

### **2012 Mentoring**

In 2012/13, the Head of the Graduate School and the Head of Research at Inverness College, with encouragement from the Dean of Research, began to explore a Mentoring Scheme for staff across UHI. This was in direct response to the fact that a number of would-be researchers and ECRs, and also mid-career researchers, did not have close and direct access to colleagues who were able to help them develop and extend their own personal research interests, primarily because their line manager in a college setting was either not research active or was active in a different discipline area.

This has resulted in the creation of a bespoke UHI model and approach to research mentoring, albeit one that incorporates the SUMAC system developed at the University of St Andrews. (SUMAC is the software system designed at St Andrews University to support its Early Career Academics' mentoring scheme.) Table 3 shows data derived from the UHI bespoke system for 2014/2015 and 2015/2016.

*Table 3: Participation in the University Mentoring Scheme, 2014/15 and 2015/16*

	MALE				FEMALE				Total Male Participants 14/15	Total Female Participants 14/15	Total Male Participants 15/16	Total Female Participants 15/16	Total participants 14/15 & 15/16
	2014/15		2015/16		2014/15		2015/16						
	Mentor	Mentee	Mentor	Mentee	Mentor	Mentee	Mentor	Mentee					
<b>Academic Partner</b>													
Perth College	2	0	2	0	2	3	2	3	2	5	2	5	7
Exec. Office	2	0	2	0	1	1	1	1	2	2	2	2	4
Inverness College	0	1	0	0	4	3	4	2	1	7	0	6	8
Moray College	0	1	0	1	0	1	0	1	1	1	1	1	2
Orkney College	0	0	0	0	1	0	1	0	0	1	0	1	1
North Highland College	0	0	0	0	0	1	0	1	0	1	0	1	1
Shetland College	0	0	0	0	0	1	0	1	0	1	0	1	1
Lewis Castle College	1	0	1	0	0	0	0	0	1	0	1	0	1
SAMS	0	1	0	1	0	1	0	0	1	1	1	0	2
<b>TOTAL</b>	<b>5</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>8</b>	<b>11</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>19</b>	<b>7</b>	<b>17</b>	<b>27</b>

The mentoring scheme (UHI, 2014) went live for the first time in 2014/15 and, as shown in Table 3, the initiative involved 27 staff from 8 Academic Partners across the University, with the 2015/16 iteration of the scheme incorporating 24 staff from 9 Academic Partners.

Participants make a commitment to 12 months involvement with the scheme, renewable in successive years but not necessarily involving the same mentor/mentee association. The intended benefits of the project are detailed in Table 4 (UHI, 2014).

*Table 4: Derived from the UHI web site, showing characteristics and benefits to ECRs of engagement with the University's Mentoring Scheme*

Mentee Group	Key Characteristics	Potential Areas of Benefit
Early Career Researchers	Recent PhD graduates and newly appointed researchers  Final year PGRs aspiring to an academic career  Part-time PGRs employed in UHI as research assistants	Proposal writing and review guidance  Paper writing and publishing guidance  Paper review- involvement in the process and what is required  Support and guidance in joining editorial boards  General mentoring / career advice

Analysis of the first year of operation indicated that the scheme had been well received and found to be valuable, which was confirmed by the fact that most mentors and mentees had signed-up to re-engage with the programme in its second year of operation. However, there was found to be a slight deficit in the number of potential mentors joining the scheme compared to mentees, which was believed to be due in part to some staff being hesitant about presenting themselves as mentors and the time commitment involved in mentoring. Occasionally, this was due to their own uncertainty about how their skills and experience could help prospective mentees. Likewise, the expectations of participants needs to be carefully managed, to ensure that both parties benefit from the engagement, but also noting the important point made by Laudel and Gläser (2008), that:

...while ECRs valued the advice from mentors, they also stated that the mentoring program did not solve their main problem, namely the lack of time for research. (Laudel and Gläser, 2008, p. 401 which was reiterating an important point made in a study by Gardiner (1999))

#### **2014 Revised Research Conference Fund Scheme**

Another useful facilitator in helping ECRs develop and establish their research ideas and then to begin to engage with their peers in developing networks and contacts, has been the central investment by UHI in a modest Research Conference Fund scheme (c. £14.5k annual value). This scheme is available to all staff on a 'first come, first served' basis, and provides partial funding to help meet the travel and accommodation costs associated with attending research conferences in the UK and overseas. The scheme was initially reserved for staff making a formal contribution but since 2014 the terms of the scheme have been amended in order to help teaching staff keep up to date with the latest research developments in their academic areas, and also to encourage them to become involved as new researchers and ECRs themselves.

