What do PhD graduates in non-academic careers actually do?
Interaction between organisation mission, job specifications and graduate lived experience

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ABSTRACT
A growing literature examines PhD graduates working beyond academia. These studies are critiqued for rarely addressing the sectoral and organisational structural factors that influence actual work. So, we examined how the non-academic, contextually situated, organisational job specifications of fifteen PhD graduates interacted with their daily work experiences – looking particularly at the role of (a) communication since effective communication is reported as an employer concern, and (b) research since this is an expected outcome of PhD programmes. References to data collection and analysis were largely absent in interviews and job specifications, but research-related capabilities, for example, analytic thinking, were present, intertwined with communication in multiple ways, with dialogue and reading central. The graduates recognised these capabilities as having been finely honed in the PhD and inherent to their jobs.

KEYWORDS
communication, job specifications, lived work experience, non-academic employment, PhD graduate, research

Increasingly, PhD graduates are seeking employment outside academic teaching-research work with more than half working beyond academia (Heuritsch et al. 2016). This has led to a growing body of literature on the potential usefulness of the PhD beyond an academic career. These studies, whether reporting employer or employee perspectives, focus largely on science PhDs in the private sector (Barnacle et al. 2020). We have much
less knowledge of the careers of social sciences and humanities graduates or of PhDs working in the public and parapublic sectors or in non-academic higher education posts. Nevertheless, in looking at the existing employer and employee studies, three themes emerge. First, a frequently mentioned worry amongst employers is the ability to ‘communicate effectively’ (Cousten and Pignatel 2018; Diamond et al. 2014; Purcell et al. 2005), without further definition. Intriguingly, little reference is made to communication by PhD graduates.

Second, generally neither the studies of employers nor of PhD graduates address whether or not individuals are doing research, and the few that do (e.g., Cruz-Castro and Sanz Menendez 2005) do not define the term. Regardless, both employer and employee studies report that what we, as authors, term research-related capabilities are valuable, for instance, critical and analytic thinking, handling complex problems, though these capabilities are rarely linked to the notion of research. Third, as noted elsewhere (McAlpine et al. 2021), the perceptions reported in these studies are rarely situated within the structural factors, such as labour sector, organisational mission and job specifications that influence the actual experience of work. Yet, without attention to these influences, our understanding of these careers lacks the substance and depth to characterise the ways the PhD might be useful or not – and thus limits our ability to prepare PhD graduates for non-academic careers. So, in order to better understand the potential role of these structural influences on actual work, we undertook a study in 2019–2020 to examine PhDs’ contextually situated work activities, paying particular attention to communication (given employer-stated concerns) and research (lack of specification) in previous studies. Specifically, we analysed the experiences of fifteen individuals who had completed their PhDs in the UK.

Given the focus on communication and research, we developed working definitions for these terms – though using different approaches. As communication is an established area of study, we turned to this literature which made clear that definitions of communication vary but they all include an initiator, a recipient, the message itself, a mode of transmission, and an effect – that is, the meaning drawn from the communication (Cacciattolo 2015). Further, any particular communication or genre, oral or written, responds to – is created and interpreted within – the purposes and values of the vested community (Parodi 2010) which will vary by context, in our case by organisation. Thus our definition: Communication entails the cre-
What do PhD graduates in non-academic careers actually do?

Ation of knowledge and exchanging of information in a range of genres (e.g., oral presentation, email) and modes (e.g., oral, written) to achieve/advance organisational (and sometimes personal) goals.

As regards defining research, we used a more inductive approach. We had noted frequent reference in the literature on PhD non-academic careers to what we termed, research-related capabilities, and characterised these abilities as essential to successful data collection and analysis. Thus, we defined research as entailing some form of investigation or inquiry that could incorporate either or both: actual data collection and analysis, and/or research-related capabilities: searching for, synthesising and organising information and analysing, interpreting and reporting the results of the work. So, by extension, research-related capabilities underpin not just data collection and analysis and academic reports but also policy-making, programme development and many other activities that benefit society as a whole (Council of Canadian Academies 2021). Each activity can be directed within (up, down, or sideways), or beyond an organisation.

Both communication and research are contextually bounded so manifested in organisational expectations in job titles and job specifications and embodied in individual experiences of actual work.

Situating the study

We drew on the notion of nested contexts (McAlpine and Norton 2006) to analyse the influence of the structural factors. These nested factors include the macro-context: the labour sector, and more broadly the economic market for skilled workers.1 The meso-context, nested within the macro-context, represents organisational type. It creates the micro-context in which the individual carries out day-to-day work activities. Further in this article we review previous studies of PhD graduates in non-academic careers using the nested contexts to differentiate the potential influence of the contexts on work.

Macro-national/international factors

There is a global competition for highly skilled workers since many countries aim to develop such a workforce (Council of Canadian Academies 2021) and PhD graduates are seen as key players, particularly as regards conducting research and spreading knowledge (OECD 2013). Such highly
skilled workers are distributed across private, public, parapublic and higher education sectors: private (efficiency, competitiveness, profit); public (policy-driven, accountable for public good); parapublic (policy-driven, accountable for varied forms of focussed-public good); and higher education (policy-driven, accountable for a specific public good, but also competitive and partly profit-driven). The public and parapublic sectors are largely absent in the empirical literature on post-PhD careers though Auriol and colleagues (2013) report that social scientists are more likely to be hired in the public sector and not be researchers, and humanists often find non-academic posts in higher education, for instance, involving teaching- and research-related tasks (Berman and Pitman 2010), such as programme director or research communications officer.

