

**Developing inductions to support mental health and wellbeing in doctoral researchers:
Findings from a qualitative co-design study with doctoral researchers and university
stakeholders**

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Abstract

Concerns about mental health and wellbeing in doctoral researchers have grown in recent years. To address these concerns, preventative strategies that seek to mitigate the onset of poor mental health and wellbeing could be valuable. This article outlines the co-design approach adopted to generate evidence that could inform the design of inductions to support mental health and wellbeing in doctoral researchers. Over a 9-month period, we collaborated with 47 doctoral researchers from 24 institutions and 13 stakeholders from one university, collecting qualitative data via focus groups and follow-up surveys. After analysing our data thematically and making refinements based on feedback from participants, actionable strategies that could be considered in the design of induction programmes for doctoral researchers were generated and captured by five themes: *peer connections*; *supervisor relationships*; *information and resources*; *student services advice and support*; and *training and development*. Feedback on the co-design process suggested participants felt positive about their involvement, with the doctoral researchers valuing the opportunity to contribute to the development of the co-designed evidence. Further research is required to examine the efficacy of the identified strategies, but we suggest that co-design shows promise for developing inductions to support mental health and wellbeing in doctoral researchers.

Keywords: supervisor; PhD; postgraduate research; student partners; psychological wellbeing; co-production

Introduction

Concerns have grown for the mental health (MH) and wellbeing (WB) of doctoral researchers (DR; Metcalfe et al., 2018), with evidence indicating issues with psychological distress in the doctoral community (Evans et al., 2018; Levecque et al., 2017; Satinsky et al., 2021). Notwithstanding the duty of care universities have to protect the health of DRs, these figures give cause for concern as poor MH and WB can contribute to attrition (Maher et al., 2020). With the launch of the #StepChange framework (Universities UK [UUK], 2017) and University Mental Health Charter (Hughes & Spanner, 2019), higher education institutions are being increasingly encouraged to embrace a whole university approach (UUK, 2017) to promoting MH and WB in DRs (Berry et al., 2020). The whole university approach seeks to transform the university setting into a healthier environment by encouraging higher education institutions to design all aspects of university life (e.g., policy, culture, resources) in a manner that supports MH and WB of students and staff (UUK, 2017). Inherent in these calls for a whole university approach to supporting DRs is the need to acknowledge that current provision for MH and WB at universities, which some have suggested is designed for, and promoted more specifically among, undergraduate students (Waight & Giordano, 2018), might be insufficient. Indeed, DRs are likely to have different support needs given the diversity of individual backgrounds and circumstances, alongside the range of stressors that may put them at greater risk of poor MH and WB (Hazell et al., 2020). Thus, tailored support mechanisms are needed for DRs (Mackie & Bates, 2019).

Universities have been advised to consider the resourcing of MH and WB support provision for DRs, with a specific emphasis on strategies aimed at prevention and early intervention (Metcalfe et al., 2018). Accordingly, a possible way forward is to design

1 interventions that address the specific needs of DRs by seeking to prevent the onset of MH and
2 WB issues in the first instance, rather than intervening *after* such issues have arisen and
3 potentially had a deleterious effect. While the support needs of DRs can vary widely across the
4 period of study for various reasons (e.g., discipline), one phase during which DRs are likely to
5 share considerable experiential space is the commencement of doctoral study. During this period,
6 similar challenges can often be experienced; for instance, DRs may experience changes in their
7 relationships and community (Cornwall et al., 2019), a shift towards more independence (Turner
8 & McAlpine, 2011), and adjustments to facilitate new ways of thinking (Hockey & Allen-
9 Collinson, 2005).

10 Given the early challenges faced, providing support to DRs prior to enrolment and during
11 the first year is important (Greener, 2021). During the transition to doctoral study, DRs are likely
12 to have an induction that introduces them to the institution and programme of study. When
13 approached from a whole university perspective (UUK, 2017), inductions should be designed to
14 support the MH and WB of DRs. To ensure that health interventions are designed to address the
15 needs of end-users in a specific setting, end-users and stakeholders should be involved in the
16 design and development of interventions (Craig et al., 2008). Such collaborations might not only
17 help develop tailored interventions, but could also aid exploration and identification of potential
18 issues before piloting (Burkett, 2012).

19 There are a range of intervention development approaches that involve partnership with
20 end-users and stakeholders (O’Cathain et al., 2019). One such approach is co-design, which is a
21 design-led process that harnesses people’s creativity and lived experiences to inform service and
22 product design (Blomkamp, 2018). By emphasising the importance of learning from and with the
23 people a service intends to support, co-design can challenge power imbalances and empower

1 individuals to make decisions about services design and delivery (McKercher, 2020). Thus, a
2 participatory approach in which inductions to support MH and WB is designed *by DRs for DRs*
3 could hold promise to generate solutions that address the needs of new DRs, thus taking a step
4 towards addressing calls for preventative approaches to promote MH and WB in DRs (Metcalf
5 et al., 2018).

6 In this study, we explored how principles of co-design could be utilised to design
7 inductions to support MH and WB in DRs. This article describes and appraises the co-design
8 methods used to generate evidence that can aid the development of inductions seeking to
9 promote MH and WB in DRs. The specific objectives of the empirical study were to: (i) explore
10 the induction and transition experiences of early-stage DRs; (ii) identify content for induction
11 programmes to promote MH and WB in DRs based on early-stage DRs perspectives; (iii) engage
12 with DRs and university stakeholders in the co-design process to develop a prototype; and (iv)
13 appraise the acceptability of the co-design experience of DRs and university stakeholders.
14 Consequently, we sought to provide guidelines that could be used by academic leaders,
15 university support services, doctoral schools, and supervisors to improve support mechanisms for
16 DRs.

17 **Method**

18 **Researcher Positionality**

19 To better understand how our positions as researchers shaped the research process, we
20 contextualise our backgrounds. PJ is a female, White Irish, early career researcher working in the
21 UK, who completed her PhD as an international student three years before the research project
22 started. As a full-time academic, PJ was also supervising several DRs. Her interest in the
23 research topic stemmed from her own experiences as a DR, a period during which she sought

support for her mental health. RS is a female, White British DR, whose interest in the topic arose from her own experience of the challenges of returning to study as a mature student with caring responsibilities. LJ is a female, White British DR, whose interest in the topic arose from discussions with her peers and of her own study experiences. Based on our backgrounds, we were aware that we held insider and outsider status throughout the project, which offered opportunities and presented challenges. Our researcher career stages gave us contemporary, experiential knowledge of the doctoral education environment. While this helped us to understand the experiences and views of the DR participants, it was vital for us to remain critically aware of this insider knowledge and challenge our own assumptions while collecting, analysing, and presenting our interpretations. We were also cognisant that our backgrounds differed to many of the participants'. Consequently, we were aware of the importance of being open, deeply interested, and committed to understanding the participants' perspectives and views.

