An Insight into Higher Education Teachers' Perceptions During Emergency-Remote-Teaching Through a Networked Learning Lens: A Phenomenographically-Informed Inquiry

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Abstract

Higher education has long been experiencing a shift towards digitization, as teachers have grappled with the challenges of incorporating technology into various aspects of their role. During the recent Covid19 emergency-remote-teaching period, these educators were forced online at short notice and with little more than their personal learning networks to rely on. This investigation thus targets how teachers perceived and used networked learning during this turbulent remote working period, in order to identify lessons that can be taken forward to facilitate their roles in an increasingly digitized work environment.

Literature gaps in the fields of networked learning and emergency-remote-teaching can be found in terms of in-depth qualitative studies that specifically target teachers' perspectives. There is also a relatively modest amount of work targeting informal approaches to professional development throughout the emergency-remote-teaching period. A phenomenographically-informed approach is adopted as a methodological framework due to its prioritization of variation across an individual's perception.

The investigation reveals four outcome spaces with multiple description categories within each. These outcome spaces are structured in the discussion chapter with the guidance of additional literature. This reveals that teachers generally perceive networks as useful tools through which a sense of community belonging can ultimately be developed online, while the most notable challenge relates to the feeling of seclusion that networked learning can induce. In terms of networked behaviours, teachers identify the exchange of personal

feelings as the most sophisticated use of their connections to people, as well as the tailoring of a bespoke online resource depository.

The prevalence of connections to people over online resources is identified as a key conclusion, as is the tension between multiple weaker ties versus fewer stronger ones within an individual's networks. The willingness and ability of teachers to stretch the user of their networks to more distant and less easy-to-access connections is also considered. Institutions should provide scaffolding to encourage networked practices among teachers in a manner that promotes the gradual transition away from traditional one-off professional development events and towards collaborative social learning. Future studies should target the longer-term implications of networked learning in a post emergency-remote-teaching period context.

Keywords

Networked Learning; Emergency Remote Teaching; Personal Learning Networks; Digitalization; Phenomenography; Covid19.

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List of abbreviations

EAP English for Academic Purposes

EMI English as a Medium of Instruction

ERIC Educational Resources Information Center

ERT Emergency Remote Teaching

HE Higher Education

NL Networked Learning

OER Open Education Resources

PLN Personal Learning Network

PLC Professional Learning Community

RQ Research Question

STEM Science, Technology, Engineering and Mathematics

List of Figures and Tables

Chapter 1: Introduction

The opening section (1.1) begins by introducing the reader to the wider background setting under which this investigation was carried out. This includes details regarding both the general long-term direction of higher education (HE), as well as the Covid19 pandemic-induced work-from-home (WFH) directive that was first encountered globally in early 2020. Once this broader background information has been established, readers are presented with the narrower contextual focus of the specific HE institution and participating teachers involved in data collection. Section 1.2 then goes on to specify the problems at teachers, theoretical and institutional level that this study aims to tackle, before identifying the specific purpose of the research in relation to these problems in the subsequent section (1.3). Section 1.4 identifies the four specific research questions (RQs) of the investigation. The research design, both theoretically in terms of the adopted networked learning (NL) framework and methodologically in reference to the incorporation of phenomenographic elements, is presented in section 1.5., followed by an overview of the contributions that the study seeks to make in section 1.6. The penultimate section (1.7) offers a glimpse into the researcher's personal motivations, before ending this chapter with an outline of the remaining chapters in section 1.8.

1.1 Research Background

This section begins with a general overview of the wider contextual factors from the HE sphere that are relevant to this investigation.

1.1.1 Broad Context

HE has long been experiencing a general trend towards digitalization, as technology has continued penetrating university campuses across the globe (Englund et al., 2017; John, 2015). This can manifest itself in a variety of ways, such as through the promotion of technology-enhanced-learning (TEL) (Kirkwood & Price, 2014) as teachers are encouraged to enrich their face-to-face classroom experience by incorporating tools like interactive whiteboards (Kim et al., 2013) or game-based platforms such as Kahoot (Smith & Kaya, 2021). It can also be seen in the increasing variation of course delivery modes, such as blended learning (BL) (Ryberg et al., 2017; Weldon et al., 2021) whereby teachers are asked to engage with students across a combination of both online and offline spaces on a single programme. Despite this long-term trend towards a more technologized HE environment, not all university teachers have embraced this paradigm shift (Englund et al., 2017; John, 2015; Krumsvik, 2014). Whether this resistance to technological integration is born out of low digital competence (Krumsvik, 2014) as teachers feel under-equipped to tackle this trend, or whether it is simply an attitudinal challenge for educators who disagree with the imposition of technology (Alolaywi, 2021; Kim et al., 2013; Lee & Brett, 2015) on what used to be an exclusively offline profession, it is clear that the long-term digitalization of HE has been tempestuous on the faculty front.

University policymakers have responded to these challenges by increasingly adapting their institutions' professional development (PD) programmes to include a greater focus on this technology (Dysart & Weckerle, 2015). Examples can range from the relatively simple training of teachers to operate new learner management system (LMS) such as Moodle

(Alolaywi, 2021), to the more complex tasks of discussing the pedagogical implications (Dysart & Weckerle, 2015) of smoothly integrating video-sharing platforms such as YouTube into their face-to-face lessons. The practice of NL, whereby teachers develop professionally through informal interactions with colleagues and online resources (Goodyear et al., 2004; Romero-Hall, 2021), has taken place to one degree or another ever since technology started penetrating HE. However, the consensus that it is a relatively complex concept due to its multiple theoretical underpinnings (Dohn et al., 2018), as well as the fact that it is less tangible than more traditional forms of PD, whereby a teacher receives an attendance certificate for partaking in a workshop for instance, means that NL is likely to be under-represented as a legitimate PD-mechanism across universities.

As the majority of HE institutions continued to operate in the mostly face-to-face settings that they had long grown accustomed to, the early part of 2020 delivered an unexpected blow to this sense of normality as a new virus that affected the respiratory system, known as Covid19, rapidly spread across the world (Adedoyin & Soykan, 2020; UNESCO, 2020). This led to many of these universities being forced to abruptly suspend their operations in the physical classroom and swiftly adapt to the online medium (Cutri et al., 2020; Lee et al., 2020), in order to meet the newly introduced social-distancing regulations. The many faculty-related challenges brought about by this disruption have ranged from their inadequate pedagogical preparation for operating online at such short notice (Carrillo & Flores, 2020; Weldon et al., 2021), to the mental health strain caused by the physical isolation and stress that many of these teachers suddenly found themselves living under (Leal Filho et al., 2021; Van Der Feltz-Cornelis et al., 2020). Despite these hurdles, the wide consensus is that most universities have continued operating in this relatively under-

explored online environment throughout this emergency remote teaching (ERT) period (Cutri et al., 2020; Lee et al., 2021). In other words, teachers may not have all been perfect 'swimmers' but few seem to have 'sunk' throughout this chapter.

While it may be true that, since then, some universities have reverted to (at least partial) face-to-face operations, questions remain about how the same teachers who had long demonstrated a certain resistance to technological integration suddenly managed to 'stay afloat' during the ERT event. Many would argue that our personal networks, both in connection to other people as well as to online resources, played a significant role during this disruptive event, since institutional support was deemed minimal as universities were caught off guard (Hodges et al., 2020; Rapanta et al., 2020). That is to say, the notion that teachers were able to continue operating in this online environment that they were unexpectedly thrust into (Cutri et al., 2020) with little meaningful guidance from their institution, however challenging this may have been, suggests that these teachers relied on their NL connections in the absence of more traditional forms of support and PD (Green et al., 2020).

This suggests that NL has the potential to be developed as a dominant and legitimate PD platform to help teachers with the continuing transition to digitalization. This calls for greater exploration into the use of networks that has taken place during the ERT period, in order to better-understand how these networked practices can be exploited in the longer-term future. By better-informing university policymakers of how to promote and support NL practices among their teachers, this investigation ultimately seeks to facilitate teachers' transitions into an increasingly technologized HE environment.

1.1.2 Narrow Context

The data for this study was collected by interviewing English for Academic Purposes (EAP) instructors from an English language university foundation programme in Kazakhstan. The teachers are mostly English-speaking expatriates recruited from a diversity of countries, whereas the students are generally from the local population with a steady increase in the enrolment of international pupils. These teachers' competence and experience in educational technology had long been regarded as a desirable trait, rather than as a strictly mandatory employment requirement, which means that, as in many other universities, there are varying levels of teachers' capability and enthusiasm towards digitalization.

This institution was forced to shift from face-to-face to online teaching in March 2020 as a result of the Covid19 lockdown (UNSECO, 2020). The timing, mid-way through the final semester, resulted in a challenging scenario for educators, most of whom had originally joined the organization with the understanding that they would be teaching face-to-face. With very little advance warning, all stakeholders, including teachers, students and management, found themselves in an unprecedented scenario whereby they were thrown into the deep end in terms of adopting the only medium that was deemed safe to operate in: online (Alolaywi, 2021; Smith & Kaya, 2021). The university overtly supported its teachers financially by funding digital tools, such as teleconference Zoom licenses, and by disseminating online teaching resources. There were also emotional support steps put in place, by increasing the available time slots with the university counsellors and by conducting more regular team meetings for instance.

Despite the university's visible efforts, it, like many other institutions (Ontong & Waghid, 2020; Rapanta et al., 2020), was largely wrong-footed by the unexpected and unprecedented nature of the ERT event. After all, the new physically-distanced reality meant that the yearning for face-to-face workshops focussing on how to use information and communication technology (ICT) tools or on the intricacies of online teaching pedagogy (Drucker & Fleischhauer, 2021) could not be satisfied. This means that teachers have largely been dependent on their informal network connections for the purposes of learning and teaching throughout this ERT period. This signifies that educators have used ICT to engage with like-minded professionals and online resources using their own initiative, in order to obtain the necessary know-how to navigate the dramatic switch to online teaching. By better-understanding how this NL has been used as an unexpected PD platform throughout this period (Green et al., 2017), HE stakeholders can better-prepare for the inevitable future permeation of technology into campuses (Acuyo & Lee, 2022).

1.2 Research Problem

A number of recently published articles (Adedoyin & Soykan, 2020; Rapanta et al., 2020), suggests that the unexpected Covid19 global shift from face-to-face to online teaching across universities was a turbulent process. A key causal factor attributed to this unsteady transition between learning spaces was inadequate faculty preparation, as teachers tried to cope not just with technological challenges, but also with the intricate complexities of virtual community interaction. Yet despite these understandable challenges, universities continued to operate which means that teachers somehow coped with online teaching by

rapidly developing professionally via their informal networks. While face-to-face meetings and training events may have been the norm in a pre-lockdown environment, the recent, socially-distanced reality has dictated that teachers must learn to utilize ICT (Drucker & Fleischhauer, 2021), at least in part, in order to access their personal networks and continue adapting professionally to cope with the technologization of HE. For instance, a teacher struggling to use certain Zoom features (Alolaywi, 2021; Smith & Kaya, 2021) would likely have relied on receiving online technical help from a supervisor via email, a teacher grappling to make online classes more student-centred has probably reached out to the professional community via a social media post and a teacher suffering from isolation has plausibly used an online messenger such as WhatsApp to confide in a trusted colleague that is not within close physical proximity.

With the above in mind, a lesser argument could be made that future pandemic-like scenarios resulting in ERT are more likely to be a question of 'when' rather than 'if' (Toquero, 2020), which means that institutions need to better-prepare for these. However, a significantly stronger argument could be presented owing to the understanding that universities had gradually been shifting towards a complex hybrid environment anyway, involving a blend of online and offline interaction (De Laat & Lally, 2003; Dirckinck-Holmfeld et al., 2011) as technology began to penetrate traditional learning spaces (Cutajar & Montebello, 2018) long before the pandemic, meaning that understanding teachers' use of their networks (Kearney & Maher, 2018) is becoming more relevant by the day. The future of education is unlikely to be a binary choice of offline or online, but rather "unpredictable combinations of distance learning, blended learning and in-classroom teaching" (Darling-Hammond & Hyler, 2020, p.457). The recent ERT period has merely provided an unexpected

preview of what the future digitalization of HE holds, which means that researchers should capitalize on this as an opportunity to explore how NL can be used to facilitate this transition in the long-term.

The practical hurdles associated with the above include the notion that HE stakeholders are often not aware of the potential role and value that collegial collaboration and online resource use can have as technology is increasingly integrated into their day-to-day practice. This means that isolated teachers are less likely to proactively tap into their network connections for support and miss PD opportunities in turn. Secondly, while there is ample literature that focuses on teachers and NL, there appears to be relatively little existing NL literature that focuses on teachers in an ERT context specifically. This partly neglects face-to-face teachers who unexpectedly find themselves in an online environment gradually as technology seeps into HE campuses. Finally, tertiary educational institutions often prioritize overt and tangible PD practices such as certificated courses or documented observations, at the expense of less visible practices such as peer collaboration or the use of online resources. This status quo of placing little or no value on networked activity is likely to lead to an increase in the feeling of isolation and seclusion among instructors as HE advances towards digitalization. It is fair to say that teachers are less likely to explore the uses of networks without the approval and support of their institution.

1.3 Research Purpose

With the problems detailed in the previous chapter in mind, this investigation seeks to address three inter-related issues. On a practical level, the aim is to raise the awareness of

the role that technologically facilitated networks play in the day-to-day activities of HE teachers, in a bid to encourage greater future collegial collaboration and exploitation of online resources. This is likely to mitigate practical challenges encountered by teachers in future as they adjust to HE's gradual slide towards the online environment. At a theoretical level, this research seeks to plug the hole in qualitative NL literature regarding the uses and perceptions of technology-mediated networks by teachers who are accustomed to working in a predominantly face-to-face teaching environment. Lastly, at an institutional level, this paper offers universities a clearer path towards establishing future policies that will enable their teachers to better-support each other in a HE environment where technology is playing an increasingly vital role. This refers to the future direction in which universities seek to steer their teacher training and PD, as well as the legitimization and promotion of less tangible practices, such as networked collaboration with colleagues and online resources, that can enable educators to support themselves and each other.

The purpose of this study is therefore to explore the qualitative differences in HE teachers' accounts of their perceptions and uses of networks for teaching and learning using elements of phenomenography as a framework that expects to find a plurality of perceptions of this target phenomenon (Ashwin, 2006). The emphasis is on tackling the void in the understanding of teachers' diverse understanding of and approaches to community-based learning. Whether an institution is still operating online or not, the recent Covid19 ERT period has provided a unique opportunity to explore the variety of these networked practices, since it has increased teachers' use of networks on account of the temporary physical restrictions.

1.4 Research Questions

In order to answer the overarching question below, the study has been divided according to four RQs, alongside a rationale for each one. The first two RQs target teachers' perceptions of opportunities and challenges, in terms of how they view networks. The final two questions explore teachers' perceived behaviour, in terms of how they actually use these networks in their own words.

Overarching Question:

What were HE teachers' different perceptions and uses of networks for learning and teaching throughout the ERT period?

Perceptions:

RQ1: What are the qualitatively different ways in which HE teachers perceive that their use of networks has been *beneficial* for the purposes of learning and teaching during the recent ERT period?

This RQ intends to uncover the value that teachers perceive in the use of networks. Examples may include the reduction of time constraints as teachers choose to engage asynchronously with their connections, or the removal of spatial limitations as network users utilize ICT to reach out to distant professionals from other countries.

RQ2: What are the qualitatively different ways in which HE teachers perceive that their use of networks has been *challenging* for the purposes of learning and teaching during the recent ERT period?

This question targets the potential barriers and disadvantages that prevent or disincentivise teachers from engaging in NL. This includes themes like inadequate technological competence as educators struggle with the more advance features of tools like Zoom, or workload concerns as they feel stretched thin to meet the new demands of their online role.