Regardless, in all sectors, forms of employment vary. Individuals can work full-time or part-time given the growth of contract work (in Europe, O’Connor 2019) and may be permanent or on contract. They may work in a single job or have a hybrid career with more than one concurrent job in different organisations perhaps spanning sectors (Cañibano et al. 2019). They may engage in serial or concurrent job changes within and across sectors. Finally, they may be salaried or self-employed, given the growing gig economy (Hune-Brown 2018).

**Meso-organisational factors**

While macro-context factors influence the organisational level, most PhD career studies focus on what is happening within the organisation – though often only specifying the labour sector. We summarise here the reported factors pertinent to our study: (a) mission or purpose of the organisation; (b) employer interest in or willingness to hire PhDs; (c) perceived worth as regards the ‘fit’; and (d) capabilities required of employees to fulfil their roles. We also report the perceptions of PhD employees working in such organisations.

*Employers:* Regardless of sector, differences in hiring practices are influenced by the mission or purpose of the organisation, that is, the nature of communication will be directed at achieving organisational goals both within and beyond the organisation (Hallahan et al. 2007). Thus, communication is perhaps the most important capability a potential employee can bring since it is indispensable in meeting these goals (Cacciattolo 2015).
We know, for instance, that private sector firms that appreciated the PhD tended to cooperate with universities and make a greater effort in research and development (Garcia-Quevedo et al. 2012). Still, organisations must decide whether to make the substantial financial and human resource investment to ensure PhD employees remain (Gadja 2019) and may hesitate to make the commitment without a history of success (Adams et al. 2006). This suggests that organisations may not believe a PhD adds sufficient worth beyond a master’s degree (Kyvik and Olsen 2012) or may prefer to hire those with lower qualifications at a lower salary (Thune et al. 2012). Further, prior work experience outside academia can also be a crucial criterion (Cousten and Pignatel 2018; Diamond et al. 2014) since employers want employees with business acumen.

As well, there may be no explicit requirement for the degree in the job specification since it would preclude other potential employees from applying (McAlpine and Inouye 2022), though it may be included as ‘desirable’ (Kulkarni et al. 2015). Thus, while a majority of PhDs may work as researchers, the majority of researchers do not hold a PhD (Benito and Romera 2013). Interestingly, organisations which had recently hired PhDs had done so without intending to – suggesting the PhD can give an advantage if the candidate demonstrates good interpersonal skills during interview (Purcell et al. 2005).

Employees: Consistent with the employer evidence, the majority of PhDs in non-academic jobs reported a PhD was not required in their job specifications (Purcell et al. 2005) – though they perceived it as giving an advantage in the hiring process (Bryan and Guccione 2017). Evidence to support this view is that PhDs have reported others in their local work environment also hold PhDs (McAlpine et al. 2021).

PhDs generally value their PhDs (Bryan and Guccione 2017; Diamond et al. 2014) and are satisfied as regards intellectual challenge, degree of independence, and level of responsibility in their work (Benito and Romera 2013; Sinche et al. 2017). Still, there are discrepancies in satisfaction: Thune et al. (2012) reported 90 per cent felt the degree was relevant to their work, but Heuritsch et al. (2016) reported just 65 per cent felt they worked at the PhD level; Béret and colleagues (2003) noted similar results. We believe such discrepancies likely result from research designs that do not attend to how differences in meso-organisational structures, such as the capabilities required of employees, impact on micro-context and work role/activity.
Micro-context

Employers: Beltramo et al. (2001) reported employers wanted employees who worked well with others, communicated well to a range of audiences, and engaged in group problem-solving, but also worked well in isolation and under pressure, and produced creative and accurate documentation. This may explain why the ability to communicate effectively has been noted as a concern, especially in teams (Cousten and Pignatel 2018; Diamond et al. 2014; Purcell et al. 2005). Generally, such studies do not define ‘communicate’ though Diamond et al. (2014) noted PhDs’ strength in writing reports and presenting information to others. Nor do they situate the communication expectations within specific organisational roles and goals. As for research, Hannelore de Grande and colleagues (2014) reported those with PhD employees had already appreciated their research skills (undefined), scientific knowledge and leadership. Other studies note employers value PhDs’ critical, systematic and analytical thinking, ability to handle complex problems (Cousten and Pignatel 2018; de Grande et al. 2014); and ability to think creatively (Cousten and Pignatel 2018; Diamond et al. 2014). What we see here is the expectation for research-related capabilities, though data collection and analysis are not mentioned.

Employees: Employees’ perspectives generally matched those of employers as regards research-related capabilities. Individuals reported systematic and analytical thinking and handling complex problems as important (Bryan and Guccione 2017; Diamond et al. 2014; Kyvik and Olsen 2012; Lee et al. 2010). Johanna Törnroos (2017) reported that regardless of discipline or sector, PhD graduates felt the most important abilities for their careers were: piecing together and solving problems; searching for, adopting and critically examining knowledge – with no mention of data collection and analysis. As for communication, studies such as Sinche et al. (2017) and Thune et al. (2012) have reported graduates perceived their communication skills as underdeveloped thus paralleling employer reports. At the same time, report-writing, a specific type of communication, has been described as useful (Lee et al. 2010; Bryan and Guccione 2017) – mirroring Diamond et al. (2014) – as was research sector knowledge and networks, which could provide credibility (Bryan and Guccione, 2017).