Procedures

Ethical approval was granted by our institutional ethics committee. All participants provided consent to take part. The proposed content for the DR induction was developed through a 4-stage, co-design process (Figure 1) detailed in the following sections. Our co-design process was guided by the steps involved in approaches to the development of health-improving interventions (O'Cathain et al., 2019), including: *conception*, by identifying concerns with MH and WB in DRs; *planning*, by conducting a systematic review (SR) and recruiting DRs and university stakeholders to guide the co-design; *designing*, by generating ideas and making decisions about intervention content through continued engagement with participants; and *creating*, by producing an overview of a proposed intervention.

[FIGURE 1]

Stage 1: Initial Evidence Gathering and Stakeholder Engagement

Systematic Review

In addition to consulting existing literature on MH and WB in DRs (Hazell et al., 2020; Metcalfe et al., 2018), a SR was conducted by members of the research team to summarise empirical evidence on MH and WB in early-stage doctoral students (ESDS) published up to November 2020 (Jackman et al., 2021). The SR did not identify any interventions or induction programmes specifically designed for MH and WB in DRs, but by synthesising evidence on factors that could facilitate and inhibit positive MH and WB in ESDS, it provided valuable insights that contributed to our Stage 1 outputs (see below).

Stakeholder Consultation

Thirteen individuals, hereafter referred to as the stakeholder group (SG), were recruited from a single, teaching-intensive, UK university, where the DR community ranges from 400-600 researchers. This SG consisted of 10 members of staff working closely with DRs (e.g., student services, postgraduate coordinators) and three DRs. We purposively sampled staff members based on the relevance of their role to DRs and invited them to join the SG. Additional staff members were also recruited by snowball sampling after being recommended for inclusion at the first stakeholder meeting. Recruitment of the DRs was facilitated by the postgraduate coordinators. We met 10 members of the SG for the first time in November 2020, when we provided an overview of the project aims and clarified their role. The SG could ask questions and made further suggestions on individuals to join the group, as well as areas for exploration in our DR focus groups. We sent a recording of the project overview to the three members who joined afterwards and invited them to ask questions.

Focus Groups with Doctoral Researchers

We regarded the DRs as the leaders throughout the co-design process, whereby their ideas on induction design constituted the starting point for shaping, and subsequently refining, the proposed programme. As such, the “power” within the co-design process remained with the DRs (McKercher, 2020). To ensure the findings resonated with the experiences of DRs who were in, or recently completed, the early stages, we recruited DRs in the 1st-2nd year of full-time or 1st-4th year of part-time degrees. Before the focus groups, participants completed an online demographic questionnaire. Forty-seven participants (female $n = 30$, male $n = 17$) from 24 institutions were recruited via social media posts (e.g., Twitter) and emails circulated at five UK institutions. Most DRs were: aged 29 or under ($n = 31$); enrolled as domestic students ($n = 42$), studying at an institution in the UK ($n = 37$); White ($n = 36$); and had previously attained a Masters degree ($n = 41$). In terms of academic discipline, the participants were primarily undertaking research in social sciences ($n = 22$), followed by medical sciences ($n = 13$), science, technology, engineering, and mathematics (STEM) ($n = 7$), and arts and humanities ($n = 5$). Of the 47 participants, 17 reported prior history of poor mental health before commencing their PhD, with two preferring not to say, and the remaining 28 indicating no prior history of poor mental health. All participants received a £10 voucher as an inconvenience allowance.

In January-February 2021, 12 focus groups facilitated by PJ and LJ, both of whom had extensive experience in qualitative interviewing and focus groups, took place via Microsoft Teams (M length = 94 minutes). After providing background information, participants were asked to discuss their doctoral study transition experiences and perceptions of factors impacting MH and WB in DRs in the early stages. Embracing a participatory approach, participants were then asked to discuss the following: “If you were able to design an induction package for DRs,

what would it consist of?” Furthermore, participants were asked to specify when and how content should be delivered, and by whom. The focus groups were recorded and transcribed verbatim. During and after the focus groups, the facilitators made reflective notes, with debriefing sessions taking place between the facilitators to discuss initial impressions.

Data Analysis and Outputs

Focus group data were analysed inductively using thematic analysis (Braun et al., 2016). After familiarising ourselves with the dataset through reading and re-reading transcripts, we generated codes by engaging with data concerning the suggested content for DR inductions. PJ then combined similar codes into preliminary themes, which were reviewed by LJ and RS before a team meeting. This resulted in further refinements to the proposed content and labelling of the five themes, which represented the core components of the first prototype shared in Stage 2. At this point, we considered findings from the SR (Jackman et al., 2021) to understand how the DRs’ perspectives resonated with the extant literature. Given that our SR included participants on research doctorate and taught doctorate programmes, but the focus of the current study was on DRs, we critically examined how findings from our SR might or might not resonate with the experiences of DRs recruited for our study and the intended end-users. Consequently, we further refined our themes, adding more elaborative information on the proposed components (e.g., additional strategies for self-care identified from our SR were added to the actionable strategy, ‘website and resources’). A summary of the proposed content was generated and developed into a 10-minute video.

Stage 2: Prototype Sharing and Stakeholder Engagement 1

Doctoral Researcher Surveys

In April 2021, all 47 DRs were invited to watch the video explaining the first prototype and to complete an online survey. This asynchronous approach was selected to enable participants to complete this at a convenient time. The survey asked participants to offer qualitative feedback on the prototype (i.e., likes, dislikes), outline further suggestions on how it could be modified or improved, and explain why they felt each component of the prototype could – or could not – be helpful. Moreover, participants were asked to rate the perceived importance of each component on a 5-point Likert scale ranging from 1 (*not at all important*) to 5 (*very important*). Finally, to assess the acceptability of involvement in the study, participants were asked to respond to eight items adapted from research on co-production (Brooks et al., 2020) and to describe their participation experience via an open-ended question. Overall, 35 DRs (74.5%) completed this phase.