### **Other forms of support and encouragement**

The University Partnership provides a range of other support for would-be ECRs, including provision for some staff to secure funds to cover tuition fees for their own research degree studies. These aspects of support combine to provide a significant level of practical help for the development of the growing research community across the University. Indeed, it is important to note that in addition to building a strong research culture (Pratt *et. al.* (1999)) and helping develop the academic careers of its staff, the University's interventions are also aimed at helping to address the issue of the loss of excellent potential academics from the Higher and Further Education sectors, not least during the important transition stage from PhD study to full academic status, a significant problem that was recognised by Laudel and Gläser (2008) and also to some extent Roberts in his *Set for Success* report for HM Treasury (2002), and thereby to effect the support necessary to stimulate their academic (research) activity once they enter the sector for the first time.

UHI – primarily through the Research Office – has also provided overt encouragement to ECRs to become actively involved in external schemes such as the RSEYA (Royal Society of Edinburgh Young Academy), the Edinburgh Beltane project for public engagement, and a host of other relevant opportunities, including the Scottish Graduate School for Arts and Humanities. Staff have also been encouraged to take positions on boards and working groups within these organisations where available. Also, encouragement and practical support with grant applications has been provided by the UHI Research Grants and Contracts team, and the European Office team, to help ECRs secure funding from external sources to facilitate the development of their research. In this regard, UHI has achieved a notable range of success with the Scottish Funding Council's Innovation Vouchers scheme (Interface, undated).

A significant investment of approximately £150k annually has been made in e-based library resources, following a staff and research student survey in 2014 to determine the journal and e-library stock required to meet current and future research needs. While this is being used to fund a range of subscriptions to key journals, a portion of the funding has been reserved to facilitate one-off access to journals and other e-based resources that the University had not subscribed to, via the British Library facility. In this way, the University is able to track and monitor actual usage of resources and then take conscious decisions on whether to extend the range of subscriptions or simply to continue to make resource available for access on a case-by-case basis through the British Library. This approach also ensures that ECRs are able to access whatever e-based materials and resources are relevant to their own research needs. Furthermore, UHI has also benefitted from a number of unique collections, housed in its Academic Partners, and so ECR's have access to a wealth of research-related resources such as Gaelic language resources at Sabhal Mòr Ostaig, Theological texts at Highland Theological College, and Marine Science resources and artefacts – not least derived from The Challenger Expedition (1872-1876), housed in SAMS (Scottish Association for Marine Science).



## **BARRIERS TO IMPLEMENTATION**

Of crucial importance at the outset was the need to establish exactly who constituted an ECR in UHI. The RAE's (2008) definition of an ECR (and that of the subsequent REF) as an independent academic researcher was not entirely appropriate, particularly noting the institution's largely FE-based roots and the young University's orientation towards learning and teaching. In broad terms, ECRs in UHI were considered to be staff who were seeking to engage in research activity for the first time, or who were returning to research activity following a (sometimes lengthy) period of inactivity. Once this had been established, there were a number of barriers that needed to be overcome in order to encourage would-be researchers to become ECRs, and some of the most significant of these are considered below.

### **Institutional Barriers**

The governance and organisational structure and geographic spread of UHI presents an obstacle to the consistent implementation of initiatives for the development of ECRs. UHI is highly unusual, if not unique, in that it does not employ staff directly but rather staff are employed by each Academic Partner within its federal structure. Therefore, the University is unable to demand engagement in ECR initiatives but has to rely on the goodwill of participating institutions. Each Academic Partner also offers different job titles, contracts and terms and conditions, meaning that 'a one size fits all' approach simply does not work, resulting in ECRs having different access to research opportunities across the partnership. Initially it had been a challenge to convince all partner organisations of the need to engage in research activity and to give potential ECRs an allowance of time to engage in research.

Again due to the unique nature of the federal structure, before becoming part of UHI there was no need to capture information about staff's research activity in the FE colleges and as such there was no information available to identify potential ECRs. Indeed, the University does not operate a single Human Resources system across the partnership and this causes difficulties in terms of communications and data collection.