Overall, in both employer and employee studies, references to communication were largely unspecified as to genre, mode, audience, and so on. Further, reference is frequently made to research and what we term
research-related capabilities, but we found no specific naming of data collection and analysis, despite the assumption that PhD graduates are valued for their ability to conduct research (OECD 2013).

**Research questions and methods**

What relationship, if any, exists between meso-organisational work expectations and the micro-context lived work experience of PhD graduates in non-academic occupations? Given the focus on communication and research, we had two sub-questions:

1. What communication and research activities characterise meso-organisational expectations?
2. What communication and research activities characterise the micro-context lived experience?

**Approach**

Our goal was to generate a broad picture while retaining the individual dimension of the phenomenon we were studying (Creswell and Plano Clark 2017). So, we used an approach in which, in the first instance, we grounded our understanding of the data through narrative (Elliott 2005) to ensure we conceived each individual’s career trajectory as distinct. We then conducted a series of cross-case analyses to generate quantitative and qualitative patterns.

**Participants**

Fifteen individuals who did their PhDs in the UK participated in the study. All were given English aliases since culturally relevant names could potentially make identification of participants easier. Thirteen remained in the UK and two had moved to countries beyond Europe. Eight had graduated in the social sciences, four in the sciences, and three in humanities – so more than two-thirds constituted an under-researched group. Eight were male and seven were female. All but one was in a permanent full-time position. Five were in the public/parapublic sectors (three humanists and two social scientists); five were in non-academic posts in higher education (three social scientists and two scientists) – a reminder of the growth in these...
kinds of posts; and five were in the private sector (two social scientists, two scientists and one humanist. That is, two-thirds were situated in higher education and the public/parapublic sectors (less well studied sectors). All but one, Jim, held full-time, secure salaried posts. There were no instances of being self-employed.

Table 1. Participant characteristics

<table>
<thead>
<tr>
<th>Alias</th>
<th>Discipline</th>
<th>Labour sector</th>
<th>Role/title</th>
<th>Survey: status and % research</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENJAMIN</td>
<td>SS</td>
<td>Private</td>
<td>Policy consultant</td>
<td>Full-time, permanent; &gt;75% research</td>
</tr>
<tr>
<td>DAVID</td>
<td>S</td>
<td>Private</td>
<td>Senior medical device or IVD product specialist</td>
<td>Full-time, permanent; 20%–30% research</td>
</tr>
<tr>
<td>MOLLY</td>
<td>S</td>
<td>Private</td>
<td>Data scientist</td>
<td>Full-time, permanent; no response re: research</td>
</tr>
<tr>
<td>PETER</td>
<td>SS</td>
<td>Private</td>
<td>Research associate</td>
<td>Full-time, permanent; 60%–70% research;</td>
</tr>
<tr>
<td>ELISE</td>
<td>Hum</td>
<td>Private</td>
<td>Senior manager in strategy &amp; technology strategy</td>
<td>Full-time, permanent; 20%–30% research</td>
</tr>
<tr>
<td>JIM</td>
<td>SS</td>
<td>HE</td>
<td>Digital learning development officer</td>
<td>Hybrid; 50%, permanent, plus teaching contract @ 1 d/wk; 20%–30% research</td>
</tr>
<tr>
<td>SANDRA</td>
<td>SS</td>
<td>HE</td>
<td>Business development manager</td>
<td>Full-time, permanent; 10% research</td>
</tr>
<tr>
<td>MATT</td>
<td>S</td>
<td>HE</td>
<td>Industry partner manager</td>
<td>Full-time, permanent; no research</td>
</tr>
<tr>
<td>BRENDA</td>
<td>SS</td>
<td>HE</td>
<td>Transition officer (student recruitment and outreach)</td>
<td>Full time, permanent; 10% research</td>
</tr>
<tr>
<td>SAMUEL</td>
<td>S</td>
<td>HE</td>
<td>Researcher development</td>
<td>Full time, permanent; 25–30% research</td>
</tr>
<tr>
<td>ADRIAN</td>
<td>SS</td>
<td>Public/parapublic</td>
<td>Deputy head of policy &amp; acting head</td>
<td>Full-time, permanent; 40%–50% research</td>
</tr>
<tr>
<td>JEREMY</td>
<td>SS</td>
<td>Public/parapublic</td>
<td>Portfolio development manager</td>
<td>Full-time, permanent; 75%+ research;</td>
</tr>
<tr>
<td>FELICITY</td>
<td>Hum</td>
<td>Public/parapublic</td>
<td>Head of strategic partnerships</td>
<td>Full-time permanent; no research</td>
</tr>
<tr>
<td>JENNY</td>
<td>Hum</td>
<td>Public/parapublic</td>
<td>Senior family planning and reproductive health researcher</td>
<td>Full-time permanent; 75% research</td>
</tr>
<tr>
<td>AMY</td>
<td>SS</td>
<td>Public/parapublic</td>
<td>Senior data analyst</td>
<td>Full-time, permanent; 20%–30% research</td>
</tr>
</tbody>
</table>

SS = social science; S = science; Hum = humanities; HE = higher education
Data collected

Each participant completed a short pre-interview survey as to background, the nature of the organisation, and their work activities (from a list to which they could add), including the percentage of activities that were research (self-defined). The semi-structured interview lasted about one hour. At the beginning of the interview, participants were asked to create a visual career timeline (Miles and Huberman 1994), which became the focus of the first part of the interview. In the remainder of the interview, we explored the nature of their present work and the ways in which they saw connections with their PhD. Finally, at the end of the interview, participants were asked to provide job specifications for their present jobs. We decided on collecting job specifications at this point since we viewed them as organisational, thus a distinct data set. Further, we did not want the job specification to influence how participants described their jobs.

