Appendix 5. Doctoral provision in the Arts and Humanities: Emerging findings from a rapid evidence assessment

This document presents the key findings from the rapid evidence assessment (REA) conducted by RAND Europe as part of Work Package WP-1B in autumn 2021.

Aim and objectives

The aim of the REA is to gather evidence on the current landscape of doctoral provision in the arts and humanities (A&H), including current trends, drivers, challenges and uncertainties for the future. The evidence from the REA will inform the main engagement stage of the project (Stage 2) and also help to identify a longlist of critical factors to inform the future scenarios to be developed in Work Package 3A.

Specifically, the REA aims to gather evidence on the following research questions:

1. What is the **current landscape of doctoral training provision in the arts and humanities** (including trends, drivers, challenges and uncertainties for the future)?
2. What is the **pipeline** of doctoral students into the arts and humanities?
3. What are the eventual **careers** undertaken by A&H doctoral graduates?
4. What **skills** will A&H doctoral students need in the future?

Overall, we note that there is limited evidence reported in the academic literature focused on doctoral training provision within the arts and humanities. Therefore, to ensure useful information could be gathered, the study team also included literature focusing on doctoral training provision across disciplines, as well as considering evidence from both the UK and internationally. This evidence was supported by other reports and documentation already known to the CRAC/Vitae team. Finally, it should be noted that the study team adopted a rapid evidence assessment approach, which means that there may be relevant studies and documents not identified or included in the assessment.

1. What is the current landscape of doctoral training provision in the A&H?

This section presents current trends in the provision of doctoral training, with a particular focus on the arts and humanities (A&H), but also highlighting current trends across disciplines where relevant.

1.1. Changes to the UK's economy are impacting doctoral provision

There are perceptions of an increasingly competitive and diverse job market across the world for doctoral graduates. Less than half of doctoral students across multiple disciplines expect to continue to a career in academia and they increasingly have to demonstrate marketable skills (Marini 2019). It is suggested that students who study social sciences and humanities could be even more impacted by this as industries are frequently less interested in hiring individuals with a higher degree in these disciplines (Marini 2019). Humanities and social science doctoral students in the UK compare getting an academic job to playing the

lottery, as it is not clear what students should prioritise; it seems that publications are important, and teaching less important, as well as the 'fit' with the department, tapping into academic networks, and interview presentations (Brown and Mountford-Zimdars 2017). On the basis of studies in single universities, those doctoral students (across multiple disciplines) that are able to find academic positions are faced with increasing use of short term contracts (Holmes, Reynolds, and Chaplin 2019; Brown and Mountford-Zimdars 2017).

There are shifting discussions about the value of an A&H doctoral degree. A&H degrees (across all levels of higher education) have intrinsic value which go on to benefit society, contribute to social cohesion in the UK, and prosperity and security abroad (British Academy 2017). A&H subjects contribute to the development of reflective individuals, developing empathy towards others, and gaining greater understanding of environments and areas which are unfamiliar (British Academy 2017). These A&H subjects matter for their own sake and can be studied simply for their distinctive disciplinary character and understanding of knowledge (Robson, Holgate, and Randhawa 2021). This is a non-instrumentalist argument for studying A&H (at any higher education level), which is particularly popular in the US and the UK (Robson, Holgate, and Randhawa 2021). However, as higher education increasingly engages in conversations about skills and employability, there are more pressures to find the 'economic' and 'instrumental' benefit to an A&H higher education degree (Robson, Holgate, and Randhawa 2021). One approach is to concentrate on the public value of these subjects (including 'importance of learning from the past', 'informing policy', 'importance of teaching') or the economic value of these subjects (by contributing to the knowledge economy as well as the economy as a whole through the publication of books, supporting museums, theatres, heritage sites etc.) (Robson, Holgate, and Randhawa 2021). A&H doctoral candidates in the humanities, arts and social sciences may be treated as 'empty vessels' with little to offer in comparison to STEM students with few transferable skills or experiences and a lower capability development potential (Barnacle et al. 2020) and in comparison to vocational and STEM degrees, A&H degrees are increasingly associated with weak financial returns (Robson, Holgate, and Randhawa 2021). However, this overlooks some of the previous experiences A&H doctoral students have (Barnacle et al. 2020) and it is accepted that with further investment humanities, arts and social science students (HASS, across any level of higher education) can go on to contribute to solving the challenges of the future (Mellors-Bourne and Handforth 2021)[1]. Research conducted in 2020 suggests that HASS doctoral researchers' engagement with industry can facilitate learning and increase knowledge exchange (Mellors-Bourne and Handforth 2021).

There are concerns about the decreasing 'investment value' of UK higher education degrees, with the 'graduate premium' decreasing (this concern applies to multiple disciplines and all higher education student levels) (Casey 2009; Robson, Holgate, and Randhawa 2021). In the UK, in multiple subjects, studying a bachelor's degree leads to an increase in earnings (over 20% higher for men who have studied versus those which chose not to study, over 35% for women who chose to study over those who chose not to), and further study to the doctoral level leads to higher earnings still (31% for men and 60% for women) (Casey 2009). However, there are concerns about overall diminishing levels of the graduate return, with UK graduates born in 1970 earning 19% more than a non-graduate by the age of 26, whereas graduates

[1] This DTP evaluation is currently unpublished but was included in the REA due to its high relevance.

born in 1990 only earning 11% more (Robson, Holgate, and Randhawa 2021). It is also found that while there is a relatively larger earnings jump between a bachelor and a master's degree, the jump in earnings between masters and doctoral degrees is less (this applies to all disciplines) (Casey 2009). Those figures also showed that while a PhD in medicine, science, business or finance do lead to higher earnings, PhDs in social sciences, languages and arts do not significantly enhance earnings for either sex, although the paper concludes that while PhDs would not always seem to improve a person's earning capacity they can contribute to wider social benefits such as in teaching and learning and 'spill over' of knowledge (Casey 2009). So while A&H doctoral candidates are expecting to enter the global market with a competitive edge, this is increasingly difficult to realise in a global marketplace (Holmes, Reynolds, and Chaplin 2019).

These findings are supported for A&H doctoral graduates in the UK by data collected in 2010 through the HESA 'Longitudinal' Destination of Leavers from Higher education (L DLHE) survey. While the median salary for doctoral graduates across all disciplines rose in line with the UK's labour market (+3%) between 2008 and 2010, this was not the case for social sciences and A&H graduates (Vitae 2013). In the same period, the median salary of social science graduates remained the same (at £39,000) with more graduates earning between £30,000-40,000 and a decrease in graduates earning between £40,000-£50,000 in 2010 compared to 2008 (Vitae 2013). For A&H doctoral graduates, there were more students in 2010 than 2008 earning less than £30,000 (from 28% to 37%) and the proportion of graduates earning between £30,000-40,000 decreased (from 52% in 2008 to 41% to 2010) (Vitae 2013). An increase was reported in the proportion of graduates earning more than £40,000 (from 20% in 2008 to 22% in 2010) but this increase is small in comparison to the changes seen in the lower sections of earnings, with the overall median salary for A&H graduates falling from £35,000 in 2008 to £34,000 in 2010 (Vitae 2013). The report caveats these findings by highlighting a methodological difference between 2008 and 2010 results and notes that the A&H respondents in the 2010 survey were more likely to report they were engaged in portfolio working to earn a living as well as reporting longer/more than one period of unemployment which could also impact their earning potential or salary progression (Vitae 2013).

1.2. Training of doctoral students is strongly emphasised along with greater involvement of businesses in doctoral provision

Perceptions of the A&H doctoral degree have shifted away from 'the lone scholar' image of doctoral students; instead there is an increased emphasis on the skills doctoral students develop. Since 2005, when the AHRC announced its aim to 'banish' the image of the 'lone scholar', focus has shifted away from the traditional image of a doctoral student pursuing independent research towards doctoral training and developing skills that students need for the future (Blaj-Ward 2011). In the UK, a traditional model of a doctorate (in any discipline) is one where a doctoral student is an apprentice researcher learning the trade of the discipline with a view to becoming a university teacher-researcher. Increasingly there is a focus by governments, public bodies, and public and private institutions to search instead for a professional and intellectual cadre of highly qualified people that can complement the growing knowledge economy (Holmes, Reynolds, and Chaplin 2019). Some have observed a perceived split between the meaning of training and skills, with research supervisors embracing the discipline-apprenticeship model of research training, in comparison to an

emerging category of research trainers ('researcher developers') promoting generic skill development (Blaj-Ward 2011).

There is increased emphasis on doctoral skills training. To meet the changing skill demand and keep students competitive in a rapidly changing economic and job market, universities are embedding skills development into the doctoral curriculum (across multiple disciplines) (McVitty 2020). There is a broad range of initiatives, programmes, and training courses students can attend to build doctoral skills (Bos et al. 2017; Blaj-Ward 2011; Hooley et al. 2009). Doctoral training (in multiple disciplines) now includes a wide range of models including Doctoral Training Partnerships (DTPs) and Centres for Doctoral Training (CDTs) (ESRC 2021). Research Organisations contribute to training by providing students with world-class research environments and excellent supervisors, while the DTPs and CDTs within them provide supplementary provision and cohort-based modules which emphasise multi- or interdisciplinary research and other research-related skills (ESRC 2021).