Data Analysis and Outputs

The qualitative responses were reviewed and further refinements made to the prototype. Overall, the DRs were very positive about the content. Nine respondents provided comments related to potential areas for improvement, which we reviewed, critically discussed as a team, and used to refine our themes. In many cases, the comments the DRs provided were observations of potential challenges (e.g., peer support recruitment), which stayed with us and proved valuable in the write-up (see Findings and Discussion). After finishing our analysis, we created a table for each component detailing the following information: component description; purpose; timing; personnel; and rationale for inclusion.

Stage 3: Prototype Sharing and Stakeholder Engagement 2

Stakeholder Focus Groups

In May 2021, the SG were sent a hyperlink to 6-minute video detailing instructions for their next contribution. Each stakeholder was asked to review the table of proposed contents, and to consider their general views on it and ideas that could help to improve the prototype before taking part in one of four focus groups. To mitigate any potential power asymmetries between the focus group facilitators (PJ and LJ) and participants (e.g., between staff and DRs), PJ facilitated three staff focus groups, while LJ facilitated the DR focus group. The involvement of the SG enabled us to draw on their knowledge and experiences, which deepened understanding of implementation challenges and led to further refinements. Each focus group was recorded.

Data Analysis and Outputs

A list of suggested refinements to the proposed programme were generated for each focus group. PJ analysed these refinements and categorised each suggestion based on the component it pertained to. We then analysed the suggestions for each component before meeting to discuss these and make refinements. Most refinements made related to implementation, with the SG outlining potential practical challenges, including those that resonated with the DRs' comments in Stage 2 (e.g., recruitment and retainment of peer mentors), and offering suggestions based on their own experiences of working in the university setting (e.g., staff highlighted the value of regular interactions with DRs over time). PJ produced a written report detailing the components of the third prototype and ratings of the perceived importance of each component.

Stage 4: Prototype Sharing and Stakeholder Engagement 3

Stakeholder and Doctoral Researcher Surveys

In July 2021, members of both the DR and SG received a hyperlink to the third prototype and a survey soliciting final feedback. Participants also rated the acceptability of the co-design process and reported perceptions of their study experience in the same manner as Stage 2. In total, 12 DRs (25.5%) and 11 stakeholders (84.52%) completed this phase.

Data Analysis and Outputs

Feedback generated through the qualitative surveys completed by the DRs and SG were analysed using the same process outlined in Stage 2. The feedback was overwhelmingly positive, with only minor refinements made. Descriptive statistics were calculated for quantitative responses concerning the acceptability of the co-design method assessed in Stage 2 (DR group) and Stage 4 (both groups). The qualitative responses were analysed thematically (Braun et al., 2016), similar to Stage 1, and added to the final written report.

Findings and Discussion

Through the co-design process, five components that participants felt could contribute to the development of inductions to support MH and WB in DRs were created, namely: (i) peer connections; (ii) supervisor relationships; (iii) student services advice and support; (iv) information and resources; and (v) training and development. The perceived importance of these components varied, with peer connections ($M = 4.46$) and supervisor relationships ($M = 4.31$) rated most important, followed by information and resources ($M = 4.20$), student services advice and support ($M = 4.17$), and training and development ($M = 3.97$). In the following sections, we present the five components, outline the acceptability of the co-design approach, and describe the perceived value of the co-design process. Furthermore, we integrate the SR findings (Jackman et

al., 2021) and extant literature, with supporting participant quotes drawn from the focus group data unless otherwise specified (i.e., qualitative survey responses). Further information on findings is detailed in Supplementary File 1.

Induction Components

Peer Connections

This component reflected the widely emphasised importance of connecting with other DRs in the early stages. In addition to being ranked as the most important component in the quantitative ratings, the peer support scheme was the most frequently cited component of the induction that the DRs liked. One participant said, “It would help mitigate the 'loneliness' of the PhD journey” (DR13). The sharing of stories by doctoral and early career researchers about their experiences was widely suggested as an activity that could benefit new starters, thus aligning with work that reported sharing of experiences as a valuable outcome of meeting new peers in a DR peer support group (Crooks et al., 2021). As DR4 commented when reflecting on their own induction experience:

I feel it would have been a great help to have a couple of students in various stages of their journeys speaking in the induction. So somebody that’s in second year, somebody who’s in final year, somebody who is in part-time study, so you can hear their reflections and you can get an insight from them.

In addition to getting an insight into the doctoral journey, stories could create a sense of relatability that might help to address self-deprecation concerns, a significant issue in DRs (Byrom et al., 2020; Hazell et al., 2020). As DR7 said:

It would be nice to have different stories that new PhD researchers could relate to, because then I think that could actually help with imposter syndrome, because that's what

1 it will be like at the start. But then if they see a story of someone who's almost identical
2 or in the exact same situation they are, I think that could really help with that easing in.
3 This quotation reflects the potential value of storytelling. From a narrative perspective (Hagger
4 & Smith, 2018), stories could help DRs to gain insights into the sociocultural landscape of
5 doctoral study and affect their thoughts, emotions, attitudes, and actions during the transition,
6 thus becoming a valuable resource to make sense of their experience and aid acculturation to the
7 new environment. Participants also felt that pairing new DRs with more advanced DRs through a
8 peer support scheme could help the transition, giving new starters someone to talk to and
9 constituting an informal knowledge-sharing method, as conveyed in the following extract:

10 As childish as it sounds, a buddy system. It could be somebody who's even got the same
11 supervisor as you, or someone you've got some joint interest with that is your go-to. It
12 works both ways; you can learn off each other. But you've got that one person that you
13 know has experienced that. (DR3)

14 I don't think it's childish at all. I think it's a really good idea. It could be buddying or
15 some sort of mentoring aspect to a PhD. I think that's a really, really valuable suggestion.
16 (DR2)

17 One participant currently in a peer supporter role commented on the intrinsic rewards of
18 providing support to new DRs and discussed benefits for their own knowledge: “it’s really nice
19 now being able to answer other people’s questions and it’s also helpful for me. I feel I’m
20 learning stuff from them as well...we are just supporting each other, rather than it being a power
21 dynamic” (DR22). While feedback on this component was hugely positive, some constraints to
22 implementing peer support schemes were also raised, especially in terms of the time required.
23 Several SG members commented on the need to clarify boundaries of peer support and develop

1 training for peer supporters. A postgraduate coordinator commented on potential difficulties with
2 recruiting later-stage DRs:

3 Ideally, the 3rd year students can act as a peer support for the 1st year students, but the issue
4 is that quite often, the 3rd year students go into a period of writing and are stressed out, so
5 the system can work quite well for a few months, and then it comes to a halt. (SG1)

6 This point was also echoed by some of our DRs, who worried that the potential time involved
7 could make fulfilling the role difficult. As DR37 said:

8 It's not that I dislike this aspect [peer support], I'm just wondering how it would work
9 practically? PhD students that I know, including myself, are all very busy and already
10 struggling to keep up. I wonder about giving them yet another task to do! (qualitative
11 survey 1)

12 As a result of the potential difficulties with recruitment, it was suggested that institutions would
13 need to acknowledge and reward the peer supporters' time, offering suitable incentives to
14 participate: "I think having more incentive for PGR students to get involved with the new PGR
15 students is actually something that probably needs to be worked on" (DR45). Beyond this,
16 activities where DRs could build their peer support networks more informally were
17 recommended, especially for those moving to a new institution or community. Connecting with
18 other researchers in a department and/or lab and engaging in socialisation activities throughout
19 the first year, and PhD as a whole, were widely suggested. Such activities needed to be engaging
20 and encourage participation, while also being accessible and inclusive. Overall, connecting with
21 peers appeared to be a mechanism for new DRs to develop a sense of membership within the
22 doctoral community, thus developing their sense of social identity (Tajfel, 1978) and helping
23 them feel supported, substantiating the value of peer support for DRs (Sufyan & Ali Ghouri,

2020).

Supervisor Relationships

Supervisors were viewed as an integral support mechanism for new DRs, thus aligning with findings from our SR (Jackman et al., 2021). Supervisory teams were advised to take steps towards building high-quality supervisor-researcher relationships. The DRs emphasised the need for supervisors to spend time with new DRs during the induction period to clarify each other's expectations, working styles, and outcomes to work towards. DR6 spoke about their experience:

We set quite clear boundaries on how I wanted feedback to be given and what my working style was, because obviously supervisory fit and working style can be such an important thing in success in a PhD and wellbeing of a PhD student. So how I prefer to work, whether I'll send through drafts that are bullet points or are a more cohesive, formed document, and the turnover time for when to expect feedback back, laying out almost a ground agreement on what we want the next three years to be. That has been super-beneficial for my mental health.

Both the DRs and members of the SG also highlighted the importance of supervisors being aware of individual circumstances (e.g., socio-cultural background) and how these may influence their studies. The need for tailored supervisory support is important as myriad personal circumstances (e.g., work-life imbalance) have been identified as detrimental for MH and WB in ESDS (Jackman et al., 2021). Beyond the initial induction, there was widespread agreement on the need for supervisors to provide direction, reassurance, and indications of progress, with weekly or fortnightly meetings initially recommended. DR10 recalled the benefits of regular meetings and support:

1 It [regular meetings] definitely helped at the beginning to make sure you're on track, and
2 even gave reassurance that you're doing the right stuff, that you haven't wasted a whole
3 month of time. If you meet even for 10 minutes every week to just say, "Okay, this is
4 what I've done." "Yeah, you're doing the right things. Maybe focus on X, Y and Z for the
5 following week".

6 Given uncertainty surrounding research structure and expectations is a primary stressor for first
7 year DRs (Cornwall et al., 2019), the value of direction and reassurance is unsurprising. By
8 providing structure and reassurance in the early stages, these strategies could offer an
9 opportunity to scaffold self-agency development (Berry et al., 2020). It was also suggested that
10 supervisors could facilitate peer connections by, for example, introducing new starters to other
11 DRs they were supervising. The general view expressed by the DRs and SG was that raising
12 awareness of the challenges faced by new DRs and educating supervisors on strategies to build
13 strong relationships could enhance existing training and supervisory practice development
14 activities.

15 *Advice and Support from Student Services*

16 Embedding an activity offering information on student support services (e.g., finances,
17 English language, wellbeing) at the institution in induction programmes was strongly
18 encouraged. The DRs recommended that these support services should develop and highlight
19 dedicated supports and resources (e.g., self-help strategies) that can be accessed, with a webpage
20 dedicated to DRs. These findings echo calls for universities to develop tailored non-academic
21 support for doctoral students and to clearly highlight the bespoke nature of support offered to this
22 community in promotional materials (Waight & Giordano, 2018). DRs who reported past history
23 of poor mental health highlighted the importance of creating mechanisms that encouraged rather

1 than discouraged engagement with university support services through, for example, making the
2 administrative process as user-friendly as possible. Furthermore, to avoid creating a negative
3 perception or expectation of poor MH and WB, it was recommended that MH and WB activities
4 (e.g., workshops), along with supporting resources (e.g., videos, documents), should be positive
5 and practical in their focus. This reinforces the need to construct models of practice that are
6 developmental rather than deficiency-based (Hughes, 2021) and to challenge the cultural
7 narrative that poor wellbeing is an inevitable consequence of doctoral education (Byrom et al.,
8 2020). As DR11 said:

9 Learning some personal coping strategies to try before going on to access a service would
10 be really useful. Even just simple things, like time management, the sorts of skills that
11 you need to get through a PhD and obviously do impact your wellbeing. So just teaching
12 the skills rather than just signposting to what's out there if you get to the point where you
13 think you need help, the kinds of things that might prevent you from getting to that stage.

14 Participants also expressed that support services should provide information pre-arrival and
15 could remind DRs of these supports over time (e.g., via training activities), which could be
16 tailored to specific stages of the doctoral journey that are known to be more challenging (e.g.,
17 approaching assessment points – Jackman et al., 2021). The need to maintain the visibility of
18 non-academic support available is substantiated by the positive association between perceptions
19 of support and health outcomes (Thoits, 2011).

20 ***Information and Resources***

21 The DRs highlighted the importance of being provided with, and having access to,
22 information and resources to support their transition. The tenets of the stress buffering model of
23 social support (Cohen & Wills, 1985) can explain the value of information and resources,

wherein this support could help to buffer against the stress that might be elicited by the challenges faced in the doctoral study transition. A consistent view was the need for long, thin inductions, as many felt the volume of information shared in their inductions was overwhelming.