Analysis

All data were entered into MaxQDA by case. We began with a narrative approach (Elliott 2005; Riessman 2008): creating extended low-inference cameos that integrated the various sources of data. These texts of about three hundred words retained as much as possible of the actual words used in the various forms of data in order to avoid interpretation. These data displays (Miles and Huberman 1994) ensured we coded-in-context: re-situating ourselves within each individual’s experiences when coding. First, we coded the same three interviews for the two main codes: research and communication, with sub-codes emerging from iterative comparative reading of coded sequences. We discussed the few discrepancies until consensus was reached. Once the code system was established, we each independently coded the remaining interviews, reviewing iteratively each other’s coding, with agreement over 90 per cent in all the cases. Both of us did a final random code check for around half of the cases. The first author then coded the job specifications using the same codes, with the second author code checking all the cases (see Table 2 for the final code definitions and examples).

Once coding was completed, the second analytical step involved a series of queries in MaxQDA to generate data displays that enabled us to observe both qualitative and quantitative patterns within the labour sectors, institutional type/mission and work role/title to answer the research questions.
Table 2. Coding system for all data

<table>
<thead>
<tr>
<th>Codes &amp; sub-codes</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Reference to communication that cannot be sub-coded since it does not specify the nature of the activity, e.g., deliver x, present y; experience of working with committees (not clear if oral and/or written)</td>
<td>To work with the wider organisation and the other UK national organisations on specific projects and initiatives, supporting and leading as necessary, to ensure a joined-up approach (Adrian Job specification, 20)</td>
</tr>
<tr>
<td>Writing</td>
<td>Writing different genres as well as drafts &amp; summaries for different purposes (includes planning)</td>
<td>I will write up the consultants’ analysis, like I’ll format it and make it all nice, (Peter Interview, 84)</td>
</tr>
<tr>
<td>Dialogue</td>
<td>Conversations (speaking &amp; listening); may be described as meeting, discussing, sharing</td>
<td>I have to interact a lot more with other teams, and also in different ways. It’s more like convincing people that this is…why you should use [x] (Molly Interview Pos. 110)</td>
</tr>
<tr>
<td>Reading</td>
<td>Reading a range of genres for different purposes</td>
<td>[I] might be reading a report…reading presentations…reading Word documents. (Elise Interview, 86–87)</td>
</tr>
<tr>
<td>Oral Presentation</td>
<td>Formal presentations: different audiences &amp; purposes</td>
<td>I …give a talk somewhere or if I’m invited to speak or give a workshop …that’s within my role as well. (Benjamin Interview 99)</td>
</tr>
<tr>
<td>Research</td>
<td>Reference to research that can’t be sub-coded since it does not specify the nature of the activity</td>
<td>Conducts research across commercial markets and analyses business development metrics to identify new opportunities for business development. (Sandra Job specification, p. 1: 1204)</td>
</tr>
<tr>
<td>Data collection and analysis</td>
<td>Tasks specifically involving data collection &amp; analysis; includes evaluation, assessment</td>
<td>Then another big part of course is actually analysing the data (Amy Interview, 63)</td>
</tr>
<tr>
<td>Research-related capabilities</td>
<td>Tasks preceding (e.g., search on-line for information) or following data collection and analysis (e.g., synthesising/interpreting data); can include knowledge of HE</td>
<td>I know roughly how long each review takes me and where I need to focus more or not, and then I skim through the file to identify potential places where more work is needed, and then organise my time to meet that. (David Interview, 75)</td>
</tr>
</tbody>
</table>
Results

Our general question asked about the relationship between meso-organisational work expectations and the micro-context lived work experience of PhD graduates in non-academic occupations. It was broken into two sub-questions focusing on communication and research. We report the results intertwined with discussion in this section, first the two sub-questions, then the overall question. Before this, we introduce two participants – Ben and Felicity – through low-inference cameos, to illustrate job diversity in relation to sectors/organisations and roles.

Benjamin is a social scientist in the private sector who does research, and Felicity is a humanist in the parapublic sector, who does not. Neither job required a PhD.

The lived experience: Overview

BENJAMIN works as a Policy Consultant in a consultancy, the mission of which is to generate contracts from the public sector related to green energy. He notes about a third of staff doing his kind of work have PhDs. He started there several months after graduating, states that research makes up 75 per cent or more of his job, and since work projects are often about research funding, he feels close to academia. He enjoys the variety of work, though sometimes the amount requires good time management.

FELICITY works as Head of Strategic Partnerships in an international organisation, with a mission to build and sustain strategic partnerships around their programmes. Though she is not alone in having a PhD, such a qualification is rare. She started working there two years ago, some years after graduation. She enjoys her work including the range of people and contexts she gets to work in, though the amount of work, including administration and management can be challenging. Research makes up 10 per cent of her work.

We turn now to the findings about the meso-context – the organisational expectations as to communication and research – as represented in the job specifications. It is introduced through analysis of Benjamin’s and Felicity’s documents and then cross-case results are provided. The section afterwards reports, in a similar manner, the micro-context lived work experience: how individuals characterised their communication and research work activities in the interviews.
The meso-context: Organisational expectations in job specifications (sub-question 1)

The communication and research expectations for Ben and Felicity can be seen in their respective job specifications.