There is an increased emphasis on A&H doctoral students' transferable skills and how these can enable access to a wide range of career paths. Traditional skills development in A&H doctoral degree provision focused on training in research skills but this has shifted to embrace the development of personal and professional skills that are transferable to a wide range of career paths in academia and beyond (Vitae 2010). For example, a recent evaluation showed that DTPs have provided funding for the cohort-based training of 35,000 A&H doctoral students across 11 centres of research excellence, providing students with opportunities for training and development to foster subject-specific, research-specific and transferable skills (Mellors-Bourne and Handforth 2021).

However, there are challenges that come with increased emphasis on training. Early concerns with the integration of training into doctoral programmes included how training would complement the pedagogical model of a doctoral degree (Blaj-Ward 2011). Indeed, some argued it placed competing demands on students, as doctoral students reported feeling like they are doing two degrees - one theoretical and one practice-based (Throp 2016). Another challenge facing these training programmes is concerns about the outsourcing of training and how it complements the doctoral learning experience (Blaj-Ward 2011), but many of these training programmes are now more integrated. The recent [unpublished] AHRC DTP evaluation highlighted: (1) the training was in some cases opened up to allow other doctoral students to participate as well as DTP students (who have more access to opportunities and benefits through the DTP programme); (2) questions of diversity within the DTP student population (if it reflected the current doctoral population or if it was even less diverse); (3) that early on in the programme many supervisors were not buying into the DTP model as they were resistant to doctoral students spending time developing skills outside of their academic studies, but this was improving over time; and (4) a lack of knowledge about alumni (graduates') experiences after the programme limited the assessment of outcomes and impact of the DTPs) (Mellors-Bourne and Handforth 2021). Some of the concerns about training access are also highlighted elsewhere for part-time students as they struggle to attend training, as they already juggle multiple demands (Hooley et al. 2009). The training landscape is complex and still evolving, the DTP example demonstrates how new challenges can emerge as these new types of training programmes and partnerships are rolled out.

Businesses are increasingly involved in doctoral provision. Increasingly businesses are involved in doctoral education with the breakdown of educational silos (McVitty 2020; Barnacle et al. 2020) and the growth of structured, collaborative programmes. There is also growing popularity of Professional Doctorates (Holmes, Reynolds, and Chaplin 2019; Harriss 2019;

Barnacle et al. 2020). Professional Doctorates are especially popular within certain arts based disciplines (such as architecture), which are moving beyond traditional doctoral degree models, for example through offering practice-based and practice-led doctoral training (Harriss 2019; Gopalan 2018; Throp 2016).

1.3. The profile of doctoral candidates is shifting

This section summarises the macro-scale trends which have impacted doctoral recruitment in the UK. Information on the profile of those undertaking a A&H doctoral degree in the UK is captured in response to research question '2. What is the pipeline of doctoral students in the A&H?' (in section 2).

Higher education in the UK has undergone a process of massification[2]. Over the last three decades the UK's higher education system at first degree level has shifted from a 'mass' to a 'universal' system (where 50% of the population of young people attend university) (Robson, Holgate, and Randhawa 2021). Over a 10 year period (2006-2016), The Higher Education Funding Council for England saw annual UK doctoral degree enrolments (across multiple disciplines) rising from 23,000 to just under 30,000 (Holmes, Reynolds, and Chaplin 2019). That expansion of postgraduate education has led to fierce competition for academic jobs (Brown and Mountford-Zimdars 2017). Evidence shows that UK institutions aimed to expand their postgraduate student numbers across multiple disciplines (in 2010 and 2011) despite only small annual increases in the number of academic staff appointments (Brown and Mountford-Zimdars 2017). One study goes on to highlight that as such expanded enrolment goals are in tension with wider trends in the UK's higher education sector (Mellors-Bourne et al. 2014). In a study aiming to understand HEI's (higher education institutions) approaches to doctoral recruitment (across multiple subjects), nearly all of the sixty UK institutions included in the study were seeking at least some growth in the number of doctoral student enrolments (across multiple disciplines) (Mellors-Bourne et al. 2014). But the study also found that these intentions to increase student enrolment were in tension with other external forces in the market, such as students facing limited funding options, rising student debt and concerns about attracting international students with 'underlying anxiety that the UK is an unwelcoming place'. There was no literature included in this REA that went on to discuss how this may specifically affect A&H doctoral students.

There is increasing internationalisation of the UK's higher education student population, although this is potentially less prominent for the A&H specifically. The UK is the second most favoured higher education study destination (after the USA) for foreign students (across all levels of higher education), with the majority of the students coming from the EU, as well as China, India and Nigeria (Maringe and Jenkins 2015). These international students (across all levels and disciplines within higher education) bring opportunities for UK institutions through considerable income into UK universities (Holmes, Reynolds, and Chaplin 2019). This may also increase over the years. For example, one study conducted at Durham University suggested that international higher education students accounted for 12% of the student population, with the institution aspiring to increase this to 30% in the next five years

[2] 'Massification' is a term developed by Trow (1973). It is used to describe a process of growth and transition in the UK's higher education as it goes from a 'mass' to 'universal' higher education system, when 50% of the population of young people attend university. (Robson et al. 2021)

(by 2020) (Maringe and Jenkins 2015). This greater internationalisation also holds true for doctoral student entrants (across multiple disciplines). HEFCE recorded increases in the number of international doctoral degree entrants (2006-2016) where across this period around 50% of full-time and approximately 20% of part-time doctoral degree entrants were not UK-domiciled (Holmes, Reynolds, and Chaplin 2019). However, evidence specifically for A&H doctoral students seems to suggest that the proportion of international entrants in much lower than across disciplines, with a 2012 study (giving a snapshot within the 2006-2016 period) reporting that 82% of AHRC doctoral candidates were British (DTZ 2012). More recent information on nationality profile is provided elsewhere in this report, not from the REA.

There is an increasing interest in diversity and widening participation and, with it, increased recognition of challenges in this area. Recent movements, such as #MeToo, Black Lives Matter, the Race Disparity Audit, the decolonisation of the curriculum movement and gender pay gap reporting have highlighted inequalities throughout society (Harriss 2019). In the higher education sector this has sparked a conversation about equality, diversity and inclusion in the research and innovation landscape (Harriss 2019). Equality, diversity and inclusion was deemed to be particularly relevant when thinking about the make-up of academic staff, when a report found that there were 'no black academics in the elite staff category of managers, directors and senior officials' and a decreasing number of female professional appointments despite women making up only a quarter of professors in the UK (Harriss 2019). Issues around equality, diversity and inclusion also apply to doctoral enrolments (across multiple disciplines) whereby some groups face barriers to enter a doctoral degree (more information on these disadvantaged groups is given in section 2). Some therefore advocate for changes to be made at entry to doctoral degree programmes in order to adjust for inequalities that 'trickle up' to the doctoral degree level (potentially applying to multiple disciplines) (ESRC 2021). It has been argued that actions should be taken in the future to ensure diversity at the doctoral level, including 'outreach to underrepresented groups, targeting participation 'cold spots', advice and guidance and reviewing admissions criteria and practices to ensure they are fair and valid' (ESRC 2021). For example, on the 22nd October 2020 the UK's Office for Students (OfS) and Research England launched a new £8 million funding competition to improve access and participation of BAME students in postgraduate research studies (OfS 2020a). More information on enrolment challenges is given in section 2 describing the A&H doctoral pipeline.

1.4. There is increasing focus on research culture and the individual experiences of doctoral students

There are concerns about student wellbeing. Supervisors of A&H doctoral students highlighted the growing importance of wellbeing within doctoral degrees and how wellbeing was now being integrated into their supervisory roles (Parker-Hay 2020). However, supervisors also recognised that they lacked deeper institutional knowledge of wellbeing services which made signposting these services to students more challenging, and that wellbeing and mental health training available to supervisors was challenging as the student experiences they experienced may not necessarily fit into the generic mental health frameworks being taught (Parker-Hay 2020). The discussion around the wellbeing of students is ongoing, with levels of student anxiety and depression increasing among social science doctoral students and higher than the UK population as a whole, with more students seeking

out mental health support (ESRC 2021). While some of these elements can affect all university students, some of these pressures are unique to certain cohorts of social science doctoral students especially if they are self-funding, balancing their studies with work or family commitments, or navigating challenging supervisory relationships (ESRC 2021). There was no literature included in this REA that went on to discuss this for A&H doctoral students specifically, however we might expect a similar situation for this group as they experience similar pressures (self-funding and balancing studies with work and family commitments). Suggested causes of increased doctoral students' anxiety and depression among social science students include bullying, harassment, discrimination, feelings of isolation, pressure to succeed (e.g. in terms of measurable publications, citations, conference presentations and impact of research) and concerns about future job security (ESRC 2021). Elements of research culture can also contribute to this, such as expectations of long working hours, physical institutional infrastructure, disciplinary and departmental boundaries, as well as the individualistic nature of researching a long-form thesis leading to feelings of stress and isolation (ESRC 2021). For example, not having an office to work in can lead to a student working in sub-optimal environments which limit other people checking in on them (ESRC 2021), which again is a characteristic that is likely to be similar for A&H doctoral students. This was of course one element which impacted students during COVID-19. Results from a 2020 report (surveying 8,000 doctoral students from a range of disciplines from 45 UK institutions) show doctoral student satisfaction is high at 80% (just 1% lower than 2019 results), but satisfaction with research culture is lower at 60% and 3% lower than in 2019 (Pitkin 2020)[3]. Some impact could be expected as a consequence of the disruption caused by the COVID-19 pandemic, and indeed satisfaction levels pre-pandemic were higher than the reported satisfaction from students studying through lockdown (77% versus 82%) (Pitkin 2020). Results also highlighted that part-time students recorded higher levels of wellbeing than full-time students, with 12% fewer full-time students saying they felt happy the day before completing the survey (Pitkin 2020). Students' suggestions for future reform include: counselling being provided, increasing mental health resources, funding by programme of research rather than by time-period to alleviate time-pressure and stress around funding, providing tailored career advice for students, building a sense of community, and inciting cultural change to develop a collaborative and supportive working environment (Pitkin 2020).