These unique institutional barriers also produced an additional barrier that can be seen in the response to the seedcorn initiative, which was the first formal intervention by UHI aimed at developing ECR engagement. Although the initiative was generally well received, and a number of action-based research activities were undertaken (McNiff, 1988), there was an undercurrent of concern about the seeming encroachment of HE into FE territory and the associated potential for subconscious bias and unease among some staff. Interviews with staff who had engaged in the seedcorn initiative revealed that there was occasionally perceived to be an underlying tension between FE and HE cultures, and that the addition of research into the mix at UHI compounded that tension for some, while being highly welcomed by others. This mirrors the situation described by Brotherton (1998: 311) in his own work in this area.

### **Financial Barriers**

A further key barrier was, and remains, finance for the entire HE sector in the UK. At the time the first concerted efforts were being made to develop opportunities for ECRs at UHI the world banking crisis of 2008 occurred, the aftermath of which has affected HE and FE budgets from the UK and Scottish Governments ever since (for example see Scottish Funding Council (undated) for budgets). Thereafter, Academic Partner Principals were required to deliver increasing FE and HE taught programmes and courses while receiving less money. This proved challenging when seeking to build research across a new HEI, which necessarily involves the investment of new resource or re-direction of existing resources.

The financial barrier was compounded by the highly structured context for teaching and learning that exists in an FE college setting, within which all tasks associated with teaching, administration, and personal development, are scheduled with strict time allocations at an individual level. This left very little time for staff to develop their research potential (Laudel and Gläser 2008) within 'core' hours, and only a relatively small number were prepared to contribute to that development in their non-contracted hours, and particularly during the lengthy summer holiday period (which still mirrors the school holiday closures).

While the general financial constraints outlined above are not unique to UHI, the issues relating to the involvement of FE colleges within a university setting is highly unusual. However, what marks UHI out as unique in terms of financial obstacles is that it is a new university, having only secured University Title in 2011.

As Bazeley states:

In the highly competitive funding environment of the last decade, a new generation of academic researchers has found it difficult to compete with those who have long since established their credentials, and who are well known to those assessing, advising or making funding decisions. (Bazeley, 2003, p. 257)

If even ECRs in established research intensive universities are finding it difficult to secure funding for research projects, the problem is compounded for those wishing to become ECRs at UHI in a newly established university which has a tertiary education focus.

### **Personal Barriers**

The opinions of prospective ECRs were gathered from a number of sources, including: informal and structured personal interviews; discussion in forums such as committee meetings; responses to surveys; and via applications for funding for schemes such as the University's mini sabbatical initiative and subsequent feedback reports.

The issues identified by ECRs at UHI as obstacles to furthering their research careers are by no means exclusive to UHI. However, the difficulties faced by the prospective ECRs at UHI are more likely to be experienced by those commencing research activity from a non-traditional starting point e.g. coming from an FE based background or those returning to HE following a lengthy career break.

The feedback which was collated and analysed identified the following personal barriers to ECRs at UHI:

- 1) a lack of understanding about what research actually is;
- 2) a fear of statistics and a lack of confidence in their ability to develop research skills/research methods to a suitably high standard – particularly evident among some older staff;
- 3) a lack of knowledge and information about 'where to start' in terms of developing a research idea and project;
- 4) A lack of formal research qualifications, such as the possession of a higher degree, or access to colleagues locally with higher degrees who were willing to act as informal or formal mentors;
- 5) a fear of failure and/or a concern that their research interests would not be shared by others;
- 6) a lack of time both to engage in the development of their research plans and then to undertake the work;
- 7) a concern about possible lack of support by peers and senior colleagues – including line managers; and a sense that their efforts would not be viewed as an important contribution to the institution;
- 8) a sense of isolation at a number of levels; and,
- 9) a lack of resources and/or lack of knowledge about where to go to in order to seek help and advice, e.g., how to access journal-based research papers in their chosen areas.

It was clear that in a context where research had been viewed as a junior partner to teaching and/or where there had not hitherto been a significant culture of engagement with research, these issues needed to be addressed if the schemes in support of ECRs were to be successful.

Conversely, although UHI has many unique barriers to the development of ECRs, its very structure and relative youth can also be seen as an advantage in that there are fewer traditions and protocols which can sometimes stifle invention and ingenuity in longer established institutions. At UHI, if a good idea for an initiative can be presented and a strong case made and agreed, this can translate into implementation relatively quickly. This creates a 'can do' attitude, where risks can be taken and helpful gains achieved.

### **CURRENT AND FUTURE DEVELOPMENTS**

UHI is now at a further important transition point in its history and its support for the developing careers of its ECRs. There are a number of new schemes and initiatives underway which commenced in the 2015/16 session, three of which require some consideration here.