Perceived Behaviours:

RQ3: What are the qualitatively different ways in which HE teachers perceive their use of network connections to other *people* for the purposes of learning and teaching during the recent ERT period?

This aligns with the first part of the chosen NL definition: learner to learner and wider learning community connections. Answers include activities such as cross-checking information as one teacher contacts another to compare their interpretations of an email sent to all teachers, or emotional support as teachers reach out to the wider professional community via a social media post for reassurance.

RQ4: What are the qualitatively different ways in which HE teachers perceive their use of network connections to online *resources* for the purposes of learning and teaching during the recent ERT period?

This targets the latter part of the adopted NL definition: connections between the learner and online resources. Responses include a teacher downloading lesson material from an online repository or viewing a clip on a video-sharing site such as YouTube, in search for a quick solution to a specific pedagogical problem.

1.5 Research Design

This section details the adopted educational theory underpinning this investigation, NL, before presenting a phenomenographically-informed approach as the choice of methodology. Both of these will be explored in greater depth in chapters 2 and 3 respectively.

1.5.1 Theoretical Framework

Given the rapid development of the NL field (Jones, 2015), it is important to adopt a clear definition early on in this paper, which will then be referred back to in subsequent sections. Hence for the purposes of this study, NL is defined as "Learning in which ICT is used to promote connections: between one learner and other learners, between learners and teachers; between a learning community and its learning resources" (Goodyear et al., 2004, p.1). Despite accepting much of the continued effort by the NL community to re-define the concept (Networked Learning Editorial Collective, 2021), the author felt Goodyear et al.'s (2004) core definition to be both clear and applicable to this study's HE and PD focal points (Dohn et al., 2018).

Elements from this definition have been adapted for the purposes of this study, including the use of networks not just for 'learning,' but also for 'teaching'. This is because research (Czerkawski, 2015; Ostashewski, & Reid, 2012) related to the ERT period, underlines educators' use of networks for both purposes with substantial overlap. Another consideration is that the RQs above have been designed to reflect connections between educators and the 'learning community', as well as 'learning resources.' Again, there is likely significant crossover between the two, since PD has taken a more informal turn during this ERT period. Typical network activities involve collegial collaboration, such as peer observations or reading groups, as well as teacher interaction with students in whole-group classroom settings or in individual one-on-one encounters like a tutorial or support session. Lastly, the use of networks also involves the access of online resources, such as material repositories and instructional videos, which could be shared by colleagues via online platforms.

The post-pandemic status quo looks increasingly likely to push the direction of courses that were once referred to as face-to-face into a complex combination of offline and online elements typically experienced in BL (Al-Samiri, 2021; Ryberg et al., 2017). Universities will likely cherry-pick online practices that have worked well during ERT and incorporate them into the hybrid environment (Smith & Kaya, 2021) that HE had been heading towards since long before Covid19. The summary of NL as "a field of research and practice in education that studies such entanglements" (Networked Learning Editorial Collective, 2020, p.2) thus makes it an obvious lens choice to study the relationships between these online and offline connections of people and resources that look set to be the future of HE. The activity of

educators within these intrinsically connected digital and non-digital spaces (Green et al., 2020) is the focus of this investigation.

1.5.2 Methodological Framework

Phenomenography is an approach that seeks to unveil a plurality of ways in which a single phenomenon can be perceived (Åkerlind, 2008; Cutajar & Montebello, 2018). This means that the focus is on the participants' self-articulation, usually through the channel of a semi-structured interview (Yates et al., 2012), of how they themselves view the subject in focus at that particular given time. While this perception is likely to differ from one participant to the next, it is likely that some individuals will share certain perceptions with others. This results in a finite number of differentiable themes, known as categories of description (Örnek, 2008), which represent the varieties of the participant group's perceptions. The final product of phenomenography is when the structural relationships between these categories are established in the form of visual representations known as outcome spaces (Hajar, 2020). In relation to this investigation, four outcome spaces were established in accordance with how the participants perceived the phenomena related to the four RQs detailed in section 1.4: benefits, challenges, connections to people and connections to online resources.

The main rationale for adopting a phenomenographic research method for this investigation of network perceptions among HE teachers, is that this framework unveils not one or two, but a variety of different ways in which a single phenomenon can be perceived (Marton, 1986; Rands & Gansemer-Topf, 2016), since it is a non-dualist method (Hajar, 2020). The

advantages of this are clear for constructivists and interpretivists who accept a plurality of different 'truths' according to each individuals' beliefs, rather than a dichotomy between 'good' and 'bad' versions. Even for those who reject these ontological and epistemological assumptions by believing that there is only one objective truth, it is difficult to deny the value of having insight into an array of different interpretations. Just because one does not believe in multiple truths does not prevent others from doing so. By reviewing alternative perspectives to one's own belief, one may even change their own view eventually (Örnek, 2008). It is therefore pragmatic for researchers to gain a more informed collective understanding of the different ways in which something can be experienced, rather than be blinded to all but a single one of these interpretations.

1.6 Contributions

In terms of practice, the outcomes of this research will benefit teachers to a lesser extent during the continuation of the current ERT period experienced in some parts of the world, as well as in future ERT events that result from unforeseen circumstances (Toquero, 2020; Whittle et al., 2020). There are always likely to be future scenarios under which interruption to face-to-face teaching, on safety grounds for instance (Drucker & Fleischhauer, 2021), cannot be avoided. Today it is a global pandemic, but tomorrow educational institutions could be affected by a more localized health disaster like the 2014 Ebola outbreak in West Africa (Armitage & Nellums, 2020) or the social unrest that forced some HE institutions in Hong Kong to temporarily cancel face-to-face classes in 2019 (Kuo, 2019). To a far greater extent however, this study will benefit teachers in the post-ERT 'new normal,' as teachers are more likely to use technology to mediate between widely dispersed connections as

education shifts towards hybridity in the long-term (Goodyear, 2020) and technology permeates university campuses (Cutajar, 2018). This research will therefore prove more valuable in this latter setting.

Regarding theory, this investigation will benefit researchers interested in the application of NL as a lens through which learning and teaching during ERT can be better understood as PD mechanism to smooth the transition towards the digitalization of HE. It will aid researchers in determining the role of NL in the long-term future of the hybrid HE environment outside of the ERT context. More specifically, this research sheds theoretical light on the qualitative in-depth experiences of network uses among traditionally offline practitioners, who were temporarily forced into becoming online operators.

Finally, with regard to policy, this paper will better-inform HE decision-makers of the extent to which teachers have used their networks during ERT and how these practices can be exploited for institutional benefit in the long-term future. Examples of this include extending the recognition of PD to include informal networking activities (Romero-Hall, 2021), instead of just certificated courses for example, and the promotion of sustained collaboration with peers across a variety of channels, rather than just the formal email or face-to-face meeting for instance. Table 1.1 below aligns the research problems, purpose and contributions.

Table 1.1

Problem, Purpose and Contribution Alignment

Problem	Purpose	Contribution
Practical: Lack of NL awareness among teachers	Increase awareness of HE teachers' networked practices	Practical: Increase teachers' awareness of NL in relation to other people and online resources
Theoretical: face-to-face teachers and ERT largely excluded from existing NL literature		Theoretical: Offer insight into face-to-face teachers' perceptions of networked practices during ERT period
Institutional: NL not integrated into PD or widely recognized		Institutional: Present a convincing argument in favour of wider NL recognition and recommend how it can be better integrated into PD

1.7 Researcher's Viewpoint

Prior to deciding on this investigation focus, the author of this thesis had long been interested in NL as a whole and particularly in how teachers make (or do not make) use of their personal connections in their professional context. More specifically, the researcher had been interested in how educators themselves perceive and describe their use of networks and the wider role that they play in preparing for the continued digitalization of HE. The original intention for this thesis had therefore been to investigate NL in a HE context, to better-understand the relevance of networks in a HE environment that is gradually shifting towards a complex medium of offline and online spaces intertwined. Despite their being examples of existing literature on this already (Casey, 2016; Cutajar,

2014; Nguyen, 2017), the rapid advances in how technology permeates into university campuses means that the way in which teaching professionals connect to others and online resources is likely to be as equally fast evolving and thus worth investigating.

At the time of writing this thesis, the researcher was working as an EAP teacher at the university described in section 1.1.2. This meant that he had experienced the transition in the status quo of the institution's face-to-face operation before the 2020 event that forced it to abruptly go online. This unforeseen event that made teachers rely on technologically mediated communication thus presented an unmissable opportunity for the researcher to exploit. This scenario whereby teachers were temporarily thrust into a mostly online environment offered a glimpse into a possible future of HE that the researcher wanted to better-understand. Rather than simply trudging through this unexplored territory in his role as an EAP teacher, the researcher decided to use this opportunity by basing his doctoral thesis on it, with the aim of using the findings to make valuable contributions to the wider HE community.

1.8 Outline

Following on from this first introductory chapter, the remainder of the thesis is divided according to five subsequent chapters. The next chapter (2) provides an overview of current publications that centre on the three main themes underpinning this investigation: ERT, NL and PD. Significant elements from these fields are explored and gaps are presented, in order to offer the reader an indication of the pre-existing material available on the target foci. Following this, the methodology chapter (3) presents an overview of the chosen

phenomenographically-informed method. After discussing the strengths and weaknesses of this chosen research design, details are provided on the collection and analysis of data. This chapter ends with an overview of the ethical considerations that were undertaken.

Once the data has been analysed, the findings chapter (4) presents these discoveries in the form of four outcome spaces according to each of the four RQs. Each space contains description categories, along with supporting evidence in the form of transcript quotations and a visual indication of the structural relationships between these categories. The penultimate discussion chapter (5) interprets the data presented in the findings through the infusion of a synthesis of relevant literature, in order to better-understand category themes in the wider context of HE and NL theory. This chapter takes a step back to consider the potential connections between the separate outcome spaces. The final conclusions chapter (6) draws on both the findings as well as the discussion chapters, in order to end the paper with key take-away contributions to practice, theory and policy.

Chapter 2: Literature Review

This review has been divided according to the study's three main focal points: ERT (2.1), NL (2.2) and PD (2.3). Section 2.1 refers to the initial status quo of HE in which the research takes place: unplanned online teaching from home. Section 2.2 applies to the chosen conceptual framework of ICT-mediated social learning that underpins the RQs within an ERT context. Section 2.3 relates to the training, both formal and informal, that teachers undertake to up-skill themselves in line with their increasingly digital work environment also with the ERT background in mind. All three points are evaluated with the purpose in mind of being able to better-comprehend how teachers have used their personal networks to sustain themselves throughout this recent turbulent ERT period and, more importantly, how this understanding can consequently be used to smoothen the glacial transition towards digitization that HE has long been experiencing. Finally, the chapter ends with concluding remarks that reflect on all three focal areas in section 2.4.

This review was carried out by using a range of keywords that relate to the study's main themes. In the case of ERT, terms such as 'work from home,' 'lockdown teaching' and 'Covid19 teaching online' were used. As for NL, the keywords searched included 'collaborative learning,' 'personal learning networks' and 'network connections,' in addition to at least one of the ERT keywords. For the PD subsection, combinations included 'teacher professional development' and 'teacher education' within the ERT setting. In order to manage the high number of search results, Boolean operators were used to narrow the focus. Examples of these include 'Networked Learning AND Emergency Remote Teaching,' to search specifically for NL articles that relate to the ERT context, 'Networked Learning NOT

students' to reveal literature that is more likely to focus on teachers, as opposed to student, perspectives and 'Professional development NOT schools' to focus specifically on HE; all within the context of the ERT period in focus.

Initially, more open and article-rich search engines, such as Google Scholar, were used to search for literature, as this provided a useful starting point to allow the author to gain a flavour of the existing literature. However, after some time it became apparent that, despite the use of specific keywords and Boolean operators, the search results were still too expansive. The author consequently began to use more specialized and gate-kept, albeit less article-rich, databases in order to manage the vast quantity of literature. For instance, the Lancaster University library's One Search engine was more successful in terms of providing academically reputable sources that could be verified. Likewise, the Education Resources Information Centre (ERIC) database provided results that were more likely to be set within the context of education. Lastly, the ProQuest database helped to identify specific types of sources, PhD dissertations, that proved to be substantially more detailed than some of the journal articles found via generic search engines.

In terms of the selection criteria, the focus was mostly on academic journals, books and PhD dissertations. Despite efforts made to target relatively recent literature by adjusting the search filters to produce results from within the last decade, older publications that are still deemed highly relevant, such as Goodyear et al.'s (2004) definition of NL, have still been included on occasion. The long-term nature of this doctoral project, spanning across almost half a decade, also magnified the challenge of source currency.

2.1 Emergency-Remote-Teaching

This subsection begins with an overview of ERT in contrast with other approaches to online teaching, as well as providing an adopted definition. The centre of this subsection explores the challenges and opportunities in connection to ERT, before ending with insight into the potential literature gaps.

The tendency to use the term ERT synonymously, and often inaccurately, with similar labels such as remote teaching (Bozkurt & Sharma, 2020), BL or TEL means that a clear definition is needed. A contrast between ERT and these other forms of online teaching is challenging to present, given the overlap among them, however certain distinctions can still be made. Hodges et al. (2020) claim that ERT was born out of necessity during the Covid19 pandemic, in order to differentiate between the hurried struggle to shift courses that were originally intended for face-to-face delivery to online format, from the carefully designed online intended courses that are delivered by teachers experienced in online pedagogy (Drucker & Fleischhauer, 2021) or the supplemental manner in which technology is routinely used to support face-to-face teaching (Al-Samiri, 2021). That is to say, ERT is reactionary and improvisational in nature (Acuyo, 2022; Bozkurt & Sharma, 2020), whereas other forms of online teaching are generally planned ahead for (Kentnor, 2015).

2.1.1 Foundations of ERT

HE programmes that are originally intended for online delivery of some kind, whether this is entirely remotely, using a combination of face-to-face and online delivery as the term BL suggests (Garrison & Vaughan, 2008), or by using technology in the classroom to improve

elements of a face-to-face course as the TEL label implies (Kirkwood & Price, 2014), undergo rigorous preparation before their start date (Kentnor, 2015). Means et al. (2014) describe the range of moderating variables that are considered when designing an online course, including the synchrony of the program (asynchronous vs synchronous), the pacing (self-paced vs class-paced), instructor role (active vs passive) and so forth.

The 'emergency' part of the ERT acronym highlights that, in many ways, it is the very opposite of a conscientiously designed course intended for delivery in an online space, since there is little time to consider these variables in advance (Mohmmed et al., 2020; Rapanta et al., 2020). A rapid and unforeseen shift from physical to virtual learning spaces, such as the one experienced across HE institutions during the initial Covid19 lockdown (Weldon et al., 2021; Green et al., 2020), has meant that teachers who were originally inexperienced in online teaching have been left to deliver a rapidly improvised version of their course (Carrillo & Flores, 2020) that had originally been intended for face-to-face settings, using little more than their home computer and support networks (Weldon et al, 2021). It could thus be argued that the recent ERT period has produced a stressful scenario whereby teachers have been "building the plane while they fly it" (Trust & Whalen, 2020, p.193).

Aside from the unplanned nature of ERT (Acuyo, 2022), another key factor that differentiates it from alternative forms of online teaching is its association of temporariness. Courses that have a planned online element in some form or another have existed since the early 1990s (Kentnor, 2015). These courses have thus benefitted from multiple rounds of feedback over the years (Meikleham & Hugo, 2020), whether that is from student evaluation surveys or from instructor input on the overall perceived success of the

programme in meeting its aims. The courses are therefore continually adapted and improved (Boud & Molloy, 2013), since the understanding among the stakeholders is that the programmes are there to stay for the long-term. Likewise, planned face-to-face courses often carefully integrate online elements to supplement physical classroom teaching (Al-Samiri, 2021), by including a homework task to be recorded and uploaded into a shared cloud space for instance, or by uploading a reading text to Moodle before the lesson.