Two DRs recalled:

It was a half-day induction and they gave me... it must have been half a tree's worth of documents and leaflets, and it was so detailed...I remember getting back to my room and saying to my partner, "I can't do this. It's too much!" (DR6)

I joined one start-up session – I don't remember what it was about – but it was at the university and it was all a bit overwhelming. So for me, it would be a recurring forum where I can tap in on different occasions that would be helpful for me. (DR13)

Echoing the viewpoint of DR13, a staggered approach to disseminating information was preferred in the first month, with further refresher opportunities at key milestones later in the first year advised:

If you can break down what students need to know on day one versus by the end of the first week versus by the end of the first month and stagger it across that time, put it in order of priority, I think that would be the best way of getting us to actually remember it and value each one. (DR11)

The need to provide relevant information (e.g., checklist, induction activities, student services, medical centre registration) in advance of the formal enrolment was highlighted, aligning with the proposed first stage of doctoral support needs (Greener, 2021). The DRs called for a website containing information and resources that was accessible and easy to navigate. In addition to providing practical information about the university (e.g., library, parking, facilities, ethics) and

links to relevant groups (e.g., societies), being able to access a list of key contacts was recommended.

Training and Development

Consistent with theoretical models of psychological wellbeing that highlight the perceived benefits of personal growth and/or the development of competence (Ryff, 1989; Deci & Ryan, 2001), participants suggested that the opportunity to identify areas for development and subsequently access resources (e.g., courses on research methods) to develop competencies could be beneficial. As DR22 commented:

We had to do a SWOT analysis, strengths, weaknesses, opportunities, threats, and I think actually having practical things can help. So if you know a weakness is literature searching, then you could sign up for skills courses that could help.

An important point expressed by the DRs, however, was the need to ensure that this process did not become a bureaucratic “tick-box exercise” (DR22). Rather than reflecting on developmental needs on an annual basis, as was the case for some participants, the DRs encouraged the integration of such conversations into regular supervisory meetings.

General Implementation Considerations

After reviewing the proposed induction programme at the various stages, the SG emphasised several implementation considerations. First, any new ideas implemented at an institution would first require an audit of existing activities and resources. Second, the need to adapt any induction programmes to the context in which it was being delivered to account for institutional differences (e.g., cohort size, intake date) was highlighted. Third, institutions must ensure that equality, diversity, and inclusion are at the heart of DR support. Moving forward, we suggest that when implementing findings from our study, institutional support services should

work in partnership with under-represented groups (e.g., international, ethnic minorities, disabled people, LGBTQ) to ensure services and resources are accessible, inclusive, and culturally sensitive. Fourth, the importance of cross-institutional coordination, collaboration, and communication was recognised; support for induction programmes should be led by a well-resourced central point, with localised departmental and discipline-specific support. The need for multi-level support for new DRs, stretching beyond the central doctoral support team, was emphasised:

The whole institution nature of what has been designed needs to be really emphasised as a selling point as historically PGR support is just left to Doctoral/Graduate schools and that is not good enough. It is getting better, but this could really help change the landscape. (SG13, qualitative survey)

Finally, given that many of the proposed induction components could need additional training and resources, the investment and time required to support this should be considered.

Acceptability of Co-Design Method

Ratings of the perceived acceptability of the co-design method for the DR and SG indicate participants were generally positive (Table 1). The number of DRs who completed the qualitative survey in Stage 4 dropped. Despite this, the perceived ratings suggest that the benefits of the co-design process outweighed the potential costs. As one stakeholder said:

The co-design process may be seen as relatively demanding of stakeholders' time and effort. However, this enhances the quality of the outcome and definitely worth the time and effort expended. (SG7, qualitative survey)

[TABLE 1]

The Value of Co-Design

1 Drawing on the qualitative survey responses of the DRs, we generated six themes
2 (italicised) representing perceptions of their participatory experience. The DRs felt the co-design
3 process was empowering and were grateful they *felt listened to and valued*. As current DRs, they
4 believed they had relevant experiences that could help inform and shape the research project:

5 It was refreshing being asked to contribute to the development of an induction package as
6 a current postgraduate researcher. It felt as if we were best placed to comment upon the
7 induction process and what might have helped us. It felt as if our voices were being heard
8 and valued. (DR23, qualitative survey 2)

9 Thank you so much for involving the participants and putting us at the heart of the
10 research. (DR24, qualitative survey 2)

11 Relatedly, taking part in the study was viewed as an opportunity for *promoting change* through
12 helping others. Unfortunately, one participant withdrew from their doctoral programme, but
13 hoped their contribution could improve the experience for others: “I hope my comments will
14 help systems to be created to negate others having to feel the way I did” (DR1, qualitative survey
15 1).

16 Beyond the potential value of their input to the research, several personal benefits arising
17 from participation were reported. Taking part *offered an opportunity for reflection*, wherein the
18 DRs made a concerted effort to think about their own experiences of doctoral induction and
19 transition, as well as reflecting on the support available at their institution. A large part of the co-
20 design process involved participants taking part in a focus group, discussing their experiences of
21 studying as an early-stage DR, and both the positive and negative impact of this on MH and WB.
22 Many conveyed how taking part in the focus groups made them realise that some of their
23 experiences were *shared experiences*, helping them validate any negative experiences and

1 feelings arising as a result of doctoral study. They felt reassured that they were not alone in what
2 they were feeling. DR5 explained:

3 I feel that this study has helped, especially in the early stages of the PhD, to understand
4 that I am not the only one experiencing certain feelings, whether those are more positive
5 or negative, and that it is OK to have different priorities and goals for the process. I think
6 it highlights that we can make a change to things by being involved in the community and
7 the importance of having a good support network (both other students and supervisors) to
8 help recognise and improve mental health throughout the journey (qualitative survey 2).

9 As reflected in this quotation, the co-design process and sharing of experiences highlighted the
10 value of a support network, a key facet of the proposed induction programme. Furthermore,
11 given that participants often shared advice during the focus groups, several participants reported
12 *learning* strategies they could implement to support their own MH and WB. Finally, several
13 *psychological benefits*, including enjoyment and confidence, were reported. DR15 explained
14 how discussions surrounding mental health helped:

15 It was beneficial for my own mental health to listen to other doctoral students outlining
16 their stresses/anxieties on a day-to-day basis and by engaging in that conversation alone, I
17 felt more at ease and capable, as I am sure they did. (qualitative survey 1)

18 In sum, based on the potential emancipatory benefits of the co-design process, institutions
19 should consider using co-design methods to shape induction programmes. For instance,
20 networking and peer support activities could offer an opportunity to ascertain the perspectives of
21 DRs on the induction process, as well as later stages in the doctoral journey. Universities
22 adopting this approach do, however, need to ensure that these efforts subsequently provide
23 sustainable improvement in DR support and that DRs benefit from their input.