The organisational expectations: Job specification

BENJAMIN’s names an external focus: the ability to ‘attract new clients and generate business’, ‘develop relationships with peer level clients’, and ‘keep abreast of market trends’. And, internally, he ‘works within a team, developing and guiding the performance and careers of our people’. He contributes new ideas within the team, and ‘provides well thought-out, concise and timely oral and written communication’. As for research-related capabilities, he ‘has a basic understanding of the qualitative (e.g., interviews) and quantitative (e.g., surveys) research methods used in our field’. And, the job requires that he ‘collects and analyses data to support marketing initiatives,’ and ‘ensures the integrity of data collection methods’.

FELICITY’s emphasises ‘strong leadership’. External expectations include ‘create strong and effective partnerships with key organisations’ that are ‘sustainable’ and ‘champion the [programme] scheme’. Internally, she is to ‘provide leadership in delivering an expansion of our programmes’. So, ‘excellent (written and verbal) communication and inter-personal skills’ are important, as is ‘the ability to make effective presentations to senior level officials’ and ‘writing for …different audiences and sensitivity for different cultural contexts’. The only research-related capability is ‘a significant track record of attracting funds, from research to closure stage’ (something she makes no reference to in her own description of the work).

Both job specifications highlight external communication as regards advancing the institutional mission and internal collaborative communication amongst staff. The differences are that Benjamin’s requires data collection and analysis whereas Felicity’s expects leadership. This sort of variation emerged in our analysis of all fourteen documents (we lacked Jeremy’s). They generally began with a description of the organisation, the role title and responsibilities, and a list of required and desirable criteria, often using bulleted lists or tables of specifications.

Job titles: These were generally descriptive and captured the nature of the work: for instance, Jim in higher education is a Digital Learning Development Officer; Elise in the private sector is a Senior Manager in Strategy &
Technology Strategy (see Table 1). We suspect the titles are chosen to be easily found and understood in search engines, since many job opportunities emerge when they are used in this fashion.

Organisational description: We noted no major differences in terms of labour sector, aside from the tone and length of the descriptions. There was a tendency for the higher education ones to be quite lengthy, including neutral descriptions not just about the university, but also the unit, as well as equity and health and safety. In contrast, the private sector ones were shorter and more entrepreneurial, referring to firm growth, competition, and job opportunity. The public/parapublic ones were more like the higher education ones, but not consistently. Finally, the terms used varied, for instance, ‘clients’ in the private sector and ‘partners’ in the other sectors.

Expectations and requirements: Communication and research activities tended to be noted separately. As shown in Figure 1, the mode/genre of communication was often not identified, with the ‘general communication’ code (unspecified form of communication) representing 50 per cent of all coded segments. Notably, reading was named in none (though individuals

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Figure 1. Distribution of communication and research activities in job specifications
reported reading in the interviews). The number of coded job specifica-
tion segments varied considerably by participant – from two in Samuel’s
very brief job specification) to twenty-nine in Jim’s. Terms used included:
‘deliver information’, ‘attract clients’, ‘accurate and timely reporting’, and
‘interact cross-functionally’. This finding reflects earlier research on the
importance to organisations of good/ excellent yet unspecified communi-
cation abilities (Beltramo et al. 2001) and the concern that PhD graduates
may not have these (Cousten and Pignatel 2018; Diamond et al. 2014). Yet,
it also highlights variation related to organisational mission, role and job
specification.

Some specific forms of communication were reported in eleven of the
fourteen documents, so not in Molly’s, Samuel’s, or Amy’s (see Figure 2).
Writing was mentioned in eleven of the fourteen, either combined with
other specific forms of communication or alone (like Benjamin’s and
Elise’s), and usually not linked to any specific genre aside from ‘reports’.
Unspecific oral communication (coded as dialogue) was required in more
than half of the cases (n=9), for instance, ‘good oral communication skills’
or the ability ‘to inspire and motivate through strong communication and
influencing skills’. These abilities were always mentioned as complementing
other communication abilities such as writing and, in some cases oral pres-
entations. Oral presentations were only required in four job specifications,
with Felicity’s being one of them.

![Figure 2. Job specification cross-case communication categories distribution](image-url)
As to research, nearly one-quarter of all coded segments represented research-related capabilities (47), either alone (in David’s, Peter’s, Matt’s, Brenda’s and Felicity’s job specifications) or in combination with other codes. We identified many fewer data collection and analysis segments (18) and only one general research. Research-related capabilities appeared in all but Samuel’s very brief job specification (see Figure 3). Recall that this code included both thinking skills and pertinent knowledge related to research and research contexts. The former included terms such as ‘critical analysis’ and ‘synthesising information’. The latter referred to ‘state-of-the-art knowledge’, ‘working knowledge of [xxx] and their application’, and ‘deep understanding of [yyy] knowledge’. As well, there were instances when more than one aspect of research-related capabilities was combined: ‘A thirst for knowledge, a methodical mind-set... and high attention to detail’. These findings support prior research as to the worth given to these thinking capabilities amongst employers (Cousten and Pignatel 2018; de Grande et al. 2014).

Notably, data collection and analysis occurred in only seven of the fourteen job specifications and these were distributed across labour sectors: private (Benjamin, Molly, Elise), higher education (Jim), and public/para-public (Adrian, Jenny, Amy). This suggests that many organisations/employers may not require data collection and analysis or may not believe the work requires a PhD (Benito and Romera 2013); it may also support

![Figure 3. Job specification cross-case research categories distribution](image-url)
findings that employers may hire PhDs because they appear a good job fit at interview – regardless of whether they have a PhD (Purcell et al. 2005).