In contrast to the above, ERT is seen as a temporary measure taken by institutions to help them cope with an unforeseen event that is causing disruption to face-to-face courses (Hodges et al., 2020; Toquero, 2020). The mutual understanding among students, teachers and other stakeholders is that ERT is to be used as a crutch that will enable programmes to continue operating, albeit under a 'new (and often inferior) reality.' The common justification for this lesser experience for students and teachers alike, is often excused by the calculated assurance that face-to-face teaching will resume in the near future. In other words, the collective assumption that ERT is a short interim before returning to 'normal,' means that the HE community is more likely to overlook gaffes on Zoom as educators experiment with tools such as this for the first time, forgive lower attendance from students who struggle to access an adequate computer and exercise patience with institutions that take longer than expected to organise the relevant training for teachers.

As the increasing length of the pandemic has made it evident that the WFH practice is going to be the reality for months, if not years for some universities at the time of writing, questions have been raised over the transition from ERT to other forms of online teaching. If the very definition of ERT revolves around its disruptive and temporary nature (Cutri et al.,

2020; Rapanta et al., 2020), it becomes increasingly difficult to defend this label as teaching from home becomes more established. The author of this paper argues that, while it is true that years into the pandemic universities have had time to plan and revise their online courses, the assumption for many institutions remains that face-to-face classes will resume in the not-too-distant future, if they have not done so already.

Firstly, at the time of writing, the optimistic vaccination-related hopes across many countries, provides a realistic possibility that it will be epidemiologically safe to return to campus. Secondly, student complaints of a diminished educational experience online, especially in terms of a lacking sense of community and peer-to-peer relationships (Lee et al., 2021; Weldon et al., 2021), have put significant pressure on universities to return to the perceived added value of a face-to-face experience (Smith & Kaya, 2021) in order to justify high tuition fees. Taken together, these factors contribute to a situation in which it is unlikely that institutions are fully investing themselves in online teaching, given the apparent desperation to return to the classroom. This means that, despite the increased experience and recent feedback of online course delivery (Meikleham & Hugo, 2020), many universities have either already returned to face-to-face teaching or are likely to in the near term. Lastly, it is important to re-state that ERT itself is not the core focus of this investigation, but rather the context for the exploration of the perceived use of networks by teachers to cope during this period and the implications that this has for the HE's long-term transition towards digitization.

With the above background information in mind, this paper's adopted ERT definition describes it as "the use of fully remote teaching solutions for instruction or education that

would otherwise be delivered face-to-face or as blended or hybrid courses and that will return to that format once the crisis or emergency has been abated" (Hodges et al., 2020, p.7). This definition encapsulates both the unforeseen nature of the phenomenon, as well as its acceptance as a temporary measure; albeit lasting longer than initially predicted by many institutions.

2.1.2 Challenges Associated with ERT

The 'teaching' in ERT is somewhat misleading in its implication that it reflects the core task that is asked of teachers during an uncertain period such as the Covid19 lockdown. Rapanta et al. (2020) explain that, aside from teaching, a more challenging role being demanded of teachers in the immediate term is course design. Prior to the ERT period, this planning role had largely been undertaken by educational technologists hired to process this well ahead of the online course start date (Lee et al., 2022). The unforeseen nature of ERT however, has meant that educators have generally been forced to take this additional role on themselves (Gewerc et al., 2020; Mohmmed et al., 2020).

The immediacy of this extra responsibility has led to emotional strain (Green et al., 2020; Bozkurt & Sharma, 2020b), as teachers rapidly improvise to repackage face-to-face courses for online dissemination. While significant attention has been paid to the psychological well-being of students, by encouraging instructors to be more understanding of pupils' personal circumstances for instance (Karakaya, 2021), there has been comparatively little focus on the fragility of the instructors themselves during this tumultuous period. One way in which teachers have coped with this short-term challenge has been through the use of their

personal networks, in order to connect to individuals for reciprocal support. Lessons need to be learnt from this network-use, in order to better enable teachers to cope with HE´s interminable shift towards digitization.

As previously described, the common association of ERT as a temporary measure, that will someday cease to exist upon the return of the face-to-face status quo (Bozkurt & Sharma, 2020a; Code et al., 2020), has in itself been problematic in the long run, since it disincentivizes teachers from investing themselves too much in the scenario. This expectation that ERT will soon become an unpleasant distant memory as worldwide vaccinations make headway (WHO, 2021) is now a reality in many parts of the world, and thus presents the risk that teachers will fail to exploit lessons learnt during this challenging period (Peters et al., 2020) and not resurface as better-rounded professionals in the long-term once universities transition to the 'new normal.' Teachers closer to the laggard end of the technological embracement spectrum are even less likely to learn from this ERT experience, since their fear of adopting technology that has been necessary during this temporary period (Toquero, 2020) is more likely to cause them stress and anxiety in comparison with their more technologically embracing colleagues (Alolaywi, 2021; Smith & Kaya, 2021).

The above points increase the likelihood that teachers have been concerned solely with their professional survival during this turbulent period, rather than spending time on much needed reflection about the lessons that can be learnt going forward as technology continues to permeate campuses. The emphasis should be not only on unearthing varied educator experiences, but also on the implications for future PD (Gewerc et al., 2020). This

debate regarding how best to exploit this unique ERT scenario is discussed in the subsequent section 2.3.

2.1.3 Opportunities Associated with ERT

While it may be true to say that the recent Covid19-induced ERT period has generally been met with pessimism and even momentary panic at times (Trust & Whalen, 2020), there are some who point to its potential advantages. In the immediate term, the benefit of increased work flexibility and efficiency (Ontong & Waghid, 2020; Paudel, 2021) has been preached by some teachers, who believe that working from home enables them to focus more on their actual work-related tasks and worry less about negatively associated work realities such as presenteeism or office politics. This suggestion can be unpacked through various examples seen in two subsequent paragraphs, after the theme of flexibility has been explored.

The widely used slogan of 'work anytime from anywhere' (Al-Samiri, 2021; Stickney et al., 2019) is something that is often propagated as an advantage of online teaching (Toquero, 2020; Weldon et al., 2021). There is therefore reason to believe that, with the initial shock of ERT overcome, this benefit of increased flexibility has begun to emerge as some teachers continue to operate flexibly under the WFH policy. The increased autonomy that teachers often associate with this (Al-Samiri, 2021; Ontong & Waghid, 2020) can lead to a range of conveniences, including the opportunity to spend more time with family and friends, reduced travel time and expenses and the option of being able to work whilst coping with certain health issues. A teacher working in online (or semi-online) form could therefore organise themselves in such a way that enables them to satisfy both their work and social

commitments without putting one at the expense of the other (Al-Samiri, 2021). For instance, there is no reason why a friend's birthday lunch would have to be missed, provided that the teacher can grade papers from a nearby café right afterwards. Likewise, an educator who would be unable to physically travel to work on account of a sprained ankle would not have to cancel lessons that day, provided they have a laptop and internet connection at home.

With reference to presenteeism, teachers have often reported a covert pressure to be seen in the office for a number of hours each day during their face-to-face teaching, regardless of whether they are in fact genuinely occupied or not (Lu et al., 2013). This means that during off-peak periods in the face-to-face teaching calendar, such as after a busy marking session or at the end of a semester, some educators feel a sense of professional guilt for not appearing to be busy and hence feel pressure to maintain a physical office presence merely for appearance. This perceived shame that some educators associate with not having a physical presence in the workplace for long periods of time can lead to job dissatisfaction and even exhaustion (Lu et al., 2013). One could therefore deduce that the nature of ERT, in which teachers have been working from the privacy of their own home, has likely reduced some of this social pressure. WFH has enabled teachers to focus more on the quality and punctuality of their tasks (Alolaywi, 2021) rather than on the number of hours that they physically spend at the office in sight of others.

In terms of collegial office relations, it is not uncommon for teachers operating face-to-face to report the strain caused by the fraying of relationships between fellow workers (Keashman & Neuman, 2010) who they are expected to be in close physical proximity to

within the office for long periods of time. Aside from disputes over relatively trivial matters such as resource-sharing or timetabling, a typical workday for face-to-face teachers also involves the risk of being belittled or verbally put-down by a colleague (Clark et al., 2013). Examples of these micro-aggressions include publicly being on the receiving end of a sarcastic remark, being overtly excluded from a conversation or purposefully ignored by a colleague. A WFH advocate would argue that these complex social pressures have become somewhat diminished while working from home. Again, this is due to the reduced physical contact time with colleagues and increased privacy of working outside the communal workspace of the institution, as is the case with the previously mentioned issue of presenteeism.

Thinking ahead to the more distant future, notable benefits associated with this pandemic's ERT revolve around the general up-skilling of teachers across various areas related to their day-to-day work activities. The most likely competencies to be enhanced include ICT, online pedagogy (Drucker & Fleischhauer, 2021), lesson design (Weldon et al., 2021) and assessment (Al-Samiri, 2021). These PD advancements will create educators that are not only likely to be more effective first responders the next time that education is affected by a crisis that results in ERT (Acuyo 2022; Drucker & Fleischhauer, 2021; Whittle et al., 2020), but also more competent and well-rounded professionals that can more comfortably adjust to HE's integration of online spaces (Goodyear, 2020). The benefits to an institution of having a well-prepared teachers extend beyond teaching efficacy, to lower teacher turnover for example (Darling-Hammond & Tyler, 2020), which incentivizes universities to invest time and resources into tailoring PD according to the lessons learnt from this recent ERT context.

Explored more in-depth in section 3.2, this faculty up-skilling is likely to be brought about in direct response to the alarmingly low levels of general technical skills held by some teachers (Falloon, 2020; Toquero, 2020;), as well as their inexperience in online pedagogy (Drucker & Fleischhauer, 2021; Veletsianos & Houlden, 2020). The former relates to teachers' general ICT skills (Hofer et al., 2021; Spante et al., 2018), in their ability to operate hardware and software required for operating online. This reference to the mechanical aspects of online teaching includes tasks like using a webcam, uploading class materials to the cloud and accessing students' work on a centralised LMS. The latter is more to do with what constitutes 'good practice' when teaching in an online space and how this may differ from face-to-face classroom pedagogy (Drucker & Fleischhauer, 2021; Kilgour et al., 2019). This focus on online teaching as a discipline can cover topics such as virtual teacher presence (Carrillo & Flores, 2020), adapting teaching materials for online suitability and the recommended length of a single synchronous contact session to avoid screen fatigue. An example of a pedagogical issue that has been particularly prominent throughout ERT is the need to make online lessons more student centred (Karakaya, 2021), in order to avoid the scenario whereby the teacher turns into a one-way communicating online lecturer.

The unexpected digital technology dependence at short notice that HE has experienced in this recent ERT period has shun a light on the uneven digital capabilities of HE teachers (Mohmmed et al., 2020; Weldon et al., 2021) and is therefore likely to result in the elevation of the typical post-pandemic educator to someone who is more literate both in general ICT, as well as in the intricacies of online teaching pedagogy. This is discussed from a PD perspective in the next section 2.3.

Aside from an increased overall ability to use educational technologies to enhance the learning experience, another benefit that HE is likely to witness as a long-term effect of ERT is a notable increase in teachers' material design capabilities. The consensus that online teaching is so heavily dependent on the design of the lesson, as opposed to its actual delivery (Gewerc et al., 2020; Rapanta et al., 2020), means teachers will have undoubtedly started to devote more attention to developing their expertise of this planning stage of their teaching role (Alolaywi, 2021). Examples of design considerations that educators are likely to have an increased knowledge of include types of communication method, building learner agency and assessment integration (Whittle et al., 2020).

As ERT extends past its first few years, this focus on design is likely to be magnified by teachers' reflection on the shortcomings of the initial scramble, as the initial pandemic waves forced universities to cease face-to-face contact abruptly. The agreement that part of the problem arose from HE's valiant but crude attempt to directly convert face-to-face courses into online equivalents without sufficient design consideration (Hodges et al., 2020; Mohmmed et al., 2020), means that instructors are likely to devote interest to improving their skills and knowledge in this area of online course design. This is particularly relevant to areas that have been deemed especially challenging during the ERT period, such as assessment (Al-Samiri, 2021) as teachers struggle to invigilate online. Add to this the growing consensus that the future of education points towards a hybrid combination of online and offline learning environments (Darling-Hammond & Hyler, 2020), and one can see a clear motivation for teachers to invest time and effort into material design, as well as into the general ICT and online pedagogical skills described in the previous paragraphs.

2.1.4 Potential Gaps in ERT Literature

Despite numerous articles providing a snapshot overview of how ERT has affected institutions globally (Bonk et al., 2020; Xue et al., 2020), comparatively little has been written from a qualitatively in-depth perspective. Moreover, what has been produced is more likely to centre on students' viewpoints of this challenging period (Anwar & Adnan, 2020; Elmer et al., 2020; Juršanaitė & Misiukaitė, 2020), which leaves a potential gap for faculty insight specifically within this ERT context. Lastly, a lot of literature has targeted the initial shock of ERT by focussing on the immediate effects that became apparent in 2019 and 2020 (Bozkurt et al., 2020; Johnson et al., 2020; Smith & Kaya, 2021; Toquero, 2020;). This leaves another gap in terms of the medium to longer-term implications of ERT (Alolaywi, 2021). In sum, there is room for future studies that target the in-depth perspectives of teachers through the lens of HE's glacial transition into an increasingly digital environment.

2.2 Networked Learning

This section begins with the definition of NL that underpins this investigation and is followed by a summary of its core composition. The subsequent parts venture into the strengths and weaknesses commonly attributed to the phenomenon, before finally highlighting potential gaps in the literature. As with the subsequent subsection, this part of the literature review has been conducted in relation to the ERT background at the focus of the investigation.

The NL definition adopted for this study, underlined in section 1.5.1, centres on the connections between people and resources via a technological medium (Goodyear et al., 2004) and is established as "learning in which information and communications technology

(ICT) is used to promote connections: between one learner and other learners, between learners and teachers; between a learning community and its learning resources" (Goodyear et al., 2004, p.1). Despite ongoing efforts by the NL community to re-define this concept (Networked Learning Editorial Collective, 2021), this chosen definition is aligned with the context of this study in that it "lends itself very well to research within higher education or continuing professional development programs where students interact with each other, their teachers, and their learning resources in designated online spaces" (Dohn et al., 2018, p.33).

NL exists in an educational context in which different technologies are embedded in HE (Cutajar & Montebello, 2018), in order to create a learning space that is non-binary. That is to say, technology has permeated HE to the extent where no course can be seen as purely face-to-face or online, since digitization is often integrated into face-to-face courses and vice-versa, as online courses often include face-to-face elements. Face-to-face course participants are just as likely to collaborate in the virtual world via social media outside the classroom for instance (Acuyo 2022), as online course ones are to arrange physical meetups to supplement their online meetings. This is the gradual technologization process that is targeted by this study and how the use of networks during the Covid19 ERT period can be used to better-enable teachers to thrive in their gradually changing environment.

The technology itself is not the focus of NL, but rather the way in which it is used to bridge connections (De Laat & Dohn, 2019; Goodyear et al., 2004) for the purposes of learning. In fact, the interactions between connections may not always be purely online (Dohn et al., 2018), given that NL can, for instance, occur in a BL context which partly involves face-to-

face contact with physical people and resources to supplement the ICT-mediated connections. While these connections are unarguably central to NL (Jones, 2015), it should be emphasized that the link between an individual and resources, rather than to other people, alone is not enough to constitute NL (Carvalho & Goodyear, 2014; De Laat & Dohn, 2019). After all, technological advancements, such as the ability to quickly share a useful resource link on an SNS like Twitter (Acuyo, 2022), have shifted focus away from content and towards connecting to likeminded individuals who are likely to share resources and expertise (Brown & Adler, 2007).