### **Research Clusters**

Research Clusters have been created based on the four Main Panels (see REF, 2012) associated with the 2014 REF submission, namely: Health; Humanities and Arts; Society, Innovation, Landscape and Knowledge; and Marine, Environmental Science and Engineering. The purpose of these Clusters is to address the future needs of both the University's general research interests and also its preparations for the next iteration of the REF. Importantly for ECRs, the Clusters are taking on responsibility for a range of relevant discipline-related mentoring, seminar series, training and development schemes, which, it is hypothesised, can be more effectively tailored to the needs of the academic staff associated with the Clusters than a more general University-wide approach can achieve. There are also plans to develop in-house review of grant applications in association with which ECRs will gain real and practical advice from more experienced researchers when applying for their first grants.

This initiative is a pan-University project whereby all staff and postgraduate students (research active or prospective researchers) are free to join the Cluster that best represents their own research interests and there is no formal membership *per-se*. It is acknowledged that some activities and research interests are cross-disciplinary, and so staff are able to take part in any relevant programme or initiative that is being run by any Cluster.

It is relatively early days for the Clusters but evidence from the first year of operation is providing encouraging signs that they will be a helpful contribution to the growing research culture across UHI (see examples at UHI, 2016 b).

### **Research/Teaching Linkage Project**

The second initiative is in respect of the development of a new approach to Research/Teaching Linkage (RTL), under the working title: "Developing Research-driven Curricula at UHI". The initiative is being co-led by the Dean of Research and the Professor of Pedagogy and is currently in its pilot stage. This initiative seeks to develop the potential and capacity of undergraduate students to engage with modest, coordinated, research projects in their final year of study. It is intended that these research projects will address real needs of SMEs (Small and Medium sized Enterprises), community groups, and other interested bodies in the Highlands and Islands region and will stimulate students to progress to advanced academic study and staff to become ECRs.

There are a range of ways in which quality and contribution will be assured and a high standard of research output produced that will be of real and lasting benefit to the organisations involved, the students and the staff. In part, this will open up the opportunity for co-publication of the research in a variety of academic and other outlets. In this way, some of the seeds of excitement about research will be sown in the lives of undergraduates (the ECRs of the future). This positive engagement of ECRs with collaborative research, as a way to secure a 'foothold on the academic ladder', particularly for female academics, was suggested in the work of Tynan and Garbett (2007, p. 413). In addition, it is

intended that the partnership and collaborative approach between non research active staff and staff who are experienced researchers will result in further research activity.

This unique approach to RTL builds on other work in the UK HE sector, including that of Vertically Integrated Projects at the University of Strathclyde and the Student as Producer model at the University of Lincoln<sup>2</sup>.

### **Support for Academic Writing**

A third initiative is due to commence in November 2016, led by the UHI Professor of Pedagogy under the auspices of the LTA, in the form of an Academic Writing Programme specifically aimed at would-be researchers and ECRs. The programme takes prospective journal authors through the stages necessary to identify and refine their project titles and hypotheses, gather evidence and information to feed into their output, analyse the material, reach conclusions, and then write-up the journal article in the style that is relevant to their intended publication outlet. The initiative is also associated with a link to the Journal of Perspectives in Applied Academic Practice (JPAAP, 2016) which has been created specifically by a collaboration of primarily Scottish universities to allow ECRs to hone their skills in publishing, educational scholarship, and research. Articles in the Journal are fully peer reviewed and robust in their academic content, but they are all primarily from aspiring rather than established researchers.

### **CRITICAL ASSESSMENT**

In the early stages of the period under review, it was recognised that a stronger and growing base of research engagement across UHI was required. In the light of this, a number of initiatives were launched to help increase momentum. However, although these achieved some measure of success in their contexts, and served to whet the appetites of a growing number of staff to take an interest in their own research/advanced scholarship potential, there was little overall coordination and leadership and there was no clear overarching strategy for the longer term development.

This situation began to change from 2010, with the introduction of a number of development and support schemes in association with the work of the RPG, which began to provide shape and focus to the efforts. From 2010-2011, these developments remained relatively loosely connected and were implemented as needs and ideas arose. But under the leadership of the Dean of Research, the strands of activity and initiatives began to be aligned more deliberately and were aimed at delivering the goals and intentions of the overarching UHI Strategic Plan.

However, the decision by UHI actively to pursue rDAP (research degree awarding powers), affected the approach that was taken to the development and embedding of a strong research culture across the University. It necessarily involved investments in ECR and PGR student support, as well as providing specific resources for use by all research active staff. This was given further impetus in the light of the University's success in the 2014 REF, which delivered a transformational impact in terms of

the University's self-belief in its ability to engage with research at the highest level, and how to go about this in the longer run.