General Discussion

In this article, we described the co-design methods used while partnering with DRs and university stakeholders to generate evidence that can inform the design of induction programmes to support MH and WB in DRs. Overall, findings reinforce the need for a whole university approach (UUK, 2017) to supporting DRs, with input from, and collaboration between, a range of stakeholders appearing vital. As illustrated in the participants experiences, some DRs felt their induction experiences could have been improved to better support their MH and WB. Based on the ideas of the DRs and engagement with our SG, we developed and refined five core components that can act as a basis for designing induction programmes for DRs in future. The findings highlight the importance and value of engaging with end-users, in this case, DRs, throughout the process of developing potential preventative measures to support MH and WB in this cohort.

Based on the survey responses, the co-design process appeared to have multiple perceived benefits for DRs. Our findings suggest that participatory approaches to developing interventions to promote MH and WB could be a valuable way to harness and learn from the lived experiences of DRs. The initial stages of the co-design process appeared to be particularly positive for DRs, with participants highlighting how much they appreciated being listened to and valued, alongside feeling that such research had the potential to instigate change. Although the effects of the co-design process on participants was unknown at the study outset, participating in the study appeared to have a range of benefits. While this was the case in our study, given the potentially sensitive nature of the topics discussed, we remained aware throughout of the need to consider the ethical implications for participants taking part. Overall, based on evidence concerning the acceptability of co-design in the current study, this, and other participatory

approaches (e.g., co-production) process, could be valuable when designing interventions for DRs.

Limitations

While interpreting the findings and implications of this study, several limitations should be considered. First, data were collected during the COVID-19 pandemic and at the time of data collection, most DRs were encouraged to work from home. While some participants had begun their degrees during the pandemic and had yet to visit the university campus, over half had commenced before being asked to work from home. This, alongside the inclusion of more advanced PhD researchers in our SG, ensured that more “typical” experiences could still be understood. Second, international, male, and ethnic minority DRs were under-represented, which is consistent with evidence indicating these groups are less likely to seek help for mental health concerns (Hyun et al., 2007; Ketchen Lipson et al., 2018; Rafal et al., 2018). As our SG included staff that directly supported international DRs, this provided some insight into the international and ethnic minority experience, which helped us to understand how the contents of the proposed induction programme could consider these groups, but future attempts to implement components of the proposed induction components should ensure engagement with under-represented groups. Third, over one-third of participants reported prior history of poor mental health before their PhD. Although this could arguably distort the degree of pre-commencement mental health concerns among DRs, it is plausible to suggest that because of their lived experiences, these participants are well-positioned to comment on how inductions should be designed to support MH and WB in DRs. We also acknowledge that DRs experiencing complex mental health concerns may have faced additional barriers to participation yet are among those most likely to benefit from accessible inductions and ongoing support. The SG included support staff

1 experienced in assisting students with a range of mental health challenges, which may have
2 helped to mitigate this under-representation. Fourth, the SG were drawn from the same
3 institution. While this has value insofar as this approach could be adopted at other institutions to
4 shape the design of their own induction programmes, it is possible that some views of the SG
5 could be institution-specific. Finally, a relatively low number of DRs completed the final survey.
6 Therefore, it could be the case that those who did not wish to contribute further (e.g., due to time
7 demands) may have held different views regarding the acceptability of the co-design process.

8 **Conclusions**

9 Various challenges that can have an adverse impact on MH and WB can be experienced
10 in the early stages of doctoral study (Jackman et al., 2021). This article offers novel insights by
11 drawing on principles of co-design to inform the development of practical recommendations for
12 induction programmes that could help to support MH and WB in DRs. In turn, findings can take
13 a step towards addressing calls for preventative measures to improve MH and WB in DRs
14 (Metcalf et al., 2018). Based on findings in this study, we suggest that the five components
15 identified through our co-design approach become focal areas in future induction programmes
16 designed to support MH and WB in DRs. While much work is needed to examine the feasibility,
17 acceptability, and efficacy of the proposed intervention components, we suggest that the findings
18 presented in the article can at least serve as a useful starting point for institutions to review their
19 existing support provision for induction programmes and assess if and how this could be
20 improved in future. Based on our stakeholder-engagement experiences, we encourage institutions
21 seeking to implement ideas proposed within this article to engage in similar co-design
22 approaches to identify how the five core components could be implemented, considering the
23 resources, cohort sizes, and level of support provision.

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6

1 **Table 1**

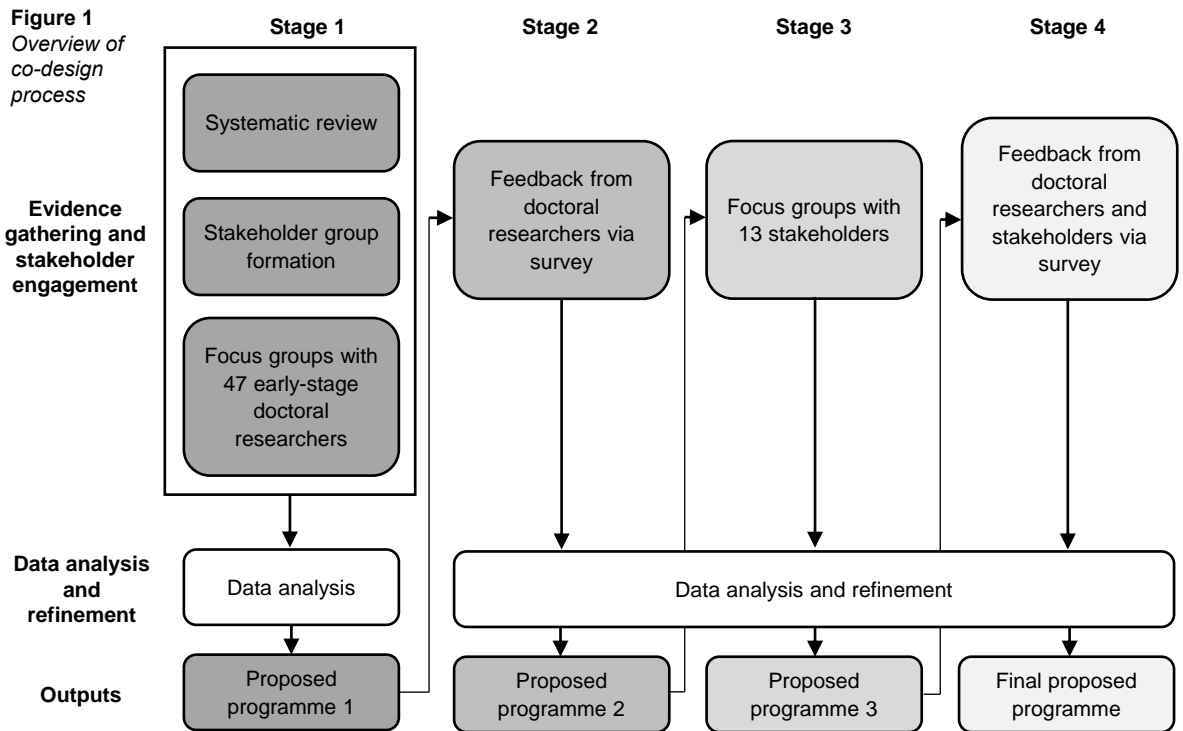
2 *Mean scores for acceptability of the co-design process for the co-design participants.*