This implies that NL places emphasis on social learning and dialogue (Romero-Hall, 2021; Ryberg et al., 2012) that requires person-to-person interaction of some kind and that human connections are consequently perceived as more valuable than resource ones (Goodyear et al., 2004). This contrasts with the independent online learning that is sometimes associated with open educational resources (OER) (Rahayu & Sapriati, 2018; Tuomi, 2013), whereby an individual may trawl information-rich resources online (Hilton, 2020, Baas et al., 2019) such as Wikipedia without discussing this material with others. Therefore, the NL emphasis is on collaborative, rather than individual, learning, though the technical infrastructural elements (Al-Samiri, 2021), such as a stable internet connection and up-to-date software, cannot be overlooked.

There are several sets of guidelines that help clarify the underpinnings of NL, such as Ponti and Hodgson's (2006) eight learning principles. This model centres on the importance of perceived value, learner responsibility, context, relationship-building time, collaboration, collective knowledge construction, facilitator role and reflection in a NL learning

environment. In terms of real-life examples of different uses of networks uncovered by previous studies, Cutajar (2018)'s phenomenographic investigation into HE academic's use of NL technologies produced five different categories of network use: increasing content knowledge, motivating students, increasing teacher-student rapport, promoting student agency through modelling and nurturing a sense of community that encourages two-way communication between members. Both the above learning principles, as well as the phenomenographic outcome categories, place emphasis on the use of NL for teaching and for teacher-student engagement. This points towards a gap in the use of NL not only for the purpose of teaching, but also for educator PD and learning to help teachers cope with the long-term digitization of HE.

2.2.1 Foundations of NL

It is important to clarify that NL is not in itself a specific model, but rather a set of conceptual underpinnings that can be applied to a range of pre-existing pedagogical approaches and learning theories (Dohn et al., 2018; Nguyen, 2017). Examples of these approaches that share common areas of agreement with NL include Constructivism, Situated, Collaborative and Cooperative Learning. While the target emphasis areas of these genres may differ, there are also points of significant overlap (Dirckinck-Holmfeld et al., 2011) that can be combined to better-comprehend NL, namely the interaction between different teachers to negotiate solutions to problems.

Constructivism essentially supports the notion that knowledge is constructed by learners based on their pre-existing understanding of the world (Amineh & Asl, 2015; Fosnot, 2005),

implying that knowledge is created as opposed to being an entity that exists externally and simply awaits discovery. While the individual form of this theory may be less relevant to NL, a social form of constructivism is in fact quite applicable (Jones, 2015), in the sense that knowledge is dependent on the learners who co-create it collaboratively (Fosnot, 2005). Despite NL placing a greater emphasis on this peer-to-peer social interaction required for this knowledge creation (Networked Learning Editorial Collective, 2021), the core constructivist underpinning that knowledge is fabricated by the learner remains the same. This leads to the conclusion that social constructivism, with its emphasis on co-construction of knowledge through the collaboration of more than one individual, is a concept that is very much relevant to NL (Dirckinck-Holmfeld et al., 2011; Hodgson & McConnel, 2019).

Secondly, situated learning theory emphasizes the inseparable relationship between learning and practice by arguing that one cannot exist without the other (Hodgson & McConnell, 2019). This interconnection between learning and doing (Brown et al., 1989) supports the notion that learners should actively engage in an activity related to what they are trying to learn, as knowledge cannot simply be transferred passively from knower to learner (Korthagen, 2010; Lee & Brett, 2015). Moreover, this theory also supports a social view of learning (Jones, 2015; Networked Learning Editorial Collective, 2021), as is the case with NL, in which engaging in an activity with other collaborators is valued above solo participation. This social contact can be deemed particularly important to teachers during the isolating ERT period.

To illustrate the above in a specific example, a situated learning proponent wanting to learn how to cook a particular dish is more likely to place value on physically attempting to

prepare this dish in their kitchen with a friend who has already made it, instead of passively reading or listening to this friend's cooking guide. This ties in with Lave and Wenger's (1991) idea of peripheral participation, discussed below, whereby community members learn by co-working on the fringes of a particular task while their more experienced peers engage in the more challenging core components. Staying with the cooking vignette, the learner might work peripherally through the simple chopping of vegetables, while their more experienced peer performs the more demanding task of deciding on the right spices. In accordance with situated learning theory, the former is likely to learn from the latter through their co-operation on the same task and, as with NL, collaboration is key.

Lastly, collaborative and cooperative learning are undeniably central to NL's social view of learning that takes place between connections (Networked Learning Editorial Collective, 2021). While the two processes are similar and often grouped together, they are not quite the same. Nguyen (2017) draws a useful distinction by explaining that cooperative learning is more applicable to contexts in which team members work individually on different parts of a task that is then combined at the end. Collaborative learning on the other hand, involves closer team integration whereby the individuals co-work on the same aspects of the task. An example of the former might therefore entail one person boiling the rice whilst the other prepares the meat to go with it. The latter would require both individuals to boil the rice together, before proceeding to prepare the meat in unison.

An aspect that is arguably shared by all the above schools of thought to some extent is that active learning supersedes a passive experience. This means that, in order for learning to occur, a shift away from the traditional teacher-centric instructional mode of learning and a

move towards a scenario where students actively participate in the creation of knowledge is needed. That is to say, an old-fashioned classroom scenario whereby students listen to the instructor dictate what is 'correct' and take notes would not be aligned with foundations of NL. Instead, an instructor could promote NL by adopting a more covert facilitating role in which the students would be at the forefront by discussing and negotiating what is 'correct' and why.

NL can manifest itself in different forms according to specific scenarios, as well as on the purpose for which an individual taps into their personal networks. The CoPs approach described above for instance, is a concept that revolves around the collaboration of individuals on a common task (Hofer et al., 2021; Mittendorf et al., 2006). This relates to NL in the sense that interactions between CoP members can take place across a blend of virtual and physical spaces. However, this narrow use of NL within a single intimate learning community contrasts somewhat with NL's broader concept of networked individualism (Jones, 2012), which portrays an alternative use of networks whereby an individual dips in and out of a range of much wider webs than the single tight-knit set of connections (Lave & Wenger, 1991) that is characteristic of CoP member interaction.

It is accepted that a NL practitioner is likely to have a range of both strong and weak ties within their networks (Jones et al., 2008; Networked Learning Editorial Collective, 2021), depending on their goal. The more regular and closer interaction involved with strong ties is likely to lead to knowledge creation, as is often seen in CoPs, whereas weak ties are more likely to be used to distribute and perhaps even challenge this knowledge across wider networks. For instance, a teacher may engage closely with colleagues from the same

teaching team, in order to develop a manual of how to use some of the more interactive features of software such as Zoom and then shares this on an SNS such as Twitter (Acuyo, 2022). This could then be countered by more distanced professionals who offer their own alternatives via the Twitter 'comment' feature. This teacher has first created a product through close tie collaboration and later disseminated it to weaker ties across wider networks for feedback.

In contrast with the close collaboration within a single community that is characteristic of CoPs, this investigation also covers the flexible use of PLNs (Dirckinck-Holmfeld et al., 2011; Jones, 2015) to maintain bridges to multiple connections (Jones, 2012), whereby a teacher might, for example, be asked something by a close colleague from one network on Moodle and then use Twitter to reach out to a wider web for the answer. Despite the ERT period largely restricting activity to the online space, technology's penetration into HE (Cutajar & Montebello, 2018) means that the use of PLNs is likely to take place both online as well as offline, now that technology has become omnipresent in many university campuses. The focus of this research is thus on how this set of micro-interactions with a wide variety of people and resources over the ERT period has been perceived and approached, in order to help HE educators cope with the long-term digitization of universities.

2.2.2 Benefits Associated with NL

Adopters of NL may take pride in the notion that they are engaging in a progressive practice that is seen by many as placing collaboration and community at the forefront of the learning experience (Dirckinck-Holmfeld et al., 2011; Networked Learning Editorial Collective, 2021).

The fact that knowledge and meaning are a product of peer-to-peer collaboration in NL (Cutajar, 2014), rather than produced solely at an individual level, means that it is inherently a social process that values interaction between practitioners above all else (Ryberg et al., 2012). This social view of learning is likely to feel rewarding and promote bonding between faculty members who would otherwise have had little authentic motivation to interact with each other. This is particularly applicable to the ERT period which has led to a sensation of detachment from others among many teachers.

Many teachers have been isolated whilst working from home, as a result of the Covid19-propelled ERT period that has lasted longer than previously predicted (Carey et al., 2021). The inclusion of NL participants into a democratic negotiation of meaning, producing knowledge as a by-product of these interactions (Jones et al., 2008; Ryberg et al., 2012), means that this wisdom is not held in the hands of a privileged few, but rather it is in the possession of regular teachers who engage with each other to collectively produce it.

At a more practical level, NL offers individuals a more flexible and tailor-made experience to suit their individual needs (Anders, 2018). This is where the technology element of NL comes into play, as ICT can be used to minimize physical constraints and thus bridge practitioners across an entire institution (Dirckinck-Holmfeld et al. 2011; Jones, 2012) and even across multiple organizations globally. The fact that interactions can take place asynchronously, just as easily as they can in real-time (Nguyen, 2017), offers teachers unprecedented flexibility (Al-Samiri, 2021; Networked Learning Editorial Collective, 2021). This fluidity can help teachers cope with the increased strain caused by the ERT period.

An example of the above might involve two teams of faculty members from different institutions collaborating on a joint project by conversing on Zoom, exchanging material via Google Drive uploads or performing both activities on a social media site such as Facebook. The conference calling software would eliminate the geographical distance barrier between the teams, the cloud space storage would offer flexibility of access to material and the social media group could be used for both purposes. While the connections between the teachers are most important, these would be difficult to form and indeed maintain without the technology that lubricates these bridges (De Laat & Dohn, 2019; Goodyear et al., 2004). The rapid pace at which the relevant technology has been developing and gaining traction in recent years (O'Keeffe, 2016; Zhu et al., 2018) means that this ICT-enabled cohesion among participants has the potential to be made easier in the near future as teachers continue to experience the technological penetration of their work environment.

2.2.3 Criticism Associated with NL

Professional identity is something that can pose a challenge for educators experimenting with NL, both for teaching as well as for learning purposes. The shifting role of the teacher away from the traditional centric position, towards a more subtle facilitator role can in itself pose a challenge to new adopters of NL (Casey, 2016; Cutajar, 2014). Aside from what is already seen as a demanding profession (Holley, 2009), NL-adopting teachers are additionally asked to potentially restrain their participation by adjusting to a new, more distanced role, as facilitators of communication between teacher, student and resources (McConnell et al., 2012; Perriton & Reynolds, 2014). For instance, a teacher may grapple with their instinct to intervene when it becomes clear that two learners cannot agree on a

particular point, on the justification that learner-to-learner dialogue is an integral underpinning of NL (Carvalho & Goodyear, 2014).

As well as this new, less-centric facilitative role, the technology that is often used between connections in NL (Networked Learning Editorial Collective, 2021) is likely to challenge some educators' identity as expert knowledge providers (Hodgson & McConnel, 2019; Romero-Hall, 2021). A possible example of this might be a teacher with a level of technological competence that is noticeably lower than that of their millennial students is unlikely to feel like the authority that they have traditionally associated with their principal teaching role; especially during the added vulnerability experienced during the ERT period. Other examples of this challenge to professional identity are explored from a PD angle in the subsequent subsection.

Another potential challenge for the adoption of NL is connected to its credibility as a legitimate, tangible and predictable activity within the workplace. Critics point to the fact that NL was born relatively recently, with its first dedicated conference held in 1998 (Casey, 2016). This is quite a young set of principles to follow, in comparison with some of the more established learning guidelines such as behaviourism or cognitivism that have been around for considerably longer. Added to this, is the consensus that NL is in itself a complex concept that involves a range of intricacies and nuances (Casey, 2016; De Laat & Lally, 2003), including meaning negotiation and emotional support. Sceptics from an institutional perspective might therefore question the practicality of introducing NL at whole faculty level, in terms of how difficult it would be to find the time and expertise to promote such a labyrinthine concept. This is especially true during the ERT period, as teachers are already

facing notable uncertainty and overload. Again, the implications of this on teachers PD is tackled in section 2.3 below.

Lastly, the significance of relationships and group dynamics in NL (Casey, 2016; Ryberg et al., 2012), means that there will also be an element of unpredictability in the practice. Regardless of how enthusiastic and dedicated one practitioner may be to engage in networked activity, it is unlikely to result in success unless there is reciprocity (Dirckinck-Holmfeld et al., 2011) from other members of the network. This reliance on others, that is characteristic of the social element of learning embedded in NL (Networked Learning Editorial Collective, 2021), could deter teachers from relying on it.

2.2.4 Potential Gaps in NL Literature

Despite the substantial amount of literature on NL as a stand-alone field (Goodyear et al., 2004; Jones, 2015; Ryberg et al., 2017), the existing pattern of literature points towards a gap in terms of how it can be applied to the recent ERT scenario. Even from within recent publications on NL in this ERT context, many of them delve into students' use of PLNs (Elmer et al., 2020; Mensa & Grow, 2020; Shim & Lee, 2020), but do not offer the qualitative depth in relation to the ERT period that a method such as phenomenography would provide. Similarly, the detailed PhD dissertations that do offer an in-depth look at an individual's perceptions of NL, tend to angle this from a student's perspective (Casey, 2016; Cutajar, 2018; Nguyen, 2017) instead of shedding light on teachers' views within an ERT context. These patterns in the literature point towards a need for future research that targets

teachers' perceptions of their use of personal networks within the recent ERT context, by adopting a method that yields rich, qualitative data.

2.3 Teacher PD in a Technological Context

This section commences with a summary of PD within the setting of teachers learning to use technology for the specific purposes of operating in an increasingly digital HE environment. After providing this overview and definition, the subsequent sections explore traditional versus more modern approaches to PD, before concluding the subsection with a focus on faculty opposition.

The narrowed scope of teacher education specifically within the parameters of technology not only enables the author to provide readers with a sufficiently in-depth review of related literature, but it is also aligned with the digital context of this investigation. This means that, as technology continues to permeate traditional learning spaces (Cutajar & Montebello, 2018), teachers need to learn lessons from the ways in which they are increasingly learning to cope in an online environment (Lee et al., 2022). The recent covid19 ERT period and teachers' use of personal networks that has taken place throughout this time is an example of a ripe scenario for these educators to emerge as more versatile and well-rounded practitioners. In order to do this, the mechanism of PD needs to be tailored accordingly to facilitate a pivot towards this increasing technologization of the HE environment.

With the above background in mind, this investigation's adopted definition of PD describes it as "the process whereby people's professionalism may be considered to be enhanced,

with a degree of permanence that exceeds transitoriness" (Evans, 2014, p.188). This broader base definition can be further tailored to this paper. Firstly, 'professionalism' is understood to be in specific reference to technological elements of a teacher's practice, such as the smoother operation of conference management software or the ability to operate online applications with minimal guidance. Secondly, 'enhanced' is perceived as relative to the ability of a particular teacher prior to undertaking said PD. Given that not all educators hold the same level of technological professionalism pre-PD, they are not expected to be at the same uniform level after undertaking it, provided that they have raised their own individual standards. Lastly, while it is accepted that 'permanence' implies that teachers' newly enhanced professionalism will certainly be expected to impact their practice positively in the long-term, it is also recognized that regular future PD will be required to maintain and update this existing professionalism. This emphasis on the cyclical nature of training is crucial, given that technology-related PD can be just as imposing for pre-service as it can be for in-service educators (Fernandez-Batanero et al., 2020), as well as due to its rapidly evolving nature (Salmon, 2011).