By the time of the 2014 REF, the University's engagement with the exercise was highly coordinated centrally, by the Dean of Research. This led to a submission of 68.1 fte staff (equating to 81 staff head count) to 6 UoA, and the attainment of World Leading excellence in all areas. This performance saw the University rise 33 places in the Times Higher Education's (THE) Quality League Table for the exercise (compared to UHI's position following the 2008 RAE) and move into the top half of UK universities, up from 86<sup>th</sup> to 63<sup>rd</sup> position (THE, 18-31 December 2014, No. 2,183).

The transformation in the underlying staff base, and their engagement with research (many at early career stage) can be shown from data derived from staff surveys conducted in 2010, related to the institution's University Title application, and in 2014, related to the University's rDAP application.

*Table 5: Participation in Research Activity by Academic Partner progression from 2010 to 2014 (anonymised aggregate data used with permission of UHI)*

UHI Academic Partner	Total no. of eligible staff - 2010 survey	Have participated in research which has produced some output (unique value)	Total no. of eligible staff - 2014 survey	Have participated in research which has produced some output (unique value)
Argyll College	10	0 (0%)	37	7 (19%)
Executive Office	21	18 (86%)	56	32 (57%)
Highland Theological College	9	9 (100%)	6	5 (83%)
Inverness College	84	15 (18%)	67	21 (31%)
Lews Castle College	46	17 (37%)	38	22 (58%)
Moray College	73	14 (19%)	50	14 (28%)
NAFC Marine Centre	16	2 (13%)	10	7 (70%)
North Highland College	81	26 (32%)	30	12 (40%)
Orkney College	39	14 (36%)	27	16 (59%)
Perth College	113	37 (33%)	74	30 (41%)
Sabhal Mòr Ostaig	27	15 (56%)	14	11 (79%)
SAMS	32	26 (81%)	46	44 (96%)
Shetland College	29	5 (17%)	14	4 (29%)
Lochaber College/West Highland College	5	1 (20%)	34	11 (32%)
<b>Total</b>	<b>585</b>	<b>199 (34%)</b>	<b>503</b>	<b>236 (47%)</b>

Table 5 shows the spread of research engagement across the University Partnership and the broad growth in the number of staff producing research outputs, up from 34% in the 2010 survey to 47% in 2014. The data sets are broadly comparable and were completed by staff in each of the Academic Partners on a voluntary (albeit encouraged) basis but do not represent the full staff complement of each Partner. The types of outputs produced were varied, and not all would qualify for submission to the REF. When one takes this factor into account, and also the rate of staff turnover across UHI, continuing development of ECRs remains a priority for the University in order to achieve its ultimate aim for research, including direct action to ensure that ECRs are enabled to become established researchers.

In this regard, it is worth noting that the 2014 Survey revealed that 26% of staff identified themselves as being ECRs (n=130).

Furthermore, the 2014 survey revealed the following staff qualifications (directly comparable data are not available from the 2010 survey):

- 51% of staff hold higher degrees (n= 259)
- 29% of staff hold doctoral degrees (n = 144)
- 7% of staff have fellowship of a learned society (n=34)

Of those without higher degrees:

- A further 34 are working towards a higher degree (7% of total sample)
- An additional 113 have relevant experience in professional practice or industrial research and development (22% of total sample).

In summary, 80% of staff either: hold higher degrees (51%), are working towards a higher degree (7%) or have relevant professional or industrial experience (22%).

These data also serve to indicate that the interventions put in place across UHI, including those initiated by Academic Partners independently, have stimulated productive research engagement by staff across the whole of the University. In addition, the engagement is demonstrably of a higher quality now than in the past, as reflected in the significant improvement in performance in the 2014 REF submission as compared to the 2008 RAE results, with particular reference to research 'Environment' scores and research 'Outputs' scores.

## **CONCLUSIONS, OBSERVATIONS AND RECOMMENDATIONS**

The evidence provided in this study demonstrates that UHI's vision to develop the research culture and landscape for ECRs and researchers in general across the University has been met by tangible and creative initiatives. Institution-level interventions to promote, develop, and thereafter sustain staff members' engagement with research for the first time (as would-be researchers and ECRs), has been broadly effective.