Required/desired criteria: In looking more closely at the qualitative nature of the descriptions, none of them required a PhD, and only two, David’s and Jenny’s, mentioned a PhD as desirable, consistent with previous reports (Purcell et al. 2005). Nevertheless, all but one participant (who did not know the answer) reported they were not the only PhDs in their organisation. For instance, Sandra noted everyone in her team had a PhD, and Benjamin noted that one-third of staff had PhDs. Jenny reported that others had PhDs, and Jim said that it was preferred though not stated in job specifications. This supports the notion that previous hiring of PhDs creates a preference for PhDs (Adams et al. 2006).

As well, reference was made to having ‘prior experience’, ‘a working knowledge’, ‘a track record’, related to the sector and organisational mission – and in the private sector to ‘commercial awareness and ‘entrepreneurship’. These results support prior findings as to the importance employers place on prior non-academic experience in the hiring process (Diamond et al. 2014).

Further, communication could generally be characterised as inward through outward facing, with the two ends of the continuum varying in prominence. So in some cases, positions were principally inward looking: like Jim’s higher education post as Digital Learning Development Officer, where his job was to support the work of other staff in their delivering effective service; or Molly’s private sector job as Data Scientist in which she supported product development. The same was true of outward looking: Brenda, in higher education as Transition Officer, whose role was outreach and student recruitment; and Matt also in higher education as Industry Partner Manager was to create and sustain partnerships with external collaborators.

The micro-context: The lived experience of work communication and research activities (sub-question 2)

In this section, we draw on the interviews, starting with Benjamin and Felicity detailing their communication and research activities and how these intersected, before moving to cross-case analysis and results.
The lived experience: What they actually do

BENJAMIN’s work is often external. As a consultant he completes client projects as part of a team and as a project manager he wins and oversees contracts.

Q: How would you describe your position in terms of roles, responsibilities and tasks?
A: It is really wide. ...So, we have [agreed with] ...the client that we ...charge them £xx and produce something. ...A part of that product is ...interviews and surveys, so ... I will be involved in ...data collection ...probably most ...interviews, ...surveys, ...and ...desk research ...look at the literature ...synthesize information ... then there's the analysis ...and then report-writing, reporting findings. I also do country ...field visits ...anywhere ...depending on ...the project...
And then there's visiting clients ...in London or wherever. So, that's ...the project side ...my role as a consultant. [Also as] a project manager ...I write a proposal ...propose a team [with] ...a Project Director above me ...quality-checking. So ...that involves ...people ...budget ...[and] client management ...so it's more ...advanced ...the kind of role that I ...will do ...if I want to progress. There is also ...marketing...
So, ...give a talk somewhere or if I'm invited to speak or give a workshop ...that's within [this] role as well ...
There is [also] ...an informal training aspect, where I will help develop junior colleagues. ...As I say, it's quite free, so I end up doing all kinds of things.

FELICITY’s work is largely external. She also has two roles: developing partnerships globally to advance the organisation’s mission and overseeing and promoting a global scholarship scheme.

Q: How would you describe your position in terms of roles, responsibilities and tasks?
A: I am the main point of contact for all of our relationships with Government and across international governments and ...developing work strands with ...three major organisations, so there's a lot of relationship-building and stakeholder management. I also run a scholarship scheme ...oversee [its] management and administration ...and that's a £XX million scheme ...across fifty countries. ...So there's ...two sides. ...I travel all the time ...I have lots of meetings with internal and external stakeholders, and ...I'm part of the senior management team, so I have corporate responsibilities as well. ...So ...face-to-face meetings with stakeholders ...planning, and then overseeing the delivery of joint activities. Some of the administration or the management of the scholarship scheme ...is very operational, ...I probably do more writing than reading ...official reports for funded projects, and ...business cases for potential funding ...a lot of letters and... bespoke documents that are intended to influence ...to explain why they specifically might want to be involved in something. ...Reading [is] ...more on keeping up to date with different priorities.
In these two descriptions, we see embodied the similarities and differences in their job specifications. Both individuals emphasise mostly general non-specified communication, but the forms and purposes vary. For Benjamin, visiting clients is an important part of marketing, as is giving talks; for Felicity, relationship-building with partners is key, with face-to-face meetings important. The difference is that Benjamin describes the importance of data collection and analysis and research-related capabilities to carry out his job, whereas Felicity makes no reference to these. Figure 4 shows the variation in intersections.³
Communication: Given our interview protocol, there was a greater degree of specificity about work than in the job specifications. Still the patterns remained the same. Across all interviews, as in the job specifications, general work communication tasks (i.e., modes not attributable) were most frequently referenced (32 per cent), followed by research-related capabilities (20 per cent), writing (17 per cent) and dialogue (12 per cent) – with the remaining codes infrequently mentioned (see Figure 5).

As to the cross-case distribution of communication activities (see Figure 6), participants described a wider range than those detailed in the job specifications. Six participants across sectors reported all the work communication subtypes (Benjamin, Jim, Brenda and Amy), or almost all (Peter and Felicity did not mention dialogue), despite variation in code frequencies. Besides generic work communication, specific writing tasks were mentioned by most of the participants. Only three in the private sector – David, Molly and Elise – did not report any specific type of writing in their daily work activities.

The writing tasks referred to a broad range of genres: for instance, technical reports or briefings (Adrian); multimodal texts including programme evaluation reports (Jenny, Benjamin) and online documents (Sandra); research proposals or grant bid writing to attract funds (Benjamin, Sandra, Matt). Generally, writing involved producing concise and short texts, with clear and sound arguments or statements adjusted to the text purpose, mainly (a) informative, to help and support colleagues or institutional
decision-makers; or (b) argumentative, to convince funders, clients and other workplace stakeholders.