For the purposes of this research, PD can generally be subdivided into its targeting of two relevant categories related to a teacher's overall ability to operate in an online space: technological and pedagogical. The former refers to a teacher's competence in the operation of digital instruments (Falloon, 2020; Toquero, 2020), whether these are hardware or software related, required to teach online. Examples of this ICT competence (Fernandez-Batanero et al., 2020) include the frictionless navigation of an LMS like Moodle (Karakaya, 2021), or the use of advanced interactive features on a team communication platform like Microsoft Teams. The latter category relates to a teacher's awareness of what

makes an effective lesson that meets its educational objectives (Dysart & Weckerle, 2015) and to what extent teachers utilize technology to support their pupils' learning (Fernandez-Batanero et al., 2020). Unlike common face-to-face pedagogical considerations such as classroom layout, online ones include a greater emphasis on material design to make lessons more student-centred (Karakaya, 2021) and greater incorporation of asynchronous work to include students whose poor connectivity limits their synchronous participation.

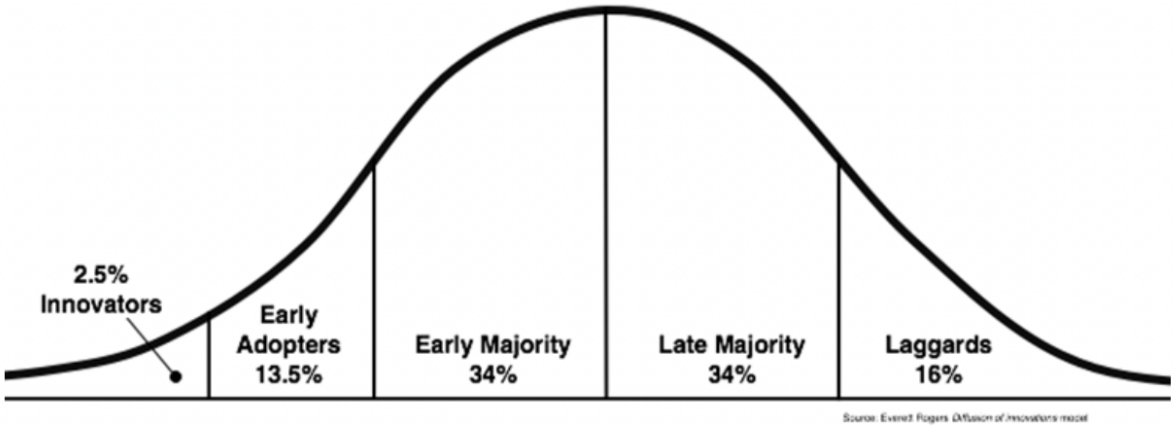
2.3.1 Formal Approaches to PD

Traditionally, technology has been viewed as a particularly problematic area for PD both in terms of the limited availability of training tailored to this area, as well as the overall inadequacy of existing programmes (Fernandez-Batanero et al., 2020). Even pre-Covid ERT, the growing popularity of online, or at least BL, courses has meant that a degree of online teaching proficiency has shifted from the 'desirable' to the 'required' category for today's teachers (Philipsen et al., 2019). This is compounded with the reality that some of the pedagogical considerations of face-to-face teaching do not directly translate over to online instruction (Salmon, 2011), which means that even highly skilled offline teachers are likely to encounter turbulence in their shift between learning spaces. These elements combined have pressured educators into attending a greater volume of visible training events that produce near-term and easy-to-quantify improvements in their digital competence. These can range from one-off events such as conferences or webinars, but can also include courses that require regular attendance.

In terms of measuring the extent to which technology-oriented PD programmes are meeting their goals, Roger's (2003) diffusion of innovations theory (Figure 2.1) is an example of a traditional model used that focuses exclusively on the level and speed in which teachers embrace new technology. This framework aims to make the adoption of new technology (or an 'innovation') tangible by categorizing users' adoption according to five stages that range from the early 'innovators' stage, representing the minority of faculty members who first adopt the technology, right through to the late 'laggard', consisting of teachers who still resist new technology even after most of their colleagues have adopted it. Educators could therefore determine the effectiveness of a PD programme, by measuring where they are on this scale before and after the training. The technological demand associated with the ERT period means that more teachers are likely to prioritize avoiding the 'laggard' end of the scale.

Figure 2.1

Diffusion of Innovations

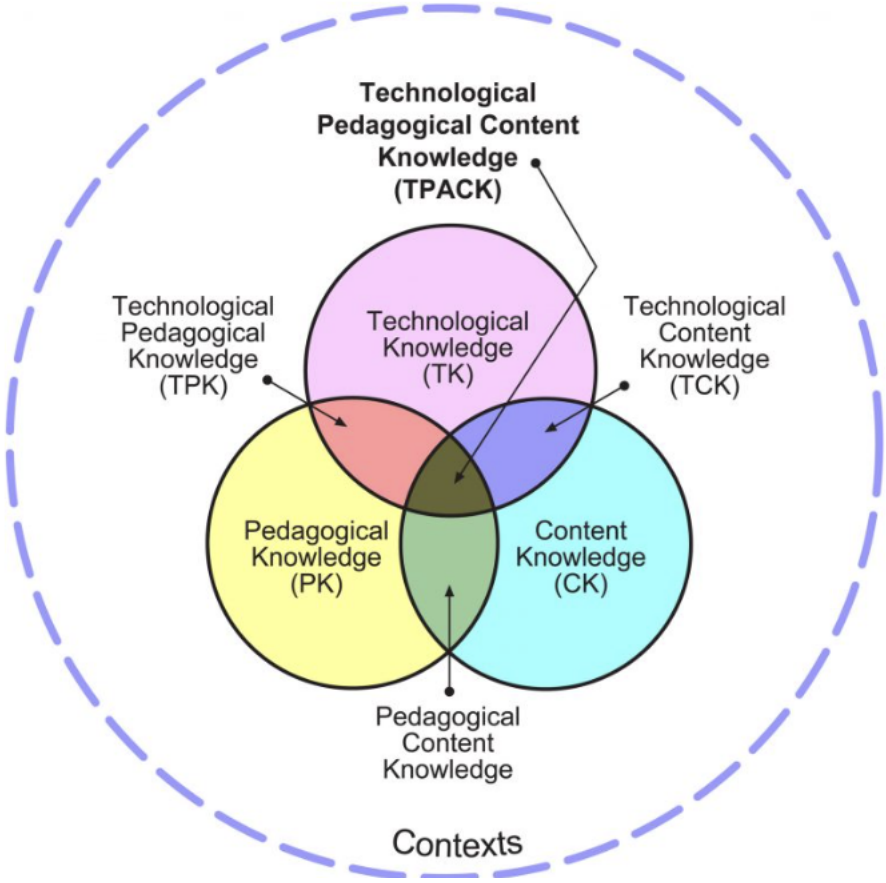


An example of a holistic model that incorporates more than just the actual technology, is Mishra and Koehler's (2006) TPACK: technological, pedagogical and content knowledge

(Figure 2.2). This measures a teacher's ability not only to operate digital instruments (technological), but also to deliver lessons that meet their aims (pedological) and master their specific subject area (content). More innovatively, the model measures teachers' integration of these different types of knowledge. This makes it particularly useful in its assessment of PD, since it can help to overcome the problematic over-prioritization of purely technological training, with comparatively little focus on pedagogical (Fernandez-Batanero et al., 2020) and content knowledge. In order to avoid a glut of formal PD events that focus exclusively on over-simplified technological training, models such as TPACK can be used to remind teachers of the need to integrate this with other forms of knowledge. The model's lack of consideration for the dialogic aspects of learning however, means that it is still regarded by some are relatively traditional in its approach towards measuring PD. The heightened pressure of the ERT period is also likely to make this model challenging to use, given the general sense of urgency and subsequent lack of conscientiousness among some faculty.

Figure 2.2

TPACK



2.3.2 Informal Approaches to PD

In contrast with the more traditional activities and measurement instruments explored in the previous section, more recent approaches to PD are likely to include social aspects of learning that involve group collaboration and relate more directly to NL. A term that is often used interchangeably with an individual's professional learning networks (PLNs) (Mensa & Grow, 2020), is professional learning communities (PLCs). While the former places greater emphasis on the actions of the networked individual as they dip in and out of different social groups to suit their bespoke needs, PLCs place greater prominence on sustained

membership to groups that seek to collaborate flexibly on solving problems that they cannot solve individually (Kalman et al., 2020; Lee & Brett, 2015). Moreover, informal PD approaches such as PLCs contrast with more formal approaches in the sense that they target activities that shift away from event attendance or even self-experimentation in the classroom and move closer towards "conversations with colleagues in subject departments" (Kalman et al., 2020, p. 599). It is this ongoing collegial dialogue over ongoing professional topics that most accurately encapsulates the shift towards a less formal type of PD.

The informal dialogue between professionals described above that is at the core of informal PD, is underpinned by the complex relationships between virtual and face-to-face environments, learners and the learning community and learners and resources that HE has witnessed are all targeted by the NL field (De Laat & Lally, 2003; Networked Learning Editorial Collective, 2020). This hybrid environment that HE is gradually shifting towards (Cutajar & Montebello, 2018; Goodyear, 2020), accelerated by the recent Covid19 lockdown, is being caused by the increasing crossover of learning spaces (Dirckinck-Holmfeld et al., 2011) and rapid technological advancements that permeate physical learning spaces (Cutajar, 2018). This means that the more social and informal approaches to PD are increasingly challenging to measure using the traditional instruments described in the previous section, such as attendance records.

Specific examples that highlight the increasing hybridization of the modern PD environment include the popularization of mobile learning (Czerniewicz & Brown, 2012; Kearney & Maher, 2018) and the 'flexible meeting place' (Networked Learning Editorial Collective, 2021, p.345) in the last decade. This means that a teacher could be sharing ideas with a

group of colleagues who are not all in the same geographical space via an ICT tool, such as Zoom from a cafe using a smartphone for instance. The physical location of the faculty members could vary from home settings to public libraries and they could be using their devices individually or in small groups, depending on their personal preferences and access to hardware. In parallel with the context of an online lesson involving a teacher and their students (Naciri et al., 2020), some individuals may engage synchronously as the content is delivered on Zoom, whereas others may engage with the recorded version asynchronously at a later date. De Laat and Dohn (2019) highlight the growing flexibility of online learning environments that range from spaces that are specifically designed for such learning, like an educational application or a conference room, to the so called 'learning in the wild' that is associated with informal tools such as social media platforms.

The scenarios described above highlight the complexity of connections and technology that NL targets (Dohn et al., 2018; Networked Learning Editorial Collective, 2020). Adopting this as an informal approach to PD would therefore require teachers to grapple with these intricacies, while at the same time engaging with the target content of the PD itself. This means that a teacher adopting this informal PD approach in seeking to increase student engagement in their online classes for instance, simultaneously needs to manage the subtleties of networked interaction (Hofer et al., 2021). Some would therefore counterargue that this is simply too much of a burden to place on already strained teachers (Smith & Kaya, 2021,) whose low levels of digital competence would make this informal PD approach too burdensome in comparison to simply attending a conference or joining a course. This is particularly salient during the highly pressurized ERT period which already requires teachers to go above and beyond their usual expectations. A convincing rebuttal is that this added

cognitive load is a price worth paying, since future PD will require ongoing community development, rather than isolated support for disconnected individuals (Kalman et al., 2020).

2.3.3 Teacher Resistance to PD

With regards to technology-focussed PD on the whole, superficial exploration of the literature reveals factors such as time constraints, as teachers experiencing increased workloads struggle to find the time for PD (Philipsen et al., 2019), alongside a general feeling of overload as they grapple with the newly added stresses of adapting to an online space (Smith & Kaya, 2021). Both of these elements undoubtedly result in a de-prioritization of PD among teachers, as they scramble to keep up with their core duties (Trust & Whalen, 2020).

Delving deeper, some authors reveal the lack of consideration for a teacher's fragile sense of professional identity, as they transition between offline and online teaching spaces (Philipsen et al., 2019). That is to say, merely instructing teachers on the mechanics of online teaching is not in itself sufficient, as many of them also need support in coping with their new role as digital educators (Baran et al., 2011) who have lost access to the physical classroom; something that has until recently been closely integrated with their professional identity and has been experienced particularly abruptly during the ERT period. Educators are unlikely to embrace a PD programme that overlooks such an important factor.

In terms of informal PD specifically, faculty resistance can also form a significant barrier to this relatively young and under-researched form of PD (Casey, 2016). As described in the previous section, questions may be raised as to how the subtle network interactions that are characteristic of NL could be measured and the implications this may have for a teacher's PD record. It is much easier to quantify certificated course attendance or the number of published articles, than it is to measure interactions between connections within networks. Likewise, it is arguably less demanding to fulfil the requirements of a traditionally structured PD course or attend a lecture on a particular subject, than it is to muster the discipline and self-motivation required to navigate the complexities of NL (Acuyo, 2022; Cutajar, 2014).

2.3.4 Potential Gaps in PD Literature

Unsurprisingly, there is ample literature available both on the rationale for technologically oriented PD, as well as on the possible approaches to achieving this (Fernandez-Batanero et al., 2020; Philipsen et al., 2019). Likewise, there appears to be a wealth of reading that focuses on faculty resistance towards PD generally, but also specifically towards educational technology (Philipsen et al., 2019). Beyond that, there is a steadily growing body of papers that explore the less traditional and more social approaches to PD described in the previous section 2.3.3 (Inken et al., 2017; Kalman et al., 2020). In contrast, there seem to be comparatively fewer articles that centre on the extent to which this latter form of community-based PD has taken place throughout the recent Covid19 ERT period which has made more traditional forms of face-to-face training less practical. Even less attention appears to be paid towards the long-term integration of these networked PD practices

based on lessons learnt from this ERT episode. The pattern of literature therefore suggests that that further investigation of these PD practices warrants further explorations specifically within an ERT setting.

2.4 Concluding Remarks

This literature review has explored existing work across three inter-connected areas that are at the core of this study and identified gaps within these in the context of the ERT period. Firstly, a review of the foundations, benefits and criticisms associated with ERT has unmasked patterns of literature in terms of relatively fewer profound studies that focus on the longer-term implications of ERT from a teacher's viewpoint. Secondly, an overview targeting the same areas but within NL has pointed to similar potential patterns, in the sense that relatively few in-depth qualitative articles have been written targeting NL specifically within an ERT context from a teacher's perspective. Lastly, the PD subsection of this literature review suggests a relative scarcity of literature aimed at exploring informal approaches to PD throughout the recent ERT period and how these lessons could be reflected in future teacher training. By addressing these inter-related literature gaps in relation to ERT, this investigation seeks to shed light on teachers' perceptions and uses of networks throughout the Covid19 ERT period and, more significantly, how this can be used to better prepare teachers in future for the increasing technological permeation of technology into HE (Acuyo & Lee, 2022).

Chapter 3: Methodology

An explanation of the author's view on knowledge will be outlined in the first section (3.1), proceeded by an overview of the chosen framework that aligns with this position in the subsequent section (3.2). A summary of data collection and analysis will then be provided in sections 3.3 and 3.4 respectively, before finally detailing the ethical considerations undertaken prior to the investigation in the final section (3.5).

3.1 Ontological and Epistemological Perspectives

As a researcher, I stand firm behind the ontologically constructivist belief that reality is subjective (Kivunja & Kuyini, 2017) and is therefore crafted individually by each person. By asserting that there is no single reality, my beliefs about the nature of knowledge align themselves with this investigation's phenomenographically-informed research design: to explore a range of perceptions of HE teachers' accounts of the phenomenon in question. The phenomenographic standpoint does, after all, support the notion that individuals experience a single phenomenon differently according to their own beliefs (Åkerlind, 2008; Cutajar, 2018). This is underpinned by the targeting of the variation of individual participants' perceptions, rather than variation across the sample of interviewees.