There is uncertainty around funding. Fees for degrees are rising and the UK's funding system is becoming increasingly complex (Mellors-Bourne et al. 2014). Within a rapid evidence assessment of the UK's social sciences doctoral training provision reviewing 46 sources, uncertainty around funding and high tuition fees were identified as key issues for doctoral students in the UK (and also in the USA), potentially creating a barrier for doctoral candidates (in a range of disciplines) (CFE 2020). The assessment also suggested that there is less funding available for social science and A&H in comparison to STEM programmes (CFE 2020). Scholarships and grants that are available to students are typically for three years full time, and longer if part time (CFE 2020). The recent DTPs and CDTs do allow some flexibility with this but as a consequence this has reduced the number of awards that can be made (CFE 2020). As students are taking on more debt at the undergraduate level as well, taking on a doctoral degree may become less attractive (Mellors-Bourne et al. 2014). These

[3] These results are reflective of UK wide doctoral education across multiple disciples, not specific to A&H.

changes, in the long term, may lead to a decreasing demand in postgraduate study in the UK, as well as a potential rise of self-funded and part-time students (these trends may apply to all doctoral disciplines) (Mellors-Bourne et al. 2014) [4]. For example, in a case study of doctoral students (from multiple disciplines) at Durham University, out of 150 doctoral students (including full-time and part-time students), approximately half are self-funded, with the remaining students receiving UKRI scholarships or equivalent from their home countries (Holmes, Reynolds, and Chaplin 2019). The rising costs in turn pose questions about inequality within higher education and questions over widening participation and the access agenda for doctoral students (in general) (Mellors-Bourne et al. 2014). The recent introduction of postgraduate doctoral loans started from 2018/2019 and these are available for doctoral students who are undertaking a first doctoral degree, are not funded via a research council and are under 60 years old (CFE 2020). However, while the loan is £25,700 after the cost of fees for home students there is only between £2,000-£3,000 left for living expenses (CFE 2020). Early indicators suggest that these postgraduate loans may assist students in humanities and social sciences doctoral programmes, while students who wish to pursue a STEM doctoral degree continue to expect securing a full studentship to enter the degree (CFE 2020).

Supervisors perceive increasing demands and expectations from doctoral students. Supervisors have always been essential in defining the experience for A&H doctoral students. However, in the past 15 years (alongside the re-conceptualisation of doctoral education), humanities, arts and social science (HASS) supervisors find themselves subject to older expectations while also adapting to newer ideas (Parker-Hay 2020). Their duties now go beyond the doctoral thesis and include career development and wellbeing support expectations (Parker-Hay 2020). Supervisors have to prepare students for the increasingly competitive job market knowing that academic jobs are competitive and students may follow a more diverse range of career paths (Parker-Hay 2020). To accommodate this, supervisors reported talking to their students about careers early in their degree (Parker-Hay 2020).. This could mean recognising that there are certain things which may not have been important when the supervisor completed their degree but will now make or break an academic career, and trying to give students the best chance possible to follow an academic career (Parker-Hay 2020). The supervisors found it difficult to approach the topic of careers outside of academia, as they did not want to impact a student's confidence in trying for academic positions, but at the same time they worry about managing student expectations (Parker-Hay 2020). Among HASS supervisors, this career mentoring can vary between disciplines, as some disciplines have more obvious paths beyond academia (Parker-Hay 2020). Examples given include information studies students going into industry and social scientists considering policy roles; however, it was thought that students from the A&H were more likely to want to be scholars and it was these students' supervisors who struggled most, with one English supervisor writing:

> '*We are precisely the wrong people to do transferrable skills stuff because we have no experience of that being successful for us in moving away from the PhD into something else. So that's one of the things that catches the supervisor in this*

[4] We have looked at the proportion of self-funded doctoral students (from HESA data) elsewhere in the interim report.

> *strange position. We know that it is important and valuable in a sense, but it does not match up with our own experience of PhDs. And we are looking into the dark because we never had to do it.*'

Wellbeing was also a difficult subject for supervisors to approach, with supervisors often waiting until the student had raised it. They recognised that the division between student services and academic departments meant that students may fall through the gaps (Parker-Hay 2020). Supervisors also recognised the need for additional standardisation and regulation but felt there was an overemphasis on administrative tasks that often impacted a supervisor's confidence to make an appropriate, context-based decision. Additionally, in a case study of doctoral students (from multiple disciplines) at Durham University, supervisors noted that they faced additional challenges from the doctoral students in terms of the demands and expectations on supervisions, for example some self-funded students used their self-funded status as a justification for demanding responsiveness and regular meetings with the supervisor (Holmes, Reynolds, and Chaplin 2019).

2. What is the pipeline and profile of doctoral students in the A&H?

In general, it is challenging to identify an up-to-date profile or pipeline for A&H doctoral students from the literature. One approach was derived from a survey of a sample of 233 former A&H doctoral students (who started their degrees in 2002, 2003, 2004 so they were approximately 5-7 years into their careers) in 2012 (DTZ 2012). Other studies provided useful insights but focused on a certain subset of the student population, such as part-time doctoral students (across multiple disciplines) (Hooley et al. 2009). A more up-to-date study focused on doctoral students within the social science disciplines (ESRC 2021). The Higher Education Statistics Agency provides statistics representative of all doctoral students in the UK, but bespoke analysis of its data would be needed to isolate A&H doctoral students, which is beyond the scope of this REA.[5] The evidence below is a summary of key findings based on the available sources.

There are more mature students in A&H discipline doctoral programmes compared to other disciplines. In 2012, a survey (using a sample of 233 former A&H doctoral students), found that 49% were men and 51% were women (DTZ 2012). It was found that 82% of these doctoral candidates were British (DTZ 2012). The same survey found that a fifth had a previous career before entering their doctoral degree (DTZ 2012). The majority were in their 30s, and the 2012 survey had more respondents over 50 and fewer under 20 in comparison with an earlier 2006 study, suggesting that students in 2012 were older than in the 2006 cohort (DTZ 2012). In 2012, a Vitae report based on a survey of 4,550 current doctoral students reported that of the A&H doctoral students surveyed: 35% were male and 61% female; 21% between 21-25 years old, 37% 26-30 years old, and 37% over 30 years old including 15% over 40 years old (Vitae 2012). A recent 2021 report on doctoral degrees in social sciences reported that more than three-quarters of ESRC-funded doctoral graduates in social sciences were under 30 on entry and only around 1 in 20 were over 40, although the age profile differed across social science disciplines (ESRC 2021). On the whole, it was suggested that social

[5] Elsewhere in this interim report, extracts from recent HESA data are used to illustrate this profile.

science doctoral students were older than STEM doctoral students when undertaking their doctoral studies (ESRC 2021). Similarly to findings in the UK, it was found that globally a significant proportion of HASS students at the doctoral degree level were mature and may be mid-career professionals (Barnacle et al. 2020). This challenges the traditional image of a doctoral student in their twenties with little skills and experience, when a considerable proportion of HASS students are actually more likely to come as mid-career professionals with pre-existing networks and career skills (Barnacle et al. 2020). However, mature students (across multiple disciplines) can also struggle coming back to a doctoral degree as they feel de-skilled (after having a successful career in a different field) and feel they are not the 'ideal young' doctoral candidate (Morris 2021).

A 2009 study looked in depth at part-time doctoral students (across a range of academic disciplines), which found that part-time students were more likely to be mid-career professionals than full-time students. Survey results found that 21% of full-time doctoral students had completed their undergraduate studies (and 37% completed prior postgraduate studies) directly before starting their doctoral degree, suggesting the majority had gone straight from an academic environment (Hooley et al. 2009). In comparison, 32% of part-time students had worked in research and 21% worked in a non-research role before starting their degrees, suggesting the majority had not come directly from prior study, i.e. a more diverse pathway to enter the doctoral degree (Hooley et al. 2009). However, completion rates are also lower among part-time students, with only 48% of part-time doctoral students completed within 10 years in comparison with 76% of full-time doctoral students (Hooley et al. 2009).