In most cases, participants mentioned adapting, or in their words ‘translating’ highly technical or specialised texts to a more general audience, namely people working in their organisations in different departments or units: ‘synthesising complex information and trying to convey it in a way that’s accessible’ (Jim).

A general characteristic across writing genres and sectors was how writing was described as a collective or organisational effort: for instance, editing and drafting others’ writing, mainly in the private and higher education sectors (Peter, Matt, Jim) or ghost-writing for others (Adrian). When asked about what might be relevant in their present work from their PhD writing, they noted conciseness, clarity in communicating complex ideas, pulling together or synthesising a great amount of information from different sources. In contrast with the absence of reading in the job specifications, two-thirds mentioned reading (often initially as searching or reviewing) different types of documents: technical, administrative and research-related reports.

Research-related capabilities: All participants referred to work that included research-related capabilities (n=54 coded segments, varying from seven for Jeremy to one for Sandra; see Figure 7). Although the nature of these tasks varied, most of the participants implied these higher-order thinking skills were associated with PhD education, confirming previous studies (Diamond et al. 2014; Törnroos 2017). Some of the participants explicitly named this association, as Elise said: ‘it’s …more around thinking and constructing arguments which …if you’ve done a PhD, you sort of
What do PhD graduates in non-academic careers actually do?

In other cases, this link with the PhD was only implicitly stated, as in this excerpt from Matt’s interview about daily tasks: ‘when you are talking with high-level senior academics about things, you need to be able to understand that …these conversations will revolve around the science often, so you have to have a good understanding of the science, or have a strong scientific background’.

Statements such as this support earlier reports of the importance of research sector knowledge (Bryan and Guccione 2017), especially when individuals are either working in higher education (as Matt was) or engaged with higher education through contracts (McAlpine and Inouye 2022). Nine individuals across sectors mentioned collecting and analysing data in different ways (e.g. conducting interviews and surveys or managing specific data analysis techniques or specialised software packages). However, except for Benjamin and Amy, this was minimal.

Relationship between meso-organisational expectations and the micro-context lived experience (overall question)

Here we compare organisational expectations and the lived experience. There generally was a good match between job specifications and interview coding (see Table 3). The most notable difference between the two was not the total percentage of communication and research tasks but the increased
specification of communication tasks in the interviews. This shift is not evident in the references to research since research-related capabilities were clear in the job specifications and there were so few references to data collection and analysis in either the job specifications or the interviews. In other words, overall, individuals’ work descriptions aligned with their job specifications. Recall the alignment between Benjamin’s job specifications and his work description including how communication and research emerged. The same was true for Felicity. Further, the level of detail and clarity of the references to communication in the interviews when describing daily work helped us unveil the actual meaning that the communication activities in the job specifications had in relation to prior studies of employers.

What was really powerful about the interview analysis, however, was the insights it offered into how, in carrying out their work activities, the different communication and research activities were integrated or networked. Specifically, the job specifications provided a clear sense of the prominence given to communication by employers as well as the relatively strong presence of research-related capabilities. However, likely due to their form (often lists), these documents did not specify how the two might interact with each other to enhance work activities or perhaps constrain them.

The analysis of the interviews about actual work experiences offered just such an opportunity. Research-related capabilities intersected fourteen times with general communication, twelve times with writing, eleven times with oral presentations, and ten times each for dialogue and reading, collectively representing 67 per cent of general communication. In our view,

<table>
<thead>
<tr>
<th>Activity</th>
<th>Interview</th>
<th>Job specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>General communication</td>
<td>32%</td>
<td>49%</td>
</tr>
<tr>
<td>Writing</td>
<td>17%</td>
<td>9%</td>
</tr>
<tr>
<td>Dialogue</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>Total</td>
<td>61%</td>
<td>64%</td>
</tr>
<tr>
<td>Research-related capabilities</td>
<td>20%</td>
<td>24%</td>
</tr>
<tr>
<td>Data collection and analysis</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>Total</td>
<td>27%</td>
<td>33%</td>
</tr>
</tbody>
</table>
these intersections highlight why employers appreciate these thinking skills and PhD graduates note their usefulness. Further, and perhaps not surprisingly, research-related capabilities intersected ten times with data collection and analysis (recall only nine named this function), and data collection and analysis intersected eight times with general communication.

So, the answer to our overall research question can be summarised as follows. Managers and human resource departments (the meso-level) specified job expectations in line with the organisational mission and the interviewees’ lived experience aligned with these. We were struck though by how the job specifications failed to specify the communication expected. Perhaps employers perceive communication as difficult to specify – or not worth specifying – as it is so embedded or bound into all aspects of work. Alternately, they may be concerned that too much specificity may exclude potential applicants – the same rationale for why a PhD is rarely required.

Discussion

At the beginning of the article, we noted three themes emerging from previous research that led us to do this study. One was a frequently mentioned concern amongst employers about the need for staff to communicate effectively (Cousten and Pignatel 2018; Diamond et al. 2014), without defining the nature and scope of the term. Second, studies of employers and PhD graduates rarely addressed the extent to which research was part of work, with the few doing so (e.g., Cruz-Castro and Sanz Menendez 2005) not defining the term – though what might be termed research-related capabilities are often noted as valuable. Third, the perceptions reported in these studies were rarely situated within their wider structural contexts, such as labour sector and organisation that influence work specifications and the actual experience of work (McAlpine et al. 2021).