My interpretivist epistemological stance is also aligned with the study's phenomenographically-informed objectives, since it supports the view that meaning is constructed by the perceptions of each individual. The purpose of this study, in seeking a diversity of qualitatively different perceptions, supports this notion that there is a plurality

of different truths according to each individual's own experience (Acuyo & Lee, 2022). A teacher with a relatively low-level of digital competence and a limited number of connections in their network for instance, is more likely to have negatively perceived the use of networks during the ERT period, than a digitally confident colleague who has an extensive support network at their disposal. Their realities of the same phenomena are thus likely to be very different and it is almost certain that different perceptions exist in between these two opposite ends of the spectrum according to the individuals' own construction and interpretation of meaning.

3.2 Phenomenography

This first part of this section (3.2.1) offers a supplementary overview of the methodological approach to what has been provided in the first chapter in section 1.5.2. Subsequently, section 3.2.2 goes on to outline the strengths of a phenomenographically-informed approach as a framework aligned with the focus of this investigation, before presenting the reader with the potential challenges associated with the method in the final subsection (3.2.3).

3.2.1 Key Principles of Phenomenography

The main notion underpinning phenomenography is that it seeks to uncover a diversity of ways in which a single phenomenon can be perceived by a range of individuals (Ashwin et al., 2016). The objective therefore, is not to reach a single objective 'truth' or 'correct' way in which the target phenomenon should be interpreted, but rather to collect and better-

comprehend a variation of possible interpretations by individuals (Åkerlind, 2008). These perceptions are freely self-explained by the investigation's participants via semi-structured interviews (Yates et al., 2012) and are eventually mapped out by the researcher into differentiable themes known as categories of description (Cutajar & Montebello, 2018). The relationship between the identified categories is subsequently explored in the form of visually representative outcome spaces (Åkerlind, 2008), which can take a variety of illustrative shapes that emphasize how these categories are structured in relation to one another. While various individuals from a target group are likely to share perceptions of a particular phenomenon and in fact experience changes in how they themselves perceive it at different times, the aim of phenomenography is to capture a finite number of perceptions at the time of data collection. The focus of this study is therefore on the variation of perceptions experienced across individual participants, rather than on the variation across the group of participants, as this range is what is more likely to be applicable in other contexts.

3.2.2 Adoption Rationale

As described in the introduction chapter, the purpose of phenomenography is "to identify the different ways in which a group of people experience, interpret, understand, perceive or conceptualize a certain phenomenon or aspect of reality – and to do so from the perspectives of the members of the group" (Orgill, 2012, p.1). This is aligned with the purpose of this investigation, which is to uncover a finite number of qualitatively different ways in which HE teachers experience the phenomenon in question: the perceptions and uses of personal networks for the objectives of learning and teaching. Phenomenography's

roots in educational research alongside its focus on conception variety (Åkerlind, 2008; Yates et al., 2012), make it a logical choice for a study that is not interested in determining a single 'right' way to use networks; but rather to uncover a diversity of perspectives in association with this phenomenon (Cutajar & Montebello, 2018). Moreover, phenomenography's characteristic as a second-order approach (Rands & Gansemer-Topf, 2016; Yates et al., 2012), in the sense that it seeks to discover how individuals other than the researcher perceive the world, makes it a rational choice for this investigation's focus on multiple teachers' perspectives.

Despite all of the alignments between phenomenography and this investigation's objectives, the study adopts a qualified version of this methodological framework which makes it phenomenographically-informed rather than standard phenomenography. This is attributed to the investigation's focus on the variation across individual participants' perceptions of the target phenomenon and the developmental hierarchies of the outcome spaces. This contrasts with certain aspects of standard phenomenography, which targets the variation across the group of interviewees, their overall experiences of the target phenomenon and inclusive hierarchies when data is finally presented in the form of outcome spaces. This is further explained in the subsequent data analysis subsection (3.4).

This study is not constrained by rigid pre-conceptions of how teachers use their networks, which makes phenomenography's unveiling of a holistic perspective (Creswell, 2014) of teachers' perceived uses an ideal methodology choice for partial adoption. That is to say, this research is open to uncovering a range of participants' perceptions, whatever they may be, rather than aiming for specific pre-determined network purposes that the researcher

has predicted in advance. Cutajar (2014) argues that phenomenographers should focus less on determining 'good' or 'bad' practice and more on the comprehension of the 'complex assemblage' that constitutes the variety of ways in which individuals perceive a given phenomenon.

According to the principles of phenomenography, meaning and knowledge essentially lie in the relationship that a particular individual has with the phenomenon (Orgill, 2012); and it is generally accepted that this relationship may differ depending on the beholder. This view helps to justify this investigation's focus on uncovering a range of holistic perceptions that can help to better understand how networks have been perceived and used during the recent ERT period, rather than aiming to compile a superficial list of 'best' and 'worst' practices.

The main advantage of phenomenography, whereby it rewards researchers and readers with a range of perspectives on how a single phenomenon can be viewed (Ashwin et al., 2016; Marton, 1986), is illustrated by Åkerlind's (2018) example of the phenomenon of colour. She explains that individuals can only really understand the concept of colour by comparing and contrasting different ones. This means that it would not be possible to experience the concept of colour only through red for instance. Instead, we would need to experience blue or green for example, in order to see how these colours differ from red. Åkerlind (2018) goes on to explain that this experience of a phenomenon, such as colour, can be heightened by increasing our knowledge of other dimensions related to the phenomenon, such as the shade or the category of each colour. That is to say, an individual

with an awareness that red is a primary colour and can be light or dark in shade experiences this phenomenon differently to someone who is unaware of these added dimensions.

To put the above example into the context of this study, a teacher who is aware of certain possible uses of personal networks, such as emotional support after a hard day of online teaching or informal instruction-checking in response to becoming inundated by emails from management, is likely to have a different perception of networks than a teacher who is unaware of these potential uses of connections as a form of support and validation. This does not necessarily mean that those with a greater awareness of networks always perceive them as being more useful or positive, however. For instance, a teacher who was accustomed to using a collegial WhatsApp group to organise social events in a previous workplace may face disappointment upon the realisation that no such channel exists in their new workplace. In contrast, a teacher who did not have access to informal communication channels such as this in their previous community is less likely to become disillusioned when faced with the same scenario. After all, one cannot miss what one is unaware of.

3.2.3 Potential Challenges

As with any methodology, phenomenography is not without its criticism. Aside from obvious challenges applicable to many investigation types, such as motivating respondents to take part in the study (Sjöström & Dahlgren, 2002), one of the main obstacles associated with phenomenography in particular, is the lack of specificity involved in the data analysis procedure (Yates et al., 2012).

Despite a set of principles that should be adhered to when categorizing data and agreement that interview transcripts should be read numerous times, both of which will be subsequently explored in section 3.4, there is essentially no single universal step-by-step guide to analysis that is prescribed and followed by a majority. There are only suggestions, such as Sjöström and Dahlgren's (2002) guide described in section 3.4, and individual researcher experiences that vary significantly. This can make it challenging for novice phenomenographers. The author of this research had to read beyond the generic textbook advice offered on conducting this method, by carefully analysing the appendices of a range of PhD theses that adopted phenomenography, such as Casey's (2016) study of transnational students' perception of NL or Cutajar's (2018) investigation into Maltese students' NL experiences.

Aside from data analysis, there is also the issue of researcher influence (Hajar, 2020; Yates et al., 2012), since the investigator's intimate involvement in the interview and analysis process means that the participants' perceptions may, unwittingly perhaps, be altered by the researcher according to what the author believes the participants are trying to say (Marton, 1986). This can be magnified by the time gap between conducting the interviews and analysing the transcripts. In addition to this, another form of researcher influence that may indirectly affect the results is the potential for participants to simply tell the interviewer what they think they want to hear (Cutajar, 2014). This would not be difficult to imagine in a case where a participant is nervous about the interview or in cases where there may be underlying power dynamics at play between the interviewer and interviewee (Casey, 2016).

These issues connected to unintended influence that a researcher may have on the data can be minimized by taking regular breaks throughout the data collection and analysis stages, as well as by ensuring that enough attention has been given to the ethical considerations associated with the investigation. For instance, participants are more likely to answer honestly if they trust that their anonymity will be protected.

In response to the pitfalls described above, it was crucial for the interviewer to immediately follow-up on any elements of the respondent's answers that were unclear (Sjöström & Dahlgren, 2002), otherwise there could have been a notable difference between what the respondent meant and what the interviewer interpreted. Another tool that helped to minimize researcher-bias in the data-analysis process, was the support of each category of description with relevant excerpts from the transcripts (Örnek, 2008). This was done to facilitate readers' comparison of the investigator's categorical description with raw data and hence act as a form of cross-checking that increases validity. Lastly, the investigator invited an external researcher to conduct a blind review of parts of the data analysis (Bowden et al., 1992). That is to say, the second scholar analysed the data without first reviewing the main author's analysis and only compared results after both sets of analysis had been completed independently.

A final challenge that reaches right to the core of phenomenography and is arguably very difficult to overcome, is the potential issue in which the participants themselves may not be able to accurately describe their relationship to the phenomenon, or perhaps even be distinctly aware of what this relationship truly entails (Säljö, 1997). This points towards the

potential gap between how a teacher might perceive their use of networks versus what their use of networks actually entails in reality.

For instance, a teacher may subconsciously exaggerate their use of technology to collaborate with peers in an interview, simply because they view this as a progressive practice that they feel they should be doing. While this would provide useful data for determining teachers' perceptions of networks (RQs 1 & 2), it would not provide an accurate account of their actual use of these networks (RQs 3 & 4). Unlike the other obstacles which the researcher could pro-actively take steps to minimize, this hurdle associated with participant ability was very challenging to tackle.

3.3 Data Collection

The data was collected at the single HE institution described in the introduction, as well as in the subsequent 3.3.1 section. The primary collection method used was a series of stand-alone semi-structured interviews with a group of EAP teachers, detailed in section 3.3.2, from this institution, which was also complemented with data from the researcher's field notes. This interview method rationale, as well as the design of the questions are explained in section 3.3.3, before a walkthrough of the piloting process is presented in section 3.3.4. Insight into the field notes is provided at the very end of this subsection in 3.3.5, since this supplemental data from the author's research journal was unpremeditated in the initial planning stages of data collection. That is to say, it was added upon reflection in the early stages of the interviewing process.

3.3.1 Research Site

As mentioned in the introductory chapter, the data was collected from a single university in Kazakhstan that operates as an EMI institution, where Russian and Kazakh are the two official state languages. As one of its country's leading autonomous research institutions, it aims to develop students into the nation's future leaders and innovative professionals. It offers courses in a range of disciplines, from science, technology, engineering and mathematics (STEM)-related foci, through to humanities such as history and languages, from undergraduate to doctorate level. In order to be admitted onto these courses, many of the students are required to go through a one-year foundation programme that aims to boost the core skills that they need to operate in this HE environment. The subjects taught in this programme that bridges school and undergraduate study include Mathematics, Science and EAP.

The EAP subject, which is heavily weighted on account of the university's EMI status, primarily targets academic soft-skills that include essay-structuring, drafting project proposals, reading journal articles, note-taking strategies, presentations and so on. This is mostly taught by expatriate teachers with a background in linguistics, teaching pedagogy or a similar subject. Aside from interacting with their students, these faculty members are expected to closely collaborate with each other in the context of shared classes, in order to solve student-related concerns and as part of their ongoing PD strategy. While these activities are normally conducted in face-to-face settings, the Covid19 disruption outlined in the introduction chapter resulted in these teachers having to unexpectedly shift to working online from their homes in March 2020. These are the educators on which this investigation

is centred on, and it is their perspectives on NL that were teased out during the interviews described in section 3.3.3.

The fact that the researcher was closely involved with the institution at the time of data collection, specifically in the EAP subject being taught in the foundation programme, posed a series of both benefits and challenges. Starting with the former, having intimate knowledge of the inner operations of the educational unit meant that the researcher found it much easier to decipher some of the more niche terms or tools that the participants referred to in the interviews. This insight includes the understanding that OWE stands for the Online Writing Environment and that this cloud infrastructure is supported by Google Drive and Docs. Likewise, a knowledge of the teaching timetable means that the researcher is aware that 'Listening and Speaking' and 'Reading and Writing' refer to sub-components of the EAP programme. The researcher is thus not only able to save time by not needing to clarify points such as this during the interviews but is also able to clearly explain this to the reader in the form of square brackets that are added to the transcribed excerpts used in the 'findings' chapter. The transcriptions therefore become more meaningful to a wider readership. A final example of a benefit can be seen in the facilitation and expedition of obtaining the 'deferral of oversight' that was required as part of the investigation's ethical considerations (see section 3.5), as the researcher knew exactly who to contact and what the procedure was for this. This allowed more time to be devoted to other parts of the investigation; most notably data analysis.

With regards to the challenges experienced as a result of the researcher's internal position, the only significant danger was the risk of complacency. This refers to the heightened

possibility that the researcher might have left things until the last minute or acted less conscientiously than he would have otherwise, on account of the familiarity with his surroundings. This was mitigated via both reflective field notes (see section 3.3.5) and regular reference to the research schedule calendar, in order to ensure that the investigator-maintained discipline by not falling behind schedule for instance, or by neglecting the interview prompts on account of the added confidence created by the familiar surroundings.

3.3.2 Participants

The participants, EAP instructors from the university foundation programme described in the previous section, were chosen using a purposive sampling strategy (Khan et al., 2019). This is a common approach to participant selection in qualitative investigations, whereby each single interviewee is likely to yield rich information (Palinkas et al., 2015; Yates et al., 2012) in comparison to a participant from a larger-scale quantitative study. These participants were recruited via an email which provided a full picture of the study, in the form of an attached 'participant information sheet' for instance, and which emphasized the optional nature of participation, by providing attachments such as a 'participant consent form' (see appendix 1).

The high stakes nature attributed to each participant, meant that interviewees were carefully recruited by the researcher according to a pre-determined criterion, along with their practical availability. To ensure wide representation in data (Nguyen, 2017; Sin, 2010), different genders, age groups and experience levels were targeted, with the aim of

obtaining a variety of qualitatively different perceptions of the target phenomenon in focus. Participants were also chosen according to their experience in the target focus (Hajar, 2020), since a teacher who, say, took leave during much of the early ERT period, would not likely have made as relevant a contribution to this study compared to one who worked throughout the event.

A table that shows the spread of coded participants according to the above-mentioned aspects can be seen in appendix 2. Overall, this shows that the participant population consists of a fairly even spread of gender, age and experience. While it can be noted that the participant profiles could technically have been more balanced, since there were for example 10 female versus only 8 male participants for instance, this is the best that could be done in light of the availability of teachers for interview.

The initial aim was to interview 20 participants, which fits within the recommended 15 to 20 range for phenomenography (Trigwell, 2000), in a semi-structured format for periods of 30 to 60 minutes. The predicted duration was intentionally left open and flexible, in order to cater for loquacious participants who may easily have discussed their perceptions of networks for the full hour, for laconic interviewees who may have struggled to reach half an hour and for everyone in between these two ends of the spectrum. In the end, most interviews lasted around the 45-to-50-minute marker in between the two parameters.

The researcher took the decision to end the data-collection process after having interviewed only 18 participants. This was firstly because the repetition of themes towards the end of the interviewing stage suggested that data saturation had likely been reached, meaning that

the phenomenographically-informed objective of obtaining perception variety had been met, and secondly on account of a number of last-minute cancellations by teachers due to personal reasons, which meant that the re-scheduling of an extra couple of participants would have had an adverse knock-on effects on the planned timing of the study. It was therefore decided that two additional interviews were unlikely to produce something new and that the practical challenges of finding two substitute participants could have reduced valuable time available for data analysis.

This consideration that the number of participants could have been increased or reduced slightly depending on when data saturation was reached, whereby no new perceptions could have been obtained from additional interviews, was taken into consideration but not predicted. The saturation level is something that could not have been neatly judged in advance (Nguyen, 2017), since not all participants had an even amount of relevant contribution to make with respect to all four RQs. This meant that some RQs reached data saturation before others. Despite this, the interview prompts were left unaltered as to provide a reasonably uniform interview experience for all participants.