There are growing concerns around inequalities in doctoral enrolment. There are certain student cohorts which are currently underrepresented at the doctoral level in the UK (including students of ethnic minority background), as seen through a recent study about doctoral social science degrees (ESRC 2021). These issues are thought to start at the undergraduate level, where a lack of diversity in enrolments at elite institutions can make it more challenging to bring change at the doctoral level (ESRC 2021). The UK's Office for Students identified that in 2017-18 17.1% of postgraduate research students (across multiple disciplines) are from BAME backgrounds which was only a 1.4% increase from 2010-11 levels (OfS 2020a). To break this figure down further, of the postgraduate research students (across multiple disciplines) in 2017-18, 8.7% were Asian, 2.5% Black, 3.8% Mixed, 2.1% Other, 79.5% white, and 3.3% unknown (OfS 2020b). A more recent study on doctoral students in social sciences gives us some insights into current breakdowns of student enrolment. The report talks about the underrepresentation of students from BAME backgrounds, and specifies that access to Research Council studentships is low among BAME doctoral students, especially among Black students (ESRC 2021). Also, the report indicates declining levels of participation of BAME students between the masters and doctoral degree level (ESRC 2021). Women's representation is also lower among social science doctoral graduates than among master's graduates (ESRC 2021). Women's enrolment in a doctoral degree varies significantly by subject within the social sciences, with the most women enrolled in Psychology, Education or Anthropology and the least number of women taking a doctoral degree in Economics, Politics or Business studies. This is perhaps because some subjects are heavily gender skewed at the undergraduate level (ESRC 2021). Another factor is the impact of socio-economic background and concerns about the rising cost of degrees. While it is typical to find socio-economic data at the undergraduate level, socio- economic data is not readily available at the doctoral level (ESRC 2021). It was also suggested that funding challenges were a core issue for widening participation. Access to and levels of funding can perpetuate inequalities for those

from economically disadvantaged backgrounds or not in a position to financially support their doctoral studies (ESRC 2021). There are some concerns that funding does not sufficiently cover living expenses, especially for more expensive regions like London (ESRC 2021). In addition, there have been concerns that COVID-19 has further perpetuated these inequalities, especially for women with caring responsibilities and international students who cannot travel to the UK (ESRC 2021). While these findings specifically look at the situation in the social sciences, we might expect a comparable situation for the A&H. More information on the emergence of the 'widening participation' discussion is included in section 1.3.

3. What are the eventual careers undertaken by doctoral graduates in the A&H?

A&H doctoral students are most likely to undertake a PhD with the motivation of pursuing an academic career. It is thought that A&H students are more likely to want to pursue an academic career after their doctoral degree as it is less obvious than other subjects (like business studies) where their skills and knowledge may apply (Parker-Hay 2020). In a recent 2020 survey, it was found that motivations have stayed fairly consistent over the last three years (despite the interruptions of COVID-19) (Pitkin 2020). In 2020, the top three reasons for undertaking a doctoral degree (in any discipline) were 'interest in the subject' (35%), 'improving my academic career prospects' (27%) and 'it felt like a natural step for me' (13%), while 'improve my career prospects outside of an academic/researcher career' (8%) and 'professional development training' (7%) were less of a consideration (Pitkin 2020). Other studies have broken down these motivations by degree discipline. One 2010 study cited that for A&H, interest in the subject was a key motivating factor for undertaking the doctoral degree and that the desire for an academic career was more likely to be stated as a reason for undertaking the doctoral degree for both A&H and social science graduates (Vitae 2010). Another 2012 study, based on survey data of 4,550 doctoral researchers, found that 44% of A&H doctoral students had a definite career plan in mind during their studies. Of this cohort 61% were hoping to have a career in higher education teaching and lecturing after their degrees and 14% hoped to have a career in higher education research (Vitae 2012). Of those A&H doctoral students who did not have a definite career option in mind, or had several alternative career options in mind, 58% wanted to go into higher education teaching and lecturing, 24% into other occupations and 15% in higher education research (Vitae 2012). A&H doctoral students also showed the second greatest intent to pursue a career in an occupation related to their discipline of research (at 73%) second only to education (at 80%) (Vitae 2012). However, this study also shed light on why some A&H doctoral students only might be intending to pursue an occupation related to their research discipline, as students were concerned about too few career opportunities (67%) and too few relevant jobs in their preferred work location (42%)(Vitae 2012). A more recent report of social science doctoral students identified that the majority of students commenced their doctoral degree aspiring for an academic career (70%) or research career in higher education (54%) (ESRC 2021). It is also noted that as doctoral students' progress in their degrees, over time the number of students wanting to pursue a career outside of higher education increases as they realise the competitiveness of the academic job market (ESRC 2021).

A&H doctoral students face an increasingly competitive job market, including specifically for securing academic jobs. The academic job market remains competitive

and few doctoral students (across all disciplines) go on to become full professors and a low percentage get full-time academic jobs (Guerin 2020). Data from 2013 highlights that in the UK, three years after completing a doctoral degree, 43% of doctoral graduates (from multiple disciplines) found work in the higher education sector in some way, with just 17% in traditional teaching or research posts, which is much lower than other English speaking countries (50% in the USA and 49% in Canada) (Brown and Mountford-Zimdars 2017). A 2013 report, based on Longitudinal-DLHE survey data, found that between 2008 and 2010 the proportion of A&H respondents working in occupations unrelated to higher education or education increased from 22% to 31%, while the proportion in higher education was lower (58% in 2010 down from 67% in 2008) (these findings should be caveated with recognition that there were more A&H graduate respondents in 2010 than 2008 which may have impacted results) (Vitae 2013). In 2010, key job clusters for A&H were teaching and lecturing in higher education (at 37%, which was significantly lower than 2008 results at 50%) and other occupations (31%) (Vitae 2013).

While a low percentage eventually enter full-time academic research jobs, A&H doctoral students are more likely than other disciplines to enter a career in the higher education sector after graduation. There is evidence to suggest that A&H and social science doctoral graduates are slightly more likely than other degree disciplines to enter an academic career (Millard 2014; CFE 2020; Vitae 2010; 2009). A 2009 Vitae study confirms this, suggesting that education remains the common sector for all doctoral degree disciplines to be entering into, but A&H (67%) and social science (62%) were the most likely to be working in higher education (Vitae 2009). In the UK in 2010 it was reported that the most common role A&H and social science graduates would enter into (just 3 years after graduation) was teaching and lecturing in higher education (at 47% for social science and 50% for A&H, while the average for all subjects was 22%) and very few A&H doctoral graduates are engaged in a research-focused role after their doctoral education (Vitae 2010). These findings confirmed 2014 results which found that the proportion of social science doctorate degrees who remained in academia (65%) was higher than the average for all subjects (50%) (with similarity expected for A&H disciplines) (CFE 2020). A 2014 European study also reports that, in the UK, A&H doctoral graduates (57.7%) and social science doctoral graduates (67.6%) were more likely to find work in the higher education sector in comparison to all doctoral graduates (at 43.9%) (Millard 2014). More recent data from 2020 showed that across all fields just over half of all doctorate holders moved out of higher education after six months from graduation, whereas social science graduates were slightly more likely to stay in academia (at 58%) than other sectors (CFE 2020).

For those aspiring towards a research career in higher education, it is increasingly common to work through a series of fixed-term, non-research contracts to build towards a permanent role (Vitae 2017). A 2012 survey (using a sample of 233 former A&H doctoral students, students who started their degrees in 2002, 2003, 2004 so they were approximately 5-7 years into their careers) found that amongst A&H doctoral students that were able to secure an academic position, 61% were in permanent positions, 27% were on fixed term contracts, and 8% were in non-academic positions (DTZ 2012). Another report (based on the DLHE survey and the follow up L-DLHE survey) found that in 2010, of A&H doctoral graduates, 66% were on permanent or open-ended contracts, 18% on fixed-term contracts (lasting 12 months or more), 4% on fixed-term contracts (less than 12 months), 9% self-employed or freelance, and 2% other (Vitae 2010). A&H doctoral graduates were less likely than physical sciences and engineering, social sciences or biomedical sciences to have

a permanent contract, and they were also more likely than any other subject to be on fixed term contracts (less than 12 months) or were self-employed/freelance (Vitae 2010).

Doctoral students who do not enter academia go on to have a range of future careers. A&H doctoral graduates have been reported quite commonly to be working as legal and business professionals, in artistic and literary occupations and administrative occupations (Vitae 2011), although the majority were in higher education or other education roles. In some countries the majority of social science doctoral graduates work outside of academia (for example, 75% in Germany) but in the UK only 42% progress to non-academic careers as their 'first destination' (ESRC 2021). In the UK, according to a recent survey of social science doctoral students, among doctoral graduates who do gain employment outside of higher education, 49% are employed within the public sector or third sector, 14% within the commercial sector, 13% other education, 13% within government/civil service or other organisation, 7% in other roles, and 4% self-employed (ESRC 2021).

There is mixed evidence on the impact of a doctoral degree on securing eventual careers. When thinking about the impact of the doctorate on a student's career, the evidence is mixed. A 2010 report (based on the DLHE survey and the follow up L-DLHE survey, targeting those students who graduated in 2004/05 totalling 2,073 doctoral graduate respondents) found that 30% of A&H doctoral students (three years after graduating) found their doctoral study had not enabled them to access job opportunities at all, and 17% felt their doctoral studies had not helped them progress towards their long term career goals (Vitae 2010). In contrast, in a 2012 study in the UK (using a sample of 233 former A&H doctoral students, approximately 5-7 years into their careers) 96% of respondents stated their A&H doctoral degree was essential to their career and 23% said that it has been of some importance getting their present job or career or quickly progressing, with only 8% saying that it has been of little importance (DTZ 2012). However, the use of varying sample size and time frames could account for the variation in results.[6] The 2010 report also included some information on how employers valued doctoral graduates in the UK (across multiple disciplines); a focus group of graduates suggested that employers valued their degrees positively or at least neutrally (Vitae 2010). Three years after graduating 50% of these doctoral graduates (across multiple disciplines) reported that their doctorate qualification had been a formal requirement for entry into their current job and 32% felt it was important to their employer when they were recruited (Vitae 2010). However, one in ten graduates from A&H subjects felt their doctorate had not been important to their employer when they were recruited and A&H doctoral graduates were more likely to be employed in roles where their degrees were not considered important to employers (Vitae 2010). Another study found that 91% of Spanish social science and humanities doctoral students did not consider their degree necessary in their jobs (Millard 2014). While some employers are positive about doctoral graduate employment - finding doctoral graduates highly employable with useful skills - others are sceptical (Millard 2014; Robson, Holgate, and Randhawa 2021).