These themes led to our broad research question: What relationship, if any, existed between meso-organisational work expectations and the micro-context lived work experience, particularly communication and research activities? The analysis showed what we believe has not previously been reported: a clear interaction between job specifications (the abilities and responsibilities required to help achieve organisational goals) and the lived experience of those holding these posts. By using organisational documents, the study moved beyond previous ones reporting employer perceptions and demonstrated how work expectations and tasks were clearly harnessed to
organisational purposes. Further, it highlighted the importance of research-related capabilities and their intertwining with communication abilities – and made evident how little data collection and analysis were called for. In the following section we describe the contributions the study makes to understanding post-PhD non-academic work, future research and PhD pedagogy and policy – including the ongoing conversation about the value of the PhD beyond academic work.

Post-PhD non-academic work

While the OECD 2013 report noted the value of PhDs to society as involving the conduct of research as well as the dissemination of information, our analysis suggests that it is the latter, effective communication, that may be privileged in many jobs. Further, it was the research-related capabilities, the higher-level thinking skills – perhaps a somewhat invisible aspect of PhD experience – that were perceived as inherent in the jobs these graduates were doing. So it is this aspect of ‘research’ that is generally valued – not data collection and analysis. This finding provides insight into the argument that participants’ PhD abilities could support policy-making, programme development and many other activities that benefit society as a whole (Council of Canadian Academies 2021). Notably, our study cannot speak to how those without PhDs, perhaps with a master’s degree, might similarly report that their higher-level thinking abilities emerged from their education.

In looking at the findings around communication, our definition and sub-codes made it possible to analyse the communication modes and genres used in non-academic PhD careers – something not done in previous studies. We noted the invisibility but centrality of dialogue. Yet, dialoguing – situated oral communication and interaction – involves rhetorical skills, thus highly relevant research-related capabilities. The fact that these are finely honed through the demands of the PhD – that is, the argumentation involved in discussions that lead to a successful thesis – may be invisible to the student (or supervisor) who is focussed on the writing task. Reading, while present in the interviews, was absent in the job specifications. It could be that the invisibility of these two modes of communication (dialogue and reading) may be partly due to the lack of artefacts, in contrast with writing and oral presentations where the artefacts make evident the specific capabilities called for.
When looking at intersections, writing, regardless of genres, emerged as central and mainly linked to research-related capabilities. We cannot establish a direct relationship between these intersections and the characteristics of those genres most used by these PhDs. However, the findings suggested participants across labour sectors shared a cross-genre understanding or meta-awareness of genre (Tardy et al. 2020) when discussing the writing they were expected to develop. Besides the general characteristics already mentioned, this meta-awareness included reference to different, earlier work done in relation to institutional purpose.

**Future research**

The use of nested contexts to differentiate the structural contexts combined with the multi-mode data collection and in-depth analysis suggests the richness that such an approach can bring. By examining the interaction between meso- and micro-contexts and using visual methods to provide a different perspective on textual descriptions of the results, we suggest a model for future studies of this type. Some specific suggestions for future research based on this study include the following:

- In addition to job specifications, incorporate employer interviews to deepen organisational perspectives.
- Do institutional case studies, focusing as much as possible within units.
- Study different sized organisations; most organisations here are large—more than 250 employees—and often global; studies of micro, small and medium sized organisations might demonstrate different results with work encompassing a broader range of activities.
- Undertake studies that incorporate a good representation of participants from both sciences and social sciences/humanities, relatively evenly distributed across labour sectors to document similarities and differences.
- Examine in a similar fashion the experiences of those with master’s degrees to see how they characterise research-related capabilities.
- Choose a specific region, large city or smaller country to examine the macro-context structural factors influencing meso- and micro-contexts.
PhD curriculum and policy

What is the PhD preparing graduates for? This question needs addressing given that increasingly PhDs are finding work beyond the traditional academic route. As regards curriculum, programmes may presently be enabling students to develop the research-related capabilities and communication skills embedded in PhD work (at least as regards writing, Inouye and McAlpine 2022). However, programmes may not emphasise or make explicit the broad usefulness of these capabilities, given the hybrid and occluded nature of PhD tasks. In other words, without explicit emphasis on genre awareness and communication modes, it may be difficult for students to understand the overlapping modes and types of reading, talking and writing they are undertaking.

Further, greater efforts could be made to offer insight into the types of work that non-academic PhD graduates now do, for example, through career fairs, mentoring by PhD graduates in non-academic careers, and perhaps more robustly, enabling non-academic work experience by offering shadowing opportunities with PhD graduates of the programme, or short internships.

As regards institutional policy, universities could require that PhD programme committees engage non-academic employers as external members. They could also require programmes to track in a consistent fashion the trajectories of their graduates or propose alternate forms of theses that would ensure PhD researchers had experience using their research-related capabilities in non-academic academic genres.

Acknowledgements

The research data were collected with the approval of ethics review board at the first author’s home institution. This study has been partially funded by the Spanish Ministry of Science and Innovation through the ECRID (PID2019-109358RB-I00) project. We thank Anna Sala-Bubare for her thoughtful comments on an earlier version of this manuscript.
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Notes
1. In this study, we focus on the labour sector only.
2. Jeremy, no job specification, said his job required a PhD; still, the interview made no mention of data collection or analysis.
3. In MaxQDA, this means how often two codes have been assigned to a segment together, that is, they overlap but may not cover exactly the same area.
4. Organisational size has been characterised as micro <10, small <50, medium <250, large 250+ (European Commission 2019).

References


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