Lastly, it was prudent to consider the temporal constraints associated with the amount of data collected, as the researcher needed to be realistic about the time it would take to analyse all this data (Bowden & Green, 2005). It would therefore not have been ethical to continue interviewing participants past the stage at which the researcher suspected that he would no longer have had the practical capacity to subsequently analyse each transcript in full. After all, the success of a phenomenographic study is decided more by the quality of the interpretation and less by the quantity of interviews (Creswell & Guetermann, 2018).

As described in section 3.3.1, the researcher's collegial position with the EAP subject teachers interviewed for the investigation at the time of data collection imposed a set of both benefits and challenges. For example, these ties to some of the faculty members notably facilitated the recruitment of participants in the sense that some of the approached teachers were seemingly content to carry out a collegial favour. Some of these teachers even went so far as to lubricate the participant recruitment process by informally advertising the study to other colleagues whom the researcher was less familiar with. These acquaintanceships also resulted in an overall smoother interview experience for many of the teachers, meaning that less time had to be dedicated to building rapport and more time could be spent on the target phenomenon. Despite these advantages, the researcher's internal position also carried the danger that participants might not have felt as comfortable in discussing sensitive topics with the researcher, such as negative experiences that involve colleagues or management. This was mitigated by reminding participants of the ethical considerations attached to the study, including the strict anonymity of their data, but also by the researcher being careful to not become too involved in any sensitive aspects of the interviews. Rather than visibly passing any form of judgement or exercising personal opinion, the researcher would simply ask participants to expand on items related to the target phenomenon or gently nudge them towards the next focal point.

3.3.3 Interview Design

Interviewing was the obvious choice for obtaining the high level of qualitative detail required for phenomenographic investigation (Bowden 2000; Yates et al., 2012), which a

questionnaire or observation would have arguably failed to capture in its entirety. Focus groups, whereby participants would be interviewed collectively in small groups, were a potentially feasible option, though they posed three significant risks.

Firstly, it would be more difficult for the interviewer to ask a particular interviewee to clarify a specific point in front of the others without interrupting the flow of the exchange. Secondly, the potential for prompting each participant to expand on a specific item of interest would also be limited (Cutajar, 2014; Nguyen, 2017), given the time constraints associated with taking up the entire group's time by focussing on a single member. Lastly, the teachers being interviewed would possibly refrain from discussing some of the more sensitive topics in front of colleagues, such as institutional weaknesses or collegial disagreements, for fear of how this may impact their future working relationships. In other words, the issue of power dynamics (Casey, 2016) would be more interruptive in a focus group setting than it would be in an anonymous one-to-one interview setting.

The fact that phenomenographic interviews are conversational and improvisational in nature (Felix, 2009; Khan et al., 2019), meant that pre-interview planning was not obstructively detailed to the point where it would reduce the flexibility of the semi-unplanned format. Each interviewee was guided with pre-prepared prompts (Rands & Gansemer-Topf, 2016), but then given the freedom to express their interpretation of the phenomenon (Örnek, 2008) in accordance with phenomenographic principles. It was important to make it clear to the respondent that there was no binary 'right' or 'wrong' answer (Sjöström & Dahlgren, 2002), but that they were free to articulate their understanding of the phenomenon in an unconstrained interview environment (Casey,

2016). During these exchanges, the role of the researcher was essentially to act as the bridge between the phenomenon and each participant's perception of it.

The points raised above meant that the careful design of interview prompts was particularly important, as these were subtly used to direct interviewees and promote more active participation. For instance, it became apparent mid-interview by an interviewee's increase in hesitation and a notable shift away from specific points towards general abstract description that they were unsure of what was meant by 'connections to resources' (RQ4). In instances like this, the interviewer provided an example or two to help the interviewee, in this case, that a resource can entail an instructional video on social media or lesson material from an online repository for example.

Aside from initial prompts to smooth the transition between topic focus, it was crucial for the interviewer to prepare follow-up questions, such as 'could you tell me more about…,' that would encourage less vocal participants to expand further on their description in accordance with phenomenography's exploratory aims (Rands & Gansemer-Topf, 2016). A copy of this interview plan can be seen in appendix 3. This provided the interviewer with a guide on how to begin, sustain and end each interview. Again, it is crucial to underline that this plan was used in a flexible manner (Nguyen, 2017) in accordance with how each individual interview proceeded. This meant that not all prompts were always necessary, as some participants autonomously self-directed themselves to cover the target topics.

3.3.4 Piloting

In order to test the interview design for potential flaws (Abdul Majid et al., 2017; Mikusha, 2017), two pilot interviews were conducted approximately 2 months before the bulk of data collection. This provided enough time for the researcher to reflect on lessons learnt from this piloting phase and respond by revisiting the interview design to make amendments (Abdul Majid et al., 2017; Casey, 2016). The piloting was conducted on colleagues who were not part of the sample pool for the official interviews, so as not to artificially influence the participants from whom the data was to be subsequently collected. Clearly, interviewing someone about their perceptions of network use throughout the ERT period twice would likely have produced results that differed from a person interviewed only once. These pilot interviews were conducted formally on Zoom, in order to replicate the authenticity of the subsequent interviews as much as possible. This pre-data-collection stage not only shun a light on some of the initial flaws of the interview design (Mikusha, 2017) but it also enabled the researcher to gain confidence in performing the interviewer role and amend his practice according to lessons learnt during this short phase (Casey, 2016).

In the case of the former, it became apparent by the end of the second pilot interview that the original prompts did not result in a smooth lead-in to the exchange. The design was thus amended to include an easy-to-answer question at the start of the interview, that could act as a steppingstone towards the deeper, more targeted subsequent prompts (see appendix 3). As for the researcher's performance as an interviewer, it was apparent that, during the first pilot interview in particular, he had adopted an overly formal style by offering little in the way of phatic talk to ease the interviewee. This created an environment that was more

characteristic of a structured interview, instead of the freer atmosphere that was intended. Given the importance of building a sense of rapport between the two interview parties (Abdul Majid et al., 2017; Nguyen, 2017) that encourages the participant to relax, the researcher subsequently made a conscious effort to be more amicable in dealing with the official participants. This was achieved through subtle but key changes, such as by including more back-channelling feedback when listening to the interviewee and by smiling more often.

The transition between the piloting interviews and the official ones was a relatively gradual process, in the sense that minor modifications and improvements were still being made after the first few of the latter interactions. For instance, when interviewing participant 1, the researcher noted that he seemed to interrupt the participant's flow by asking too many follow-up questions. Oppositely, in the interview with participant 2, there were times when the participant was allowed to venture off-topic for extended periods without the timely steering back on course by the researcher. Upon reflection, the latter interview was likely an over-reaction to the former one, which meant that the researcher was highly reluctant to guide the interviewee back on-topic for fear of interrupting him mid-flow as had happened with the first interviewee. Hence, these first two official interviews, unexpectedly, acted as an extension of the piloting process.

3.3.5 Field Notes

Even though the interview transcripts consisted of the main bulk of the data collected for this study, the author complemented this with insight from a reflective research journal from the

interview process. This decision was made on account of the significant amount of reflection undertaken throughout the data collection process that was highlighted in the previous section.

As mentioned, the official interviews themselves felt like an extension of the piloting process, on account of the researcher's sense that he learnt something useful from each interview that he could then apply to the subsequent one, with the aim of gradually improving each interaction as he progressed through the interview schedule. Clearly, the interviewer had to be mindful of the importance of providing a reasonably standardized experience for each participant, in order to uphold the overall validity and rigour of the data collection process (Yeong et al., 2018). This meant that drastic changes between interviews could not be made. The researcher did, however, make the very minor adjustments to the way in which he conducted the interviews described in the previous section, in order to create an optimum environment within which the interviewees could express their experiences.

A notable example of the above concerned the terminology used in the exchanges with participants. For instance, it became apparent after a few interviews that the term 'Emergency Remote Teaching' was unhelpful in some cases where participants raised their eyebrows or held up their hands to signal that they were unfamiliar with this concept. Consequently, the terms 'working online' or 'working from home' were deemed to be much more participant-friendly on the whole. The purpose of the interview was for them to reflect on their experiences of operating online over the past 18 months, without needing to become bogged down in the detail and nuance of the terminology that is dissected in section 2.1.

Another example from the field notes of how the interview process evolved was in the order in which the questions were asked. Instead of attempting to guide the interviewee down the list of pre-prepared questions in strict order, the researcher learnt to be more flexible by taking questions in the order that they naturally emerged from the participant, in accordance with phenomenography's principle that interviews should be led by the respondents themselves (Hajar, 2020).

When asked about their overall impressions of the ERT as per question 1 in the interview plan (see appendix 3) for instance, multiple participants volunteered specific examples of their interactions with students and colleagues. This information was more relevant to question 3 in the interview plan, which relates to engagement with others. The interviewer consequently improvised by asking these interviewees to expand on these experiences there and then, without rigidly postponing this part of the interview until question 3 was due in accordance with the interview plan. This level of improvisation is something that the researcher became gradually more confident with as the interview period progressed.

A penultimate field note reflection was on the need to steer some participants away from providing overly detailed descriptions of their students and guiding them back towards their own experiences as a teacher. A few participants seemed to automatically gravitate towards explaining their perceptions of how they thought the ERT period was experienced by their students. While some of these accounts were both interesting and telling, in that they portrayed the teachers' concerns for their students' welfare, they tended to veer away from the NL and faculty focus of the investigation.

For example, questions 5 and 6 in the interview plan aimed to elicit the positive and negative associations that the teachers had of the ERT period. However, some teachers displayed a tendency to speculate on what they thought had been positive or negative for their students. The interviewer thus had to gently nudge the dialogue towards focussing more on the teachers' own experiences and interactions, rather than dwelling too long on the speculation of their students' perceptions.

A final thought that came to light as the interviews took place was that some participants showed clear concern as to the post-interview evaluation of their comments. Despite both written (see appendix 1) and verbal assurance that the study's data would only be used responsibly for the purposes of the study, as well as the fact that their identity would be anonymized, a few participants still appeared nervous or hesitant in their responses.

Some of the phrases that were used included 'I'm not sure if this is what you're looking for…' or 'I don't want to mention anyone by name…,' which seemed to suggest that some participants still felt vulnerable by providing what they thought might be deemed a 'wrong' answer. Reflecting further on the nuances of some of these interviews, it became apparent that some interviewees were conscious of admitting to any potential wrong-doing: 'this meeting of course abided by all COVID regulations…' and even felt the need to sell themselves as professionals, job-interview-like, by speaking at length about their PD achievements. The researcher responded to this by contacting upcoming interviewees to remind them of the ethical procedures followed by the study and that questions were welcome.

3.4 Data Analysis

It is important to note that, while the data analysis was largely inspired from phenomenography, it is in essence phenomenographically-informed as opposed to purely phenomenographic due to a number of reasons. Firstly, this investigation focusses on the individual experiences of the participants, rather than on the variation across the group of participants which is more closely associated with standard phenomenography. Secondly, the study centres on the participants' own perceptions of the benefits (RQ1), challenges (RQ2) and uses (RQ3 and RQ4) linked to networks specifically, instead of targeting their overall experiences of this phenomenon as would be more typical of pure phenomenography. Lastly, the final outcome spaces in which the data is presented have been positioned as developmental hierarchies that focus on progression from one category to the next, depending on local contextual factors, which contrasts with the focus on inclusive hierarchies that is characteristic of standard phenomenography. In sum, the above illustrates that this investigation is heavily informed by phenomenography but does not claim to adhere to it in a purist fashion. This enables the researcher to benefit from elements of the approach without being constrained by aspects that do not neatly align with the study's aims.

The researcher followed Bowden's (2005) advice by only beginning the core of data analysis once the final interview had been concluded. This was done to allow the investigator to focus exclusively on one segment of the study at a time, without being stretched across the two demanding stages of data collection and analysis simultaneously.

Phenomenographic analysis requires the researcher to engage multiple times with transcriptions, in order to produce "qualitatively different conceptions of the phenomenon of interest collectively rather than the conceptions of individual participants" (Sin, 2010, p1). This iterative process (Åkerlind, 2005) means that phenomenographers have to stand back and analyse each participant's perceptions within the confinements of each individual interview, as well as in relation to the perceptions of the other participants' exchanges (Hatch, 2002). This latter collective interpretation of data is particularly important (Cutajar & Montebello, 2018), as similarities and differences in the perception of the phenomenon cannot be identified by merely analysing each participant's transcript individually and in disconnection from the others.

In the context of this study, this could result, for instance, in one participant's perception of using their network as a comparatively more challenging experience than for another participant, on account of their differing levels of ICT expertise or sociability for example. In order to identify a difference such as this, the participating candidates' accounts have to be analysed collectively for comparative purposes. The end-goal of data analysis, "to provide an outcome space consisting of a limited number of concepts that are understood relationally" (Nguyen, 2016, p.81), will be discussed throughout the remainder of this chapter. The variation of perceptions experienced by individual participants that is portrayed in these outcome spaces is what is likely to be most applicable to different local contexts, rather than the specific perceptions themselves.

3.4.1 Transcription

The interview recordings were initially transcribed using the auto-transcription software built into the Zoom platform that was enabled to record the interactions. While these initial machine-produced transcripts contained some inaccuracies, the bulk of the transcription was error-free and thus saved the researcher a great deal of time. Instead of having to manually transcribe each dialogue word-for-word, the researcher adopted the less laborious role of making corrections directly onto the auto-transcribed files. This was done by copying the auto-transcriptions from the read-only files produced by Zoom and pasting them onto editable Microsoft Word documents (see appendix 4). The latter transcript files were then opened one at a time and closely followed on the screen, while simultaneously listening back to the respective recordings. The researcher was then able to pause the audio file whenever an inaccuracy was spotted and amend this on the Microsoft Word document.

As the transcription process was underway, two notable reflections were made. Firstly, the value of meticulously transcribing every minute detail of the recording was put into question. It was decided that focusing on the main speech (Casey, 2016) was the key to answering the study's RQs and that spending copious amounts of time attempting to produce entirely accurate transcriptions would be of little added benefit to the investigation. Examples of areas of main speech that were manually corrected during this initial transcription proof-reading/listening process included 'Covid,' 'OWE' (online writing environment), 'Moodle' and 'Padlet.' These terms were deemed to be key to the investigation since, for instance 'Padlet' was a prominent example of an online resource used by some respondents that corresponded directly to RQ4, but it was not auto-

transcribed accurately by the software. Minor errors that were mostly left untouched included the odd grammatical mis-transcriptions, such as 'I've haven't used this' instead of 'I haven't used this,' that did not affect the meaning of utterance from coming through.

The second reflection upon nearing the end of the transcription process was that, despite technically being considered a pre-analysis stage by some researchers (Nguyen, 2016), this transcription proof-reading and listening process very much felt like the first stage of data analysis. Despite the researcher's target focus on checking and correcting the accuracy of the transcripts, subconsciously, themes started to emerge as each transcript was proof-read. Moreover, during this data familiarization (Casey, 2016), the researcher started to make connections between these themes. Examples of this include noticing that multiple respondents were in agreement over the high value of their one-to-one tutorial interactions with students throughout the ERT period or that they felt more confident after having confronted the initial transitionary plunge into online teaching. Overt differences between the interviewees' experiences of the target phenomena were also picked up on during this transcription process, namely the contrast in answers to the opening interview question (see appendix 3), which ranged from an extremely positive view of the ERT period versus a very bleak one. In summary, the transcription felt like an integral first stage of the data analysis process rather than a pre-stage.