[6] The research team is in the process of developing comparable statistics for 2017/18 and 2018/19 A&H doctoral graduates

4. What skills will doctoral students in the A&H need in the future?

The table at the end of this section (Table A5.1) summarises the analysis of the skills identified in this A&H REA against the skills listed in Vitae's Researcher Development Framework (RDF). Two categories of skills were considered as part of the REA: (i) skills A&H doctoral students currently have and develop within their degrees and (ii) skills demanded by employers from A&H doctoral graduates. These two categories can be compared against one another to identify gaps between doctoral students' skills and employers' demands in order to understand if there are any other skills which doctoral students need to develop to meet employers' expectations. The analysis also considers two key reports: '*The future of work (by 2025)*' (WEF 2020) and '*21st century skills*' (Voitenko, Gadasina, and Sørensen 2018). These two sources were chosen as they talk about the changing nature of the future world of work and identify skills which future workforces may need to keep up with workplace changes (WEF 2020; Voitenko, Gadasina, and Sørensen 2018). It should be noted that as only these two sources were cited in this comparison, results should be considered as a snapshot rather than a comprehensive overview of future skills needed. The full analysis of skills identified, with references to individual sources, is included in Annex B to this Appendix.[7]

A&H students currently develop a wide range of skills. The analysis demonstrates that A&H students currently have a wide range of skills which they develop within their doctoral degree (Table A5.1). Comparing skills against Vitae's RDF (Column A vs Column B of the table) we can isolate the skills A&H doctoral students currently have. A&H doctoral students are currently developing an advanced knowledge base, strengthening their cognitive skills, developing their creativity, working with others, and communicating[8]. Students are also developing their personal qualities, such as resilience and independence[9]. They also gain various management experiences, such as personal management, career management, research management, and networking[10]. Personal conduct, finances and being aware of engagement and impact are three categories within the RDF which the REA did not record any confirmation that A&H doctoral students were developing[11]. Also, thinking abstractly was a skill listed in the REA which A&H doctoral students are developing in their degree, but which is not listed in the RDF.

Doctoral students need core skills to keep pace with change and cutting-edge methods. By comparing the skills A&H doctoral students currently have against the skills in demand from employers (Column B vs Column C) gaps in skills can be identified. The working world (both academic and non-academic) is operating in an increasingly globalised and digitalised economy (British Academy 2017). Globalisation of the economy increases demands for employees who have high levels of cross-cultural capacity[12], with high levels of empathy and

[7] Other insights into skills developed and needed in future, from interviews, is elsewhere in this interim report

[8] Each of these RDF categories are backed up by 3 or more sources from the REA.

[9] These overlap with the RDF's B1 category of 'personal qualities'.

[10] This overlaps with the RDF's B2 'self-management', B3 'professional career development' and C2 'research management' categories.

[11] The three RDF categories are C1 'professional conduct', C3 'finance, funding and resources skills' and D3 'engagement and impact skills'.

[12] In the RDF this comes under D3.6 'engagement and impact: global citizenship'.

emotional intelligence[13] and languages[14]. Employers seek out high levels of numeracy and data experience[15] (such as data collection, data management, digital skills, and numeracy skills) and knowledge of quantitative methods[16]. To successfully transition to the world of work, A&H doctoral students need to be able to work in an interdisciplinary environment[17], with transferable skills[18], and some level of commercial and business acumen[19]. Communication was also highlighted as a key competency students need to develop. While A&H students do develop advanced communication skills, they can often be highly technical and specialised languages which may be different to what employers expect, as employers want persuasive messaging which will reach a broad range of audiences (Robson, Holgate, and Randhawa 2021; ESRC 2021; Vitae 2010; Guerin 2020) [20].

Employers demand certain skills that students in the UK's higher education system lack. While some business leaders do recognise that the system is producing high calibre graduates, others think the UK's higher education as a whole is not preparing students with the skills they need now or in the future (Robson, Holgate, and Randhawa 2021). These critiques touch on broader issues (not just applying to A&H doctoral students) and can relate back to concerns over the overarching structure of the UK's educational system. For example, there are concerns that students specialise too early in their education (starting at the secondary education level) which silos individuals to a specific field, when career development could benefit from more interdisciplinary work (Robson, Holgate, and Randhawa 2021). Other critiques speak to the future of work and the demand for new skills to prepare students for future jobs or to adapt to changing job roles, considering 21st century and industry 4.0 skills (McVitty 2020; British Academy 2017; Robson, Holgate, and Randhawa 2021). For example, at the undergraduate level, there is evidence that the 'digital divide' is already impacting students, with students entering university with varying levels of digital skills (McVitty 2020). A study on social science doctoral students in the UK recognised that students need to keep up with cutting-edge methods especially regarding data management, digital data collection and analysis (including big data) and dissemination (ESRC 2021). This insight applies to students pursuing both academic and non-academic careers (ESRC 2021). There are concerns that the UK's social science doctoral programmes do not provide enough emphasis on the development of quantitative skills and that the provided training in quantitative fields is too basic (ESRC 2021).

A range of doctoral skills may be useful for the jobs of the future or for adjusting to new ways of working. Two reports reviewed as part of this study suggest a list of skills which will be useful in the future (2025 onwards) as working environments continue to adapt and change (WEF 2020; Voitenko, Gadasina, and Sørensen 2018). There is some overlap between the skills listed in these reports and the skills A&H doctoral students are currently developing (Column B vs Column D). For example, A&H doctoral students leave their degrees with

[13] 'Empathy' and 'emotional intelligence' were not identified as key criteria under the RDF but are highlighted in two sources in the REA.

[14] In the RDF this comes under A1.6 'knowledge base: languages'.

[15] In the RDF this comes under A1.7 'knowledge base: academic literacy and numeracy'.

[16] In the RDF this comes under A1.3 'knowledge base: research methods – practical application'.

[17] 'Interdisciplinary work' was not identified as a key skill in the RDF but was highlighted by two sources in the REA.

[18] In the RDF this comes under B3 'professional career development'.

[19] In the RDF this comes under D3.3 'engagement and impact: enterprise'.

[20] In the RDF this comes under D2 'communication'.

advanced problem-solving abilities[21] and this is highlighted as a key attribute for the future when using new tools or adjusting to new ways of working will be required (British Academy 2017; DTZ 2012; Vitae 2010; WEF 2020; Voitenko, Gadasina, and Sørensen 2018). Creativity[22] will also be needed in the future work environment as workers need to be flexible, adaptable, show initiative and self-direction, and be able to implement new innovations (WEF 2020; Voitenko, Gadasina, and Sørensen 2018). A&H doctoral students show creativity by being adaptable[23], being able to work independently/show initiative/self-motivated[24], and innovate[25] (British Academy 2017; Gopalan 2018; DTZ 2012; Vitae 2010). In order to work in a fast paced changing environment future workers will also need to demonstrate resilience[26] and stress tolerance, something which doctoral students also need in order to complete their degrees (ESRC 2021; WEF 2020). Future leaders will also need to work alongside others in new environments and inspire others to adjust to new ways of working, also responsibility, social influence, persuasion and negotiation will be key (WEF 2020; Voitenko, Gadasina, and Sørensen 2018). Doctoral students also have the ability to inspire others through their work[27] and collaborate/negotiate[28] with others (Vitae 2010; British Academy 2017).

Part of the challenge for doctoral students is communicating their skills, as a common issue doctoral students face (across multiple disciplines) is translating their skills for employers. While doctoral students (across multiple disciplines) do have skills which are useful to employers, students seem to struggle articulating these skills to employers in "their" language (Casey 2009). One of the recent ESRC recommendations (for social science doctoral students) includes to *'ensure students understand how their knowledge and skills can be applied in a range of settings and develop wider core skills which are essential for academic and non-academic careers alike*.'(ESRC 2021) In an increasingly competitive job market, doctoral students have to demonstrate their marketable skills to employers (Marini 2019), and A&H doctoral students may need more help on how to position themselves for employment (DTZ 2012).

Students also bring varying skillsets that are subdiscipline-specific or based on interest. In some cases, this may be because these skills are specific to a group of students and not the whole cohort of A&H doctoral students. For example, doctoral students can choose if they want to take up teaching positions during their degrees, enabling them to develop a new set of teaching skills[29]. Literature on part-time students also highlights how this cohort comes away with extra skills, including: time-management skills, ability to multi-task, as well as demonstrating resolve and personal commitment (Hooley et al. 2009). Depending on the A&H doctoral degree speciality, students can also develop other specialist skills such as languages, high-level numeracy, qualitative analysis and data processing skills, geospatial skills and practical production skills, content production, recording and broadcasting and archival retrieval skills (British Academy 2017).

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[21] RDF A2.5 'Cognitive skills: problem solving'

[22] RDF A3 'creativity'.