It can also be concluded that a combination of approaches introduced in a staged way, rather than the introduction of a 'one size fits all' initiative, has been necessary for healthy growth to be initiated and then sustained. Interventions have then required ongoing review, oversight, and routine monitoring to ensure continuing relevance and benefit. This is because some forms of intervention have been found to be time-limited in their general relevance and benefit (e.g. seedcorn funding), and others have required development and re-framing over time in order to continue to meet ECR needs effectively (e.g. mini-sabbaticals).

Follow-up work is already being planned and taken forward to build on the successes of these advances, and particular attention is being paid to the development of opportunities for women (Tynan and Garbett, 2007), not least through close engagement with the Equality Challenge Unit's Athena Swan Charter accreditation process<sup>3</sup>.

From the experience of UHI in the development of ECR support, a number of recommendations can be offered to other institutions in respect of the development of their own ECR staff:

- Determine a vision, and then agree and implement a strategy and delivery plan that is stretching but achievable. The strategic aims and objectives of each intervention need to be identified and agreed up-front, and also an understanding of how the various strands of support are expected to work together constructively in order to deliver the University's end goal(s). In this way, a culture of engagement will result that has the institutional character automatically built into it;
- Ensure institution-level intervention is employed and driven from the senior management in order to promote, develop, and sustain staff members' engagement with research as would-be researchers and ECRs. Once a culture of engagement with research has successfully been established organic growth of interest among the research community will generate further ECR identification and activity;
- Provide strong and effective senior level leadership from an individual who has deep institutional knowledge and wide-ranging academic interests. Leadership must be accompanied by an understanding of the political and cultural nuances of the institution and an appreciation of the different research needs of a broad range of discipline areas;
- Initiate effective methods of communication and co-ordination. This can be achieved by a committee-based approach, but committees need to work in tandem with the direction and leadership provided by one or more senior university officers;
- Institute robust systems to ensure projects are individually and collectively monitored and evaluated, and revised where necessary;
- Encourage collaboration and ensure that ECRs are brought into close involvement with the work of more experienced researchers on specific projects, and that their contributions are recognised appropriately in final outputs;
- Develop a team-based approach in which the contributions of all staff (academic, administrative, and support) are valued and acknowledged, thereby encouraging staff participation and buy-in;
- Provide ongoing support of various types to help promote and engender the transition of staff from ECR to established researcher and then on to world-standard research contributor in a discipline area;



- Provide sufficient budgetary support (in amount and duration) to enable new developments to take place, while being prepared to stop funding initiatives that have run their course; and
- Promote a 'can-do' attitude.

With the above in mind, the University of the Highlands and Islands is continuing to develop its own approach to the development of ECRs, both in the form of staff members and doctoral level students, in a range of innovative ways and using a variety of approaches. UHI will seek to increase research activity in all areas and continue to develop a supportive environment within which ECRs and other research active staff are able to develop world class research excellence. It is hoped that this paper will inform and encourage other institutions who are engaging in the research journey, wherever they are located and whatever stage of the journey they have reached.

## Notes

1. Enhancement-led Institutional Review (ELIR) is the Quality Assurance Agency's quality review method for universities and other higher education institutions in Scotland. The main focus of ELIR is to consider an institution's strategic approach to enhancement, placing a particular emphasis on the arrangements for improving the student learning experience. ELIR also examines an institution's ability to secure the academic standards of its awards. ELIR is one component of the Quality Enhancement Framework (QEF), a radical approach to quality assurance and enhancement in higher education introduced in Scotland in 2003. (<http://www.qaa.ac.uk/reviews-and-reports/how-we-review-higher-education/enhancement-led-institutional-review>).
2. Although the University of the Highlands and Islands is developing its own approach, it is drawing on the experience of the University of Strathclyde in its introduction of Vertically Integrated Projects (<http://www.strath.ac.uk/viprojects/>), and the Student as Producer model at the University of Lincoln (<http://studentasproducer.lincoln.ac.uk/>) as examples of the types of approach that can be taken to horizontal and vertically-integrated undergraduate programmes.
3. ECU's Athena SWAN Charter was established in 2005 to encourage and recognise commitment to advancing the careers of women in science, technology, engineering, maths and medicine (STEMM) employment in higher education and research. However, in May 2015 the charter was expanded to recognise work undertaken in arts, humanities, social sciences, business and law (AHSSBL), and in professional and support roles, and for trans staff and students. The charter now recognises work undertaken to address gender equality more broadly, and not just barriers to progression that affect women: <http://www.ecu.ac.uk/equality-charters/athena-swan/>.

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