| Sample | Doctoral researchers | | Stakeholder group |
|--|-----------------------|-----------------------|-----------------------|
| | Mid-point (n = 35) | End-point (n = 12) | End-point (n = 11) |
| Item (construct) | Mean | Mean | Mean |
| I felt it was acceptable for me to take part in the co-design process (acceptability) | 4.80 | 3.83 | 4.55 |
| I enjoyed taking part in the co-design process (affective attitude) | 4.74 | 3.92 | 4.55 |
| It required effort for me to take part in the co-design process (burden) * | 3.09 | 2.83 | 3.36 |
| The co-design process was effective to design an intervention to promote mental health in doctoral researchers (perceived effectiveness) | 4.40 | 3.75 | 4.55 |
| I valued the co-design process as a way of designing an intervention (ethicality) | 4.71 | 3.92 | 4.64 |
| Participating in this co-design process interfered with my other priorities (opportunity costs) * | 2.43 | 2.00 | 2.18 |
| I am confident that I was able to contribute to the co-design process (self-efficacy) | 4.29 | 3.58 | 4.64 |
| I understood the co-design process and how it works (intervention coherence) | 4.26 | 3.83 | 4.64 |

Note: * lower scores indicate less burden and opportunity costs, respectively

3

4



Supplementary File 1

Table 1

Themes, example quotes, and recommended practices or strategies generated through the co-design study.

| Theme: Aim | Example quotes | Recommended practices or strategies | Description of recommended practices or strategies |
|--|--|--|--|
| Peer connections: Help doctoral researchers to develop connections, feel part of the doctoral researcher community, and get support from peers | <p>"I would think that if I could speak to somebody who's been through what I'm going through at the moment, that would be quite good for the reassurance that you can do it, you can get through it, it's not this huge, mammoth thing that you think it's going to be."</p> <p>"Within this induction package, there could be some recordings included where PhD students have talked about their experiences to being asked questions about how they overcome challenges or dealt with impostor syndrome."</p> <p>"[they could say that] as part of your induction, your task is to organise a Zoom call with these four people and answer these three questions...If they're done consistently and weekly – obviously not daily – the impact of that over a month, for me, I would've loved this now if I had a check-in with four other people every four weeks."</p> | Pre-arrival socialisation activity | <ul style="list-style-type: none"> Schedule virtual activity/activities that allows current doctoral researchers in a department to connect with new doctoral researchers before arrival (e.g., can discuss mutual interests, ask questions about accommodation, societies etc.) |
| | | Induction socialisation activity (department/lab level) | <ul style="list-style-type: none"> Schedule activities that allow new doctoral researchers to connect with new and more advanced Doctoral researchers, and have an opportunity to listen to insights from current doctoral researchers about the challenges of doctoral study and advice on overcoming these (e.g., as part of face-to-face or via online sessions) Encourage / provide platforms for doctoral researchers to continue to connect with other new and more advanced doctoral researchers after induction (e.g., Microsoft Teams group) |
| | | Regular peer group activities throughout the first year (and beyond) | <ul style="list-style-type: none"> Run engaging activities (e.g., in-person and virtual activities) that encourage participation (e.g., Researcher "Speed Dating", writing groups, coffee mornings) and are accessible (e.g., for international students, distance learners) Continue to encourage the use of "spaces" (e.g., virtual, physical) for doctoral researchers to connect |
| | | Peer supporter scheme | <ul style="list-style-type: none"> Pair/group new doctoral researchers with more advanced peers (e.g., before arrival, point of contact in the first year) – viewed as especially important in the first six months (e.g., before formal assessment points) |
| Supervisor relationships: Develop high-quality supervisor-researcher relationships that help doctoral researchers to obtain the support needed to address challenges | <p>"Something that I think would be practical, again from what [name] had said, was about meeting with your supervisors, maybe having some way that there is a set timeframe within your induction day that your supervisors are there, and if there's any other PhD students who they supervise at the time, you can go and speak to them and in person to organise a meeting because if you haven't met them before."</p> <p>"We're a bit like a deer in headlights, not having a clue what to expect. I think, from my experience, everything that we've all been doing has been correct, but just being told that it is the right thing to do and if you haven't achieved 10 pages of documents by this week, that's fine, just that basic reassurance so you don't feel like you're wasting your time is really, really valuable."</p> <p>"I think it would be really valuable if supervisors or department or lab heads also would get the chance to benefit from an induction or from a guide to support for PhDs."</p> | Meeting(s) to initiate relationship with supervisor(s) | <ul style="list-style-type: none"> Clarify expectations and working style Collaboratively build a timeline and identify/agree development needs Clarify direction of work in the early stages (e.g., structured reading etc.) |
| | | Develop relationship with supervisor(s) | <ul style="list-style-type: none"> Connect via regular, weekly/fortnightly meetings at the beginning Supervisors to provide direction and reassurance in the early stages (e.g., reinforce progress made and identify opportunities to create perceptions of progress) |
| | | Embed recommended practice into supervisor training | <ul style="list-style-type: none"> Build training for supervisors into existing supervisory training. Such training could aim to help supervisors: <ul style="list-style-type: none"> Understand the distinction between mental health/illness and wellbeing, the basics of self-care and academic well-being, their role with regards to mental health and wellbeing Clarify boundary/expectations regarding mental health and wellbeing concerns Know how to have conversations around wellbeing and how to respond to concerns Develop a toolkit for interactions with doctoral researchers (e.g., clarify expectations, working style, build a timeline, clarify what supervisors can/cannot offer, managing supervisory change, strength-based supervisory approach, guidance on feedback, importance of reassurance in the opening stages, working with international Doctoral researchers, equality, diversity, and inclusion in supervision) and create mechanisms |