[23] RDF A3.1 'creativity: inquiring mind'

[24] RDF A3.2 'creativity: intellectual insight'

[25] RDF A3.3 'creativity: innovation'

[26] RDF B1.2 'personal qualities: perseverance'

[27] RDF D1.6 'working with others: inspiring others'

[28] RDF D1.7 'working with others: collaboration'

[29] 'Teaching' is included as a skill within the RDF under D3 'engagement and impact'.

Some students face particular barriers to developing certain skills. On the other hand, other cohorts may face barriers to develop skills within their doctoral degrees. For example, international students completing doctoral degrees in social sciences and humanities, whose first language is not English, can face additional challenges developing the language skills they need to complete their degrees (Maringe and Jenkins 2015). A case study of doctoral students (from multiple disciplines) at Durham University highlighted the importance of language skills, noting that if doctoral students arrive without a certain level of language skills they can face delays in their studies (Holmes, Reynolds, and Chaplin 2019). Mature students can also struggle when coming back to do a doctoral degree, as they feel deskilled after being in a job where they were performing at a high standard to feeling like they know nothing at all (Morris 2021). A&H supervisors themselves may benefit from further training (in terms or wellbeing, career advice and developing professional development tools) as they face dual demands of the older expectations of a supervisory relationship with their students and newer ideas (like the challenges of the academic job market and increasing wellbeing concerns) (Parker-Hay 2020).

A&H doctoral students develop a broad range of skills but there can be a mismatch between these skills and those that an employer expects or those that will be relevant in future. Within an increasingly globalised and technological world, there is a need to reconsider whether the UK has the skills it needs for the future, as new jobs emerge and existing jobs change (British Academy 2017). From the analysis, skills that were not identified for A&H doctoral students in the REA but are already expected by employers and likely to be important in future careers include digital skills and data literacy, financial literacy and commercial acumen, media literacy and persuasion skills. Where A&H doctoral students do have skills that are valued by employers and likely to be important in future, such as analytical skills, critical thinking and problem-solving skills, adaptability, resilience, team working and communication skills, they could focus on communicating these in a way which better matches employers' language.[30]

[30] This analysis of skills is expected to be developed further, when combined with inputs from the interviews in Stage 1 and inputs in Stage 2.

Table A5.1: Skills A&H doctoral students currently have (Column B) versus the skills in demand by employers (Column C) and skills for the future (Column D)

Column A: Skills listed in Vitae's RDF Framework			Column B: Skills A&H doctoral students currently have (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students (x = Identified as A&H doctoral skill)		Column D: Skills for the future of work (x = Identified as A&H doctoral skill)	
A. Knowledge and intellectual abilities	**A1**	**Knowledge base**						
	A1.1	Subject Knowledge	x	Advance knowledge / Subject specific knowledge / Specialist and general knowledge / Technical knowledge				Environmental literacy / Health literacy
	A1.2	Research methods - theoretical knowledge	x	Research methods / Research				
	A1.3	Research methods - practical application	x	Competent in data collection methods / Reporting the data / Research methods / Research / Research skills and techniques	x	Basic competences in qualitative, quantitative and mixed-methods research / Quantitative methods / Data collection / Emphasis on advanced quantitative skills		
	A1.5	Information literacy and management				Data management		Information literacy
	A1.6	Languages				Languages		
	A1.7	Academic literacy and numeracy				Digital skills / Data literacy / Numeracy		ICT literacy / Technology use, monitoring and control / Technology design and programming
	A2	**Cognitive skills**						
	A2.1	Analysing	x	Analytical skills / Critical analysis	x	Analysis (including big data)	x	Analytical thinking and innovation
	A2.3	Critical thinking	x	Critical analysis / Critical thinking	x	Critical thinking	x	Critical and Systems Thinking / Critical thinking and analysis / Judgement and Decision Making
	A2.4	Evaluating						Systems analysis and evaluation
	A2.5	Problem solving	x	Problem solving			x	Problem solving / Complex problem-solving / Reasoning, problem solving and ideation
	A3	**Creativity**				**Creativity**		**Creativity / Creativity, originality and initiative**
	A3.1	Inquiring mind	x	Adaptability/ Ability to learn			x	Flexibility and Adaptability / Ability to learn / Active learning and learning strategies

Column A: Skills listed in Vitae's RDF Framework			Column B: Skills A&H doctoral students currently have (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students (x = Identified as A&H doctoral skill)		Column D: Skills for the future of work (x = Identified as A&H doctoral skill)	
	A3.2	Intellectual insight	x	Independence/initiative / Self-motivation / Independence			x	Initiative and Self-Direction
	A3.3	Innovation	x	The ability to innovate			x	Innovations Implementing
	A3.5	Intellectual risk	x	Risk taking				
B. Personal effectiveness	**B1**	**Personal qualities**						
	B1.2	Perseverance	x	Resilience			x	Resilience, stress tolerance and flexibility
	B1.6	Responsibility	x	Independence				
	B2	**Self-management**	x	**Personal management**				
	B3	**Professional career development**						
	B3.1	Career management	x	Career management				
	B3.2	Continuing professional development				Develop transferable employability skills / Transferable skills		
	B3.4	Networking	x	Networking				
C. Research governance	**C1**	**Professional conduct**						
	C1.2	Ethics, principles and sustainability				Ethical practice		
	C2	**Research management**	x	**Research management**				
	C3	**Finance, funding and resources**						**Financial/Economic/Business/Entrepreneurial literacy**
	C3.2	Financial management				Budget management		
D. Engagement and influence	**D1**	**Working with others**						
	D1.2	Team working	x	Teamworking	x	Teamwork	x	Teamwork
	D1.6	Influence and leadership	x	Inspiring others			x	Leadership and Responsibility / Leadership and social influence
	D1.7	Collaboration	x	Collaboration / Negotiation			x	Persuasion and negotiation
	D2	**Communication and dissemination**	x	**Communication**	x	**Communication / Dissemination / Communicate with a broad range of audiences**	x	**Communication**
	D2.1	Communication methods				Persuasion / Communicate with a broad range of audiences		
	D2.2	Communication media						Media literacy

Column A: Skills listed in Vitae's RDF Framework			Column B: Skills A&H doctoral students currently have (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students (x = Identified as A&H doctoral skill)		Column D: Skills for the future of work (x = Identified as A&H doctoral skill)	
	D3	**Engagement and impact**						
	D3.1	Teaching				Teaching		
	D3.3	Enterprise				Commercial acumen / Business awareness / Business/commercial acumen		
	D3.5	Society and culture		Content development skills; understanding other cultures		Social perceptiveness		Social skills / Civic literacy
	D3.6	Global citizenship				Ability to operate in a culture context of globalisation and digital technology		Cross-cultural skills / Global awareness
Skills not listed in the RDF framework								
		Thinking abstractly	x	Thinking abstractly				
		Empathy				Empathy		
		Interdisciplinary work				Interdisciplinary work / Intervisible work with input from industry and relevant training providers		
		Coordination				Coordination		
		Narrative skills				Narrative skills		
		Effectively reasoning						Effectively reasoning
		Productivity and Accountability						Productivity and Accountability
		Emotional intelligence				Emotional intelligence		Emotional intelligence
		Troubleshooting and user experience						Troubleshooting and user experience
		Service orientation						Service orientation

Concluding remarks

We reiterate that there is limited evidence reported in the academic literature that is specifically focused on doctoral training provision within the A&H. However, considering this limited body of literature alongside sources on doctoral training across disciplines does result in some key considerations for this study.

Current landscape of A&H doctoral training provision - Arts and Humanities (A&H) doctoral provision is impacted by a number of trends, including an increasingly competitive job market for doctoral graduates and shifting discussions on the value of a doctoral degree; an increased focus on transferable skills development; massification of higher education; increased attention to diversity (alongside a realisation that there is disparity); and outspoken student concerns about wellbeing, funding security, and changes to the student-supervisor relationship. Trends in relation to the increasingly competitive job market and shifting discussion of the value of a doctoral degree may particularly impact A&H doctoral students.

A&H doctoral pipeline - A&H doctoral students tend to be more mature than students in other doctoral degree disciplines. This challenges the traditional image of a doctoral student and may result in specific needs. There are recently published concerns around inequalities in doctoral enrolments in the social sciences, and it would be relevant to collate and analyse similar data specifically for the A&H.

A&H doctoral careers - A&H doctoral graduates are more likely than other disciplines to embark on a doctoral degree wanting to pursue an academic degree after graduation. However, that aspiration may be unrealistic for many and there is some evidence suggesting that A&H students are unlikely to embark on specifically a research-focused role after graduation, compared with those in other subjects. They were however slightly more likely than peers in other disciplines to be engaged with teaching or lecturing in higher education after graduation. Students who did not enter academia after graduation entered a very broad range of careers. This diversity in career paths might pose specific challenges in preparing graduates adequately for subsequent career steps.

A&H doctoral skills - A&H doctoral students develop a range of skills but there can be a mismatch between these skills and those that an employer expects or those that are anticipated to be relevant in future. Skills that were not identified for A&H doctoral students in this assessment, that are expected by employers or likely to be important in future careers, include digital skills and data literacy, financial literacy and commercial acumen, media literacy and persuasion skills. Where A&H doctoral students do have skills that are valued by employers or that are likely to be important in future, such as analytical skills, critical thinking and problem-solving skills, adaptability, resilience, team working and communication skills (all identified in this assessment), they would benefit from communicating these in a way which better matches employers' language. This adaptation to employers' language is something they might need increasing support with.

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Annex A: Methodology

In this section, we provide a detailed description of the methodological approach for conducting the rapid evidence assessment (REA) as part of Work Package WP-1B.

Aims and overarching approach

The aim of the rapid evidence assessment was to gather evidence on the current landscape of doctoral provision in the A&H, including current trends, drivers, challenges and uncertainties for the future. The evidence from the REA will inform the main engagement stage of the project, and also help to identify a longlist of critical factors to inform the future scenarios in Work Package 3.

Specifically, the REA aimed to gather evidence on the following research questions:

5. What is the **current landscape of doctoral training provision** in the A&H?
6. What **skills** will doctoral students in the A&H need in the future?
7. What is the **pipeline** of doctoral students in the A&H?
8. What are the eventual **careers** undertaken by doctoral graduates in the A&H?

The study approach consisted of a rapid evidence assessment (REA). A REA follows a similar process to a systemic review but is more limited in scope. They take a slightly more pragmatic approach to the scope and coverage of literature, limiting study inclusion by using a range of criteria that can be adjusted in response to the volume of literature identified, enabling them to be conducted within a more limited timeframe. The remaining sections set out our approach across four tasks:

1. Conducting searches
2. Screening
3. Extraction and quality review
4. Analysis

Conducting searches

We developed a search strategy with expert input from RAND Knowledge Services (Table A5.2). The search was conducted in the following databases: Scopus, Web of Science and ERIC. For all searches, the publication timeframe was restricted to 2011 onwards to capture literature from the past ten years, and only high-quality academic publications published in English were considered. The searches were combined in the following manner: 1 AND 2 AND 3 AND (4 OR 5 OR 6). Beyond the formal searches, we also included additional literature through knowledge already held within the team. Together, a total of 1,870 potentially relevant studies were identified for screening.

Table A5.2: Search terms

	Search category	Search terms	Notes
1	A&H	(arts OR humanities)	This set of search terms limits the search hits to those relating to **A&H**
2	doctoral student	(PhD OR doctoral OR "doctoral student*" OR "doctoral candidate*" OR "doctoral researcher" OR post-graduate OR postgraduate)	This set of search terms limits the search hits to those relating to **doctoral students**
3	Training	(training OR provision OR development OR scheme OR program* OR education OR course OR "professional development" OR employability)	This set of search terms limits the search hits to those relating to **doctoral training**
4	Skill requirements	(skill* OR knowledge OR expertise OR experience* OR competenc* OR capabilit*)	This set of search terms seeks to identify sources relating to **common skill requirements for doctoral graduates**
5	Pipeline	(pipeline OR supply OR enrol* OR recruit*)	This set of search terms seeks to identify sources relating to **the current pipeline of doctoral graduates**
6	Careers	(career* OR prospect* OR job* OR role* OR destination* OR sector* OR employment OR occupation* OR placement* OR internship*)	This set of search terms seeks to identify sources relating to the **eventual careers undertaken by doctoral graduates**

Screening

We screened initiatives for relevance against predefined inclusion and exclusion criteria (Table A5.3). Following screening, a total of 201 publications were identified as meeting the inclusion criteria. Due to the volume of literature identified, we further restricted our inclusion criteria to make the extraction and review process more manageable. We prioritised publications focused on the A&H and with a UK focus. This led to a total of 36 publications meeting the inclusion and exclusion criteria.

Table A5.3: Inclusion and exclusion criteria

Criterion	**Include**	**Exclude**	**Rationale**
Topic relevance	Studies addressing doctoral provision within Arts & Humanities	Studies addressing graduate or post-doctoral populations; disciplines outside of Arts & Humanities	We propose to keep the focus of the REA on the A&H
Geographical location	All countries	N/A	The aim of the REA is to identify evidence to inform the future scenarios for AHRC
Year of publication	2012 onwards	2011 and earlier	We propose this time period to capture key trends over the last 10 years
Study type	Peer-reviewed journal articles and reviews, conference proceedings, grey literature with clear authorship, letters, editorials, comments or opinion pieces	Documents without clear organisational authorship, theoretical work, book reviews, sub-PhD level theses	The 'study type' selection criteria are intended to optimise the quality of sources in the literature search
Language	English	Other languages	It is expected that literature searches applying the English-language search terms will yield mostly English-language sources

Extraction

We extracted information from each included publication to facilitate cross-analysis against the key study questions and themes. We captured information from each included study in a standard template in Excel. The following information was captured:

1. General information about the evidence source
    - Author, year and study title
    - Brief summary
    - Publication type (e.g. journal article, review, book chapter)

- Methodology (e.g. qualitative data collection, quantitative data collection, mixed methods)
- Geographic coverage of study
- Discipline within A&H (where relevant)

2. Doctoral skills
    - Skills doctoral students have
    - Skills that are required by potential employers (e.g. industry, academia, other etc.)
3. Pipeline of doctoral students
    - Trends in the current pipeline
4. Eventual careers
    - Current trends (what are the eventual careers undertaken by doctoral students e.g. academia, private sector, third sector, public sector, other)
5. Current landscape of doctoral provision
    - General trends
6. Other comments

For all sections we also extracted information on: drivers, challenges/barriers, future trends, and any uncertainties.

Analysis

Each element of the extraction template was explored by a member of the study team to identify the key trends and issues emerging. The findings were then discussed with other members of the team and then further explored. Through an iterative process of analysis and discussion we were able to identify a set of key emerging findings that are set out in this document.

Limitations

The findings of this study are subject to some limitations related to the approach, the scope of the literature and the analysis.

The study conducted a rapid evidence assessment rather than a systematic review. This means there may be important sources that have not been included, either because they were not identified through our search strategy or because they fell outside of our inclusion criteria. Due to the volume of literature in the field we have had to place additional limitations on the scope of our approach to make the study feasible within timeframes – for example, by focusing on A&H and the UK. However, we are confident, based on the approach taken and our expert consultation process, that our analysis provides a fair and relatively representative picture of the current state of the evidence.

Because of the complexity of the literature, it is likely that there are certain elements within the studies included that have not been fully explored within the scope of this report. We have balanced length and complexity with comprehensiveness, aiming to provide an overall picture of the key emerging issues with a focus on the study questions identified for this work.

Annex B: Skills analysis

An analysis of skills identified in this assessment, with references to individual sources, is included in Table A5.4. The analysis maps the skills identified in this A&H REA against the skills listed in Vitae's Researcher Development Framework (RDF – in Column A). Two categories of skills were considered as part of the REA: (i) skills A&H doctoral students currently have and develop within their degrees (in Column B) and (ii) skills demanded by employers from A&H doctoral students (in Column C). These two categories can be compared against one another to identify gaps between doctoral students' skills and employers' demands in order to understand if there are any other skills which doctoral students need to develop to meet employers' expectations. The analysis in this report also considers two reports: '*The future of work (by 2025)*' (WEF 2020) and '*21st century skills'* (Voitenko, Gadasina, and Sørensen 2018). These two sources were chosen as they talk about the changing nature of the future world of work and identify skills which future workforces may need to keep up with workplace changes (in Column D) (WEF 2020; Voitenko, Gadasina, and Sørensen 2018). It should be noted that as only these two key sources were cited in this comparison, results should be considered as a snapshot rather than a comprehensive overview of future skills needed.

Table A5.4 A&H skills analysis: skills A&H doctoral students currently have versus the skills in demand by employers and skills for the future

	Column A: Skills listed in Vitae's RDF Framework*		Column B: Skills A&H doctoral students currently have ("exact skill listed" and source reference) (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students ("exact skill listed" and source reference)		Column D: Skills for the future of work** ("exact skill listed" and source reference)	
A. Knowledge and intellectual abilities	**A1**	**Knowledge base**						
	A1.1	Subject Knowledge	x	("Advance knowledge" (Gopalan 2018) "Subject specific knowledge" (DTZ 2012) "Specialist and general knowledge" (Vitae n/a) "Technical knowledge" (ESRC 2021))				("Environmental literacy"(Voitenko, Gadasina, and Sørensen, 2018)) ("Health literacy" (Voitenko, Gadasina, and Sørensen, 2018))
	A1.2	Research methods - theoretical knowledge	x	("Research methods" (DTZ 2012), "Research" (British Academy 2017))				
	A1.3	Research methods - practical application	x	("Competent in data collection methods", "reporting the data" (Gopalan 2018), "Research methods" (DTZ 2012), "Research" (British Academy 2017) "research skills and techniques" (Vitae 2009))	x	("Basic competences in qualitative, quantitative and mixed-methods research" (ESRC 2021) "quantitative methods" (Vitae n/a) "Data collection" "Emphasis on advanced quantitative skills" (ESRC 2021))		
	A1.4	Information seeking						
	A1.5	Information literacy and management				("Data management" (ESRC 2021))		("Information literacy" (Voitenko, Gadasina, and Sørensen, 2018))
	A1.6	Languages				("Languages" (Vitae n/a))		
	A1.7	Academic literacy and numeracy				("Digital skills" (McVitty 2020; Robson, Holgate, and Randhawa 2021) "Data literacy" (ESRC, 2021) "Numeracy" (Vitae n/a))		("ICT literacy" (Voitenko, Gadasina, and Sørensen, 2018), "technology use, monitoring and control" "technology design and programming" (WEF 2020))
	A2	**Cognitive skills**						
	A2.1	Analysing	x	("Analytical skills" Vitae n/a) ("critical analysis" (British Academy 2017; Gopalan 2018; DTZ 2012))	x	("Analysis (including big data)" (ESRC 202))	x	("Analytical thinking and innovation" (WEF 2020))
	A2.2	Synthesising						