| | | | |
|---|--|--|---|
| to facilitate continual development of supervisory practice (e.g., resources, guides, FAQs forum, updating of training) | | | |
| Student services advice and support: raise awareness of support available, common concerns for doctoral researchers, and strategies to promote mental health and wellbeing | <p>"We all work within a university, so sort of mental health and the extended support network as well that the university offers, I think having those contact details there...is also very important as well."</p> <p>"It would be important to highlight that yes, a PhD is going to take up a lot of time and it is a lot of hard work, but to reiterate that you do get a social life... things like exercise, mindfulness, yoga, all that is really, really useful and something that PhD students should be encouraged to implement into their daily routines."</p> | Introduction to student support activity | <ul style="list-style-type: none"> • Inform doctoral researchers of supports available to them (e.g., wellbeing, finance, career advice, English language centre, learning support) and how to access these • Highlight the importance of protecting mental health and wellbeing during the doctoral journey |
| | | Website and resources | <ul style="list-style-type: none"> • Include a dedicated area on student support/wellbeing site for doctoral researchers and ensure that information supports equality, diversity, and inclusion (e.g., develop culturally appropriate content, ensure support is available off-campus) • Create resources outlining practical tips on time management, self-care (e.g., exercise, taking time out, engaging in hobbies, learning coping strategies, advice on managing work-life balance) |
| | | Regular student support activities | <ul style="list-style-type: none"> • Work in collaboration with other staff to run activities that are proactive, positive, and practical (e.g., managing work-life balance, working with supervisors, time management) • Harness regular "touch point" opportunities to interact with doctoral researchers (e.g., through existing peer support or training initiatives, newsletters) to disseminate reminders of support available |
| Information & resources: Get access to relevant information and aid familiarisation with new institution and mode of study | <p>"I think for me what would have been really useful would be almost like a timeline of what to expect."</p> <p>"For me it is the practicalities, you know, where do you park the car? Where do you go if you're feeling a bit stressed? Where do you go for a cup of tea? Where can I meet other folk, you know, to talk about things generally because it will be general because everybody's doing a different thing?"</p> <p>"I think to start off with, I know it may sound obvious, but contact details of the most important people within your PhD studies. So obviously you've got your supervisors, they're already there, but sort of, more a just sort of, just so you know, because they're sort of, what their background research is in, so you know who to ask the questions to."</p> | Pre-arrival and arrival information | <ul style="list-style-type: none"> • Provide new doctoral researchers with a checklist of information needed, details on orientation/induction activities, list of societies, and information on student services (e.g., medical centre registration) |
| | | Easy-to-navigate website with relevant resources and links | <ul style="list-style-type: none"> • Create a list of points of contact and a "who's who?" webpage detailing names of key contacts at the institution and what they should be contacted for • Outline key information on the university (e.g., library, parking, facilities, ethics etc.) • Presents general content regarding processes and regulations, including a timeline (i.e., Doctoral researcher journey map and handbook), links to initiatives for doctoral researchers (e.g., societies, training and development opportunities, peer support, career advice), and a section with FAQs |
| | | Long and thin induction | <ul style="list-style-type: none"> • Provide an overview of processes and regulations – and access to resources that are immediately important - at the start, in a manner that is easy to understand • Distribute information that doctoral researchers need to know over time and at relevant points during the journey |
| Training & development: identify areas for development and training opportunities | <p>"It would be very useful...just knowing that for every milestone, if there was something available where we were given workshops or webinars, or the tools and the resources to be able to successfully go through those milestones. Whether it's your viva, or your data collection, or your research gathering process, or writing process, just as much support as possible when it comes to those things."</p> | Development needs analysis | <ul style="list-style-type: none"> • Assess development needs based on assessment aligned with researcher development framework, with input from supervisory team (e.g., discipline-specific knowledge) |
| | | Doctoral development programme | <ul style="list-style-type: none"> • Create/direct to resources that will help doctoral researchers to build relevant skills, knowledge etc. in line with identified development needs, considering both in-person and/or online activities (e.g., research project management, time management, networking, presentations), with group training offering opportunities for peer networking • Offer opportunity for mentoring and highlight career support available |

Table 2

Overview of proposed contributors.

| Personnel | Pre-arrival socialisation activity | Induction socialisation activity (department/lab level) | Regular peer group activities throughout the first year (and throughout the first year) | Peer supporter scheme | Meeting(s) to initiate relationship with supervisor(s) | Develop relationship with supervisor(s) | Embed recommended practice into supervisor training | Introduction to student support activity | Website and resources | Regular student support activities | Pre-arrival and arrival information | Easy-to-navigate website with relevant resources and links | Long and thin induction | Development needs analysis | Doctoral development programme |
|--|------------------------------------|---|---|-----------------------|--|---|---|--|-----------------------|------------------------------------|-------------------------------------|--|-------------------------|----------------------------|--------------------------------|
| Doctoral researcher departmental/college leads | X | X | X | | | | X | | | | | X | X | | X |
| Student's union | | | X | | | | | X | X | | X | X | | | |
| Doctoral researcher reps | X | X | X | | | | | | | | | | | | |
| Early career researchers | | X | | X | | | | | | | | | | | X |
| Doctoral school | | | X | X | | | X | | X | X | | X | X | X | X |
| Department/lab staff | | X | | | | | | | | | | | | | |
| More advanced doctoral researchers | X | X | | X | | | | | | | | | | | |
| Supervisors | | X | | | X | X | X | | | | | | | X | X |
| Student support services | | | | | | | X | X | X | X | X | X | | | X |
| Student wellbeing | | | | | | | X | X | X | X | X | X | | | X |
| Digital learning/website team | | | | | | | X | | X | | | X | | | X |
| Administration staff | | | | | | | | X | X | | X | X | | | |
| Researcher development team | | | | | | | X | X | X | | X | X | | X | X |
| Library | | | | | | | | X | X | | X | X | | | X |
| Career's support | | | | | | | | X | X | | X | X | | | X |

Note: These suggestions are indicative only and should be considered at institutional level.