Column A: Skills listed in Vitae's RDF Framework*			Column B: Skills A&H doctoral students currently have ("exact skill listed" and source reference) (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students ("exact skill listed" and source reference)		Column D: Skills for the future of work** ("exact skill listed" and source reference)	
	A2.3	Critical thinking	x	("Critical analysis" (British Academy 2017; Gopalan 2018; DTZ 2012) "Critical thinking" (ESRC 2021))	x	("Critical thinking" (Robson, Holgate, and Randhawa 2021))	x	("Critical and Systems Thinking" (Voitenko, Gadasina, and Sørensen, 2018), "Critical thinking and analysis" (WEF 2020), "Judgement and Decision Making" (Voitenko, Gadasina, and Sørensen, 2018))
	A2.4	Evaluating						("Systems analysis and evaluation" (WEF 2020))
	A2.5	Problem solving	x	("Problem solving" (British Academy 2017) (DTZ 2012) (Vitae n/a))			x	("Problem solving" (Voitenko, Gadasina, and Sørensen, 2018), "Complex problem-solving" "reasoning, problem solving and ideation"(WEF 2020))
	A3	**Creativity**				**("Creativity" (Robson, Holgate, and Randhawa 2021))**		**("Creativity" (Voitenko, Gadasina, and Sørensen, 2018) "Creativity, originality and initiative" (WEF 2020))**
	A3.1	Inquiring mind	x	("Adaptability" (British Academy 2017), "Ability to learn" (Gopalan 2018))			x	("Flexibility and Adaptability" (Voitenko, Gadasina, and Sørensen, 2018), "Ability to learn" (Voitenko, Gadasina, and Sørensen, 2018), "Active learning and learning strategies" (WEF 2020)))
	A3.2	Intellectual insight	x	("Independence/initiative " "self-motivation" (DTZ 2012), "Independence" (Vitae n/a))			x	("Initiative and Self-Direction" (Voitenko, Gadasina, and Sørensen, 2018))
	A3.3	Innovation	x	("the ability to innovate" (Vitae n/a))			x	("Innovations Implementing" (Voitenko, Gadasina, and Sørensen, 2018))
	A3.4	Argument construction						
	A3.5	Intellectual risk	x	("risk taking" (Vitae n/a))				
B. Personal effectiveness	**B1**	**Personal qualities**						
	B1.1	Enthusiasm						
	B1.2	Perseverance	x	("Resilience" (ESRC 2021))			x	("Resilience, stress tolerance and flexibility" (WEF 2020))
	B1.3	Integrity						
	B1.4	Self-confidence						
	B1.5	Self-reflection						
	B1.6	Responsibility	x	("Independence" (British Academy 2017))				
	B2	**Self-management**	x	**("Personal management" (Vitae 2009))**				

Column A: Skills listed in Vitae's RDF Framework*			Column B: Skills A&H doctoral students currently have ("exact skill listed" and source reference) (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students ("exact skill listed" and source reference)		Column D: Skills for the future of work** ("exact skill listed" and source reference)	
	B2.1	Preparation and prioritisation						
	B2.2	Commitment to research						
	B2.3	Time management						
	B2.4	Responsiveness to change						
	B2.5	Work-life balance						
	B3	**Professional career development**						
	B3.1	Career management	x	("Career management" (Vitae 2009))				
	B3.2	Continuing professional development				("Develop transferable employability skills" (ESRC 2021) "Transferable skills" (Guerin 2020))		
	B3.3	Responsiveness to opportunities						
	B3.4	Networking	x	("Networking" (Vitae 2009))				
	B3.5	Reputation and esteem						
C. Research governance and organisation	**C1**	**Professional conduct**						
	C1.1	Health and Safety						
	C1.2	Ethics, principles and sustainability				("Ethical practice" (ESRC, 2021))		
	C1.3	Legal requirements						
	C1.4	IPR and copyright						
	C1.5	Respect and confidentiality						
	C1.6	Attribution and co-authorship						
	C1.7	Appropriate practice						
	C2	**Research management**	x	**("research management" (Vitae 2009))**				
	C2.1	Research strategy						
	C2.2	Project planning and delivery						
	C2.3	Risk management						

Column A: Skills listed in Vitae's RDF Framework*			Column B: Skills A&H doctoral students currently have ("exact skill listed" and source reference) (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students ("exact skill listed" and source reference)		Column D: Skills for the future of work** ("exact skill listed" and source reference)	
	C3	**Finance, funding and resources**						**("Financial/Economic/Business/Entrepreneurial literacy" (Voitenko, Gadasina, and Sørensen, 2018))**
	C3.1	Income and funding generation						
	C3.2	Financial management				("Budget management" (ESRC 2021))		
	C3.3	Infrastructure and resources						
D. Engagement and influence	**D1**	**Working with others**						
	D1.1	Collegiality						
	D1.2	Team working	x	("Teamworking" (Vitae 2009))	x	("Teamwork" (Vitae n/a))	x	("Teamwork" (Voitenko, Gadasina, and Sørensen, 2018))
	D1.3	People management						
	D1.4	Supervision						
	D1.5	Mentoring						
	D1.6	Influence and leadership	x	("Inspiring others" (Vitae n/a))			x	("Leadership and Responsibility" (Voitenko, Gadasina, and Sørensen, 2018), "Leadership and social influence" (WEF 2020))
	D1.7	Collaboration	x	("Collaboration" "Negotiation" (British Academy 2017))			x	("Persuasion and negotiation" (WEF 2020))
	D1.8	Equality and diversity						
	D2	**Communication and dissemination**	x	**("Communication" (British Academy 2017; DTZ 2012; Vitae 2009))**	x	**("Communication" (Robson, Holgate, and Randhawa 2021) (ESRC 2021) (Vitae n/a) "Dissemination" "Communicate with a broad range of audiences" (ESRC 2021))**	x	**("Communication" (Voitenko, Gadasina, and Sørensen, 2018))**
	D2.1	Communication methods				("Persuasion" (Guerin 2020) "Communicate with a broad range of audiences" (ESRC 2021))		
	D2.2	Communication media						("Media literacy" (Voitenko, Gadasina, and Sørensen, 2018))
	D2.3	Publication						
	D3	**Engagement and impact**						

Column A: Skills listed in Vitae's RDF Framework*			Column B: Skills A&H doctoral students currently have ("exact skill listed" and source reference) (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students ("exact skill listed" and source reference)		Column D: Skills for the future of work** ("exact skill listed" and source reference)	
	D3.1	Teaching				("Teaching" (British Academy 2017) (Guerin 2020))		
	D3.2	Public engagement						
	D3.3	Enterprise				("Commercial acumen" (ESRC 2021) "Business awareness" (Vitae n/a) "business/commercial acumen" (ESRC 2021))		
	D3.4	Policy						
	D3.5	Society and culture		Content development; understanding other cultures (British Academy 2017)		("Social perceptiveness " (British Academy 2017))		("Social skills" "Civic literacy" (Voitenko, Gadasina, and Sørensen, 2018))
	D3.6	Global citizenship				("Ability to operate in a culture context of globalisation and digital technology" (British Academy 2017))		("Cross-cultural skills", "Global awareness" (Voitenko, Gadasina, and Sørensen, 2018))
Skills not listed in the RDF framework								
		Thinking abstractly	x	("Thinking abstractedly" (Casey 2009))				
		Empathy				("Empathy" (Robson, Holgate, and Randhawa 2021))		
		Interdisciplinary work				("Interdisciplinary work " (Robson, Holgate, and Randhawa 2021) "Intervisible work with input from industry and relevant training providers" (ESRC 2021))		
		Coordination				("Coordination" (British Academy 2017))		
		Narrative skills				("Narrative skills" (Robson, Holgate, and Randhawa 2021))		
		Effectively reasoning						("Effectively reasoning " (Voitenko, Gadasina, and Sørensen, 2018))

Column A: Skills listed in Vitae's RDF Framework*			Column B: Skills A&H doctoral students currently have ("exact skill listed" and source reference) (x = Identified as A&H doctoral skill)		Column C: Skills in demand from employers from A&H doctoral students ("exact skill listed" and source reference)		Column D: Skills for the future of work** ("exact skill listed" and source reference)	
		Productivity and Accountability						("Productivity and Accountability" (Voitenko, Gadasina, and Sørensen, 2018))
		Emotional intelligence				("Emotional intelligence" (Guerin 2020))		("Emotional intelligence " (WEF 2020))
		Troubleshooting and user experience						("Troubleshooting and user experience" (WEF 2020))
		Service orientation						("Service orientation" (WEF 2020))

* This table was created by analysing the skills listed in the REA and mapping these against the Vitae RDF. In instances where the wording/concept listed in the paper does not exactly match the wording/concept in the RDF then (1) the exact wording in the paper is listed and (2) the skill is listed against the RDF skill which it overlaps with the most. Vitae's RDF can be found at https://www.vitae.ac.uk/vitae-publications/rdf-related/researcher-development-framework-rdf-vitae.pdf/view (Accessed 02/11/2021).

** These skills are general skills needed for the future of work. These skills are not specific to A&H doctoral students but apply more broadly to an effective workforce for future jobs (by 2025).