3.4.2 Early Considerations for Data Analysis Procedure

The fact that there is no single 'correct' way in which to analyse phenomenographic data (Åkerlind, 2005; Rands & Gansemer-Topf, 2016) posed an initial challenge, as the author

considered the rewards and challenges of various approaches, before finally deciding on the most suitable compromise for the investigation. After a lengthy period of reflection over both phenomenographic literature (Åkerlind, 2018; Bowden & Green, 2005; Hajar, 2020) together with PhD theses that have adopted phenomenography (Casey, 2016; Cutajar, 2014; Nguyen, 2016), the researcher narrowed the data analysis considerations down to two: the rigidity versus flexibility of the approach and the focus on whole individual transcripts versus a pool of relevant excerpts.

3.4.2.1 Structured Approach

A neatly structured process of seven consecutive steps is presented by Sjöström & Dahlgren (2002): 1. Familiarization > 2. Compilation > 3. Condensation > 4. Grouping > 5. Comparison > 6. Naming > 7. Contrastive Comparison. The initial stage, familiarization, is essentially the first time that the reader engages with the interview transcripts and corrects any possible inaccuracies. The second step, compilation, requires the researcher to review all the answers provided by interviewees to specific questions and extract the most relevant segments from each one. Then comes the condensation step, in which longer answers to questions are reduced to shorter versions by prioritizing the most important elements. Fourthly, similar answers are grouped together preliminarily. After this, the groups of answers are compared, revised and potentially re-grouped. The penultimate step is when the researcher names these revised categories to reflect each one's content. Lastly, the contrastive comparison stage requires the researcher not only to describe each category, but also the relationship between these distinct categories (Örnek, 2008; Sjöström & Dahlgren, 2002).

It became evident that this 7-step process could be useful when applied flexibly and partially, in the sense that the researcher would likely need to go back and forth between the different stages, rather than following the framework strictly in a linear fashion. For instance, during the initial grouping stage (step 4), the investigator might notice that some of the content is still not as concise as it could be and thus need to return to step 3 (condensation).

It is also worth noting that more than one of these steps requires the researcher to subjectively judge the most 'relevant' or 'important' elements from the respondents' answers. The making of this choice could be partly informed by Sjöström and Dahlgren's (2002) assessment guidelines in the form of frequency, position and pregnancy. The first is self-explanatory in that an element that is repeated more than others by the respondent is more likely to be 'relevant' or 'important' to them. Position refers to the part of the interview in which an element is mentioned. For instance, something that is referred to closer to the beginning is more likely to be significant than a possible after-thought at end of the conversation. Lastly, pregnancy refers to instances when the interviewee themselves explicitly signal that something is of particular importance to them by using signalling language such as 'the biggest thing for me was…'.

3.4.2.2 Flexible Approach

While the structure and micro-staging offered by Sjöström & Dahlgren's (2002) steps provides a relatively clear path to follow, the researcher also considered a more pliable and

less rigid approach to data analysis. Drawing inspiration from Cutajar's (2014) account of how she 'meandered' through her data-analysis stage, as she engaged in iteration after iteration in tackling her transcripts, the researcher of this study considered adopting a similar approach. This would involve analysing each transcript multiple times, with a single RQ in focus on each occasion, before repeating the process with the next RQ as Casey (2016) opted to do for her own phenomenographic doctoral study. For instance, the sole focus in the first round of analysis would be on the qualitatively different ways in which the respondents perceived that their use of networks had been beneficial for the purposes of learning and teaching during the recent ERT period, since this is the focus of RQ1.

After multiple rounds of engaging with the transcripts with one RQ in focus at a time, the codes generated in these initial stages would start to evolve as the researcher begins to gradually step back and consider the relationships and structures between these different categories (Åkerlind, 2005). That is to stay, instead of keeping the categories generated from each RQ separate from each other, the focus would shift towards observing the structure in relation to how these themes relate to one another. This would shed light on the complex structural relationships between the different variations in which the target phenomena were perceived by the participants at the time of interview (Ashwin, 2006).

Phenomenography's goal of unveiling a variety of ways in which a phenomenon can be experienced by different people at different times (Bowden & Green, 2005), makes the category comparison stage crucial. This later stage of the data analysis process requires the researcher to re-visit the literature (Casey, 2016), in order to find possible theoretical rationale to justify the complex relationship between categories to explore in the

'discussion' chapter. One specific challenge related to this, would be the speed at which new pandemic related ERT literature is being published, which means that parts of the literature review from the second chapter would inevitably feel out-dated by the time that the researcher reached this discussion stage. A revised literature review would thus need to be conducted, in order to provide convincing arguments in the discussion chapter.

3.4.2.3 Whole Transcript vs Pooled Excerpts

The most common approach to phenomenographic data analysis is to first consider each transcript individually in its entirety, before going on to compare it with other transcripts (Bowden & Green, 2005). This means that after multiple rounds of reviewing the single transcript and colour coding the various phenomena targeted by the study during the first few iterations, the researcher begins to identify short summative excerpts from each interview in relation to the RQs, before moving onto the next transcript. A key advantage of this is that each transcript is analysed in context (Åkerlind, 2005), which can help the researcher to derive meaning that could otherwise not be obtained from a decontextualised analysis of pooled excerpts.

In contrast to this whole transcript approach, a phenomenographer may choose to extract key chunks of text from the entire collection of transcripts, and then analyse these decontextualised excerpts together to obtain collective meaning (Bowden & Green, 2005). This means that the relevant quotes would be pooled together and no longer matched to the respective interviews that they were obtained from. This latter approach could be aided

by qualitative data analysis software, such as NVivo, to help the researcher draw connections between chunks that would otherwise be difficult to make manually.

3.4.3 Final Data Analysis Procedure

After careful consideration of the points above, the researcher decided to compromise by adopting a semi-structured approach that is detailed in the subsequent sections. Likewise, a combination of both individual whole transcript and collective transcript analysis was adopted, in an attempt to benefit from adopting both approaches in moderation.

The steps below do not represent a rigid linear process, but rather a "circular and iterative" (Casey, 2016, p.77) one, in the researcher's attempt to be led by the data without relying on pre-existing assumptions. The steps below represent the "rigorous, multi-staged coding process" (Rands & Gansemer-Topf, 2016, p.12) that is characteristic of phenomenography.

3.4.3.1 Transcript RQ Summarizing Excerpts

Despite the researcher being somewhat familiar with the participants' individual accounts from the transcription process detailed in section 3.4.1, it was decided that short, summarizing excerpts for each transcript would provide a useful starting point. This involved 4 iterations with each transcript, whereby the researcher skimmed through it with one RQ in focus at a time, before re-reading the transcript with the next RQ in focus. Each time, excerpts that were deemed relevant and summative of the participant's perception of the

area of the phenomenon targeted by a particular RQ (e.g. RQ2 challenges) were highlighted. The following colour code was used:

RQ1 Perceived benefits - Blue

RQ2 Perceived challenges - Red

RQ3 Connections to other people - Green

RQ4 Connections online resources - Orange

Once summarizing excerpts had been highlighted for all 4 RQs, the process was repeated with the next transcript in the following pattern: open transcript 1, review with RQ1 in focus while coding RQ1 relevant excerpts, repeat process with RQs 2, 3 and 4 and finally move onto Transcript 2.

Figure 3.1

Coding Sample

Participant 5 Snapshot:

33

00:04:07.890 --> 00:04:16.020

P5: The stress the most difficult and like shocking thing to me no more shocking it's like something extreme right.

34

00:04:17.070 --> 00:04:18.930

P5: What came to my mind when.

35

00:04:20.280 --> 00:04:41.490

P5: You are in the class and you, you, you have only 30 minutes and that constant stress inside like, how can I do that, like 30 minutes it's not enough and you want to elaborate here, you want to extend here, you want to.

36

00:04:42.600 --> 00:04:47.550

P5: So it's for me this adjustment was the hardest thing to do.

Participant 17 Snapshot:

263

00:34:18.420 --> 00:34:25.530

P17: that's how I just put different pictures of diagrams surround and on one side and then just had to bring them together, because it was quite good for drag and drop.

264

00:34:26.910 --> 00:34:35.430

P17: Your html based activities using hot potatoes, I found quite useful as well, but unfortunately, unlike Google, as I said, as I said earlier.

265

00:34:36.930 --> 00:34:50.850

P17: it's difficult to manage unless you unless one student screen shares and then you can you can observe the others interacting and you cannot tell who isn't talking as well, or are interacting So yes, they will be the main ones, but in terms of the.

3.4.3.2 Tabled RQ Excerpt Comparison

Still within the context of their respective transcripts, summative RQ excerpts were selected from the colour-coded data and tabled according to separate RQs, as illustrated in Table 3.1 below. Despite the excerpts still being divided according to individual participants' transcripts, the tabling of this data facilitated the comparison and contrasting necessary to progress onto the subsequent step of identifying categories of description from a combined data pool. That is to say, the side-by-side presentation of excerpts that resulted from this second step enabled the researcher to remove the boundaries between separate transcripts more easily in the subsequent third step, in order to generate a finite number of tangible ways in which the collective sample of participants perceived the target phenomena (Sin, 2010); otherwise known as categories of description.

This second step proved challenging (see section 3.4.7), in the sense that the researcher had initially colour-coded a large volume of text in step 1 that was thus difficult to manage. While the coding undertaken in the previous step certainly aided the tabling process, since the investigator could scan scripts for the colour blue for instance in searching for the RQ1 'perceived benefits' excerpts, the large volume of coded text meant that a lot of time still had to be dedicated to locating the most summative and representative quotes.

Table 3.1

Excerpt Comparison Sample

Transcript	RQ1 – Perceived Benefits
P1	'[online conferences] it's just great to hear what other people are doing out there… …kind of cool just to see kind of compare yourself okay what how do I match up with what everyone else is doing… …it's nice to hear that actually they face the same challenges that we do'
P2	'something that's been valuable is actually the number one thing is support from colleagues, I would say that was the key thing to get me through the year help from Mike and the other two people'
P3	'I was amazed over the year how students attended the tutorials practically hundred percent most students attended all the time… …I was amazed at how in tutorials one was able to relate to the students and to stay, true to a create, if you like, a pedagogic encounter are a personal encounter'
P4	'the ebulletin keeps you on track, also it's great for reference'
P5	'To get you know different sources or different you know opinions, because you know, like it helps it helps me in anchoring my own decision'
. . .	
P14	'what helped was um I think the best benefit of this is the way the tech group handled the introduction of zoom I thought that was done very well… …That was the most helpful was the way the tech team handled learning about learning about zoom.'
P15	'[tutorials] there's a bit of a distance, with this online, I think, which allows you a bit more breathing space to think about what you're going to say to prepare a bit without a person actually physically right in front of you observing you… …Even for me that can make things easier and I think for some students, especially the shy ones that can make them feel about a lot more relaxed'
P16	'I really like Zoho so do… …I like what it can do I, like the freedom, it gives you, but I also like the collaborative… …Not just with the teacher, but with other students

	like you can all look at the document at once, so I think, as I said, I would I want to use that even if we're offline and taking it into another program I think is quite helpful
P17	'I had the opportunity to complete that course in the summer and explore different ideas and develop my own awareness, you know, both in terms of training, the learners on doing helping them… …I found it quite useful professional development experience to apply some of the skills that I learned on that course.'
P18	'WhatsApp yea we had a group chat, then also received lots of private messages like asking questions, especially, it was very convenient… …with the WhatsApp you know, the theme, the people that are contacting you and the notifications that are there.'

3.4.3.3 Generating Initial Categories of Description

Through the combination of reviewing the excerpts in the Tables above and re-visiting the individual transcripts, the researcher began to produce preliminary categories of description to represent qualitatively different ways in which the target phenomena could be experienced by the sample group of participants. This required a step away from individual transcript context and towards the identification of perceptions identified at a collective level from the participants as a whole (Hajar, 2020). This resulted in 3 or 4 description categories that were each applicable to multiple participants, instead of 18 distinct themes.

As with the previous step, these categories were divided according to their respective RQs into four respective Tables. Each category of description was matched alongside representative excerpts extracted from different transcripts and presented in a new set of tables. A sample of the structure of these tables can be seen in Table 3.2 below.

Table 3.2

Initial Categories of Description Sample

RQ1	**Perceived Benefits**
Categories of Description	**Supporting Excerpts**
1. ICT can facilitate meaningful one-to-one encounters with students	- 'I was amazed over the year how students attended the tutorials practically hundred percent most students attended all the time… …I was amazed at how in tutorials one was able to relate to the students and to stay, true to a create, if you like, a pedagogic encounter are a personal encounter' (P3). - 'I think that the half hour tutorials are very good… …felt was sort of more intimate in a way… …they're facing you they've got to face you they've got to have their cameras on they gotta talk and you know you can ask direct questions, and they have to answer' (P9). . . .
2. Networks can be used flexibly to meet an individual's bespoke needs in a convenient way	- 'My hours are a little bit more flexible now. I feel like I have a yeah it's mostly with time, I have a greater choice in when I want to do things' (P6). - 'professional development, I suppose it's made it easier in a way, because you can attend various conferences or seminars, or whatever from wherever you are, irrespective of where it's being held' (P7). . . .
3. Networks can help teachers keep their fingers on the pulse of rapidly developing practice trends	- '[online conferences] it's just great to hear what other people are doing out there… …kind of cool just to see kind of compare yourself okay what how do I match up with what everyone else is doing… …it's nice to hear that actually they face the same challenges that we do' (P1). - 'the ebulletin keeps you on track, also it's great for reference' (P4). . . .

3.4.3.4 Refining Categories of Description

Before producing the four outcome spaces, the description categories that resulted from the previous step (3) had to be reviewed one-by-one and re-enforced with evidence from the transcripts. This connection between the two steps is highlighted by Rands and Gansemer-Topf (2016) in their statement that "initial descriptive, or "draft," categories help guide the next phase of the analysis" (p.11). This meant cross-checking the preliminary description categories against the information from each transcript; both coded and uncoded (Bowden & Green, 2005) in case the researcher had missed items in the initial coding. This process resulted in four possible outcomes:

1. The researcher was able to find additional representative excerpts to strengthen the existing categories of description as they had been originally presented in the previous step (3).

2. The researcher had to amend the description category, though not change it completely, in order to better-align it with the additional evidence found in the transcripts.

3. The researcher found little or no additional evidence to support the category, which was subsequently discarded as a result.

4. The researcher discovered evidence to form an entirely new description category that was missed in the previous step (3); possibly as a result of incorrect coding.

3.4.3.5 Determining Outcome Spaces

The investigation resulted in a total of four outcome spaces: one for each of the four RQs. These spaces are essentially visual presentations of the categories of description (Hajar, 2020) generated in the previous step. This means that each outcome space brings together all of the different description categories finalised in the previous step (4) for each RQ, in order to determine the structural relationships between these variations in how the single phenomenon in question can be perceived (Åkerlind, 2005; Ashwin et al., 2014). For instance, the RQ4 outcome space presents the final number of ways in which the individual participants described their uses of their network connections to online resources, and it is the variation across these individual perceptions that provides the most useful take-away for readers to apply to their own contexts. Instead of stating these in list form, the outcome space uses visual cues, such as arrows or boxes, to present the ways in which these categories are interconnected.

3.4.3.6 Determining Structural Relationships Between Categories of Description

Once outcome spaces were established, the author began to look for possible connections and relationships between them.

3.4.3.7 Review

This final step involved the researcher revisiting the transcripts, as well as the tables generated in the previous steps, in order to ensure that the categories of description and

structures represented the data as accurately as possible. To achieve this, the researcher took a break from the data analysis process to clear his mind and then re-attempted steps 2 and 3. This enabled the investigator to compare his earlier outcome spaces with the revised ones and make changes until stability was achieved in terms of categories and their relationships to one another (Trigwell, 2006). By this stage the researcher had engaged in multiple reiterations of the data, involving the non-linear analysis cycle of re-reading, re-testing and re-comparing described above (Rands & Gansemer-Topf, 2016). He could therefore be reasonably confident that no key categories or structures had been overlooked.

Given that listening to a live interview offers a far richer and more holistic experience in comparison to merely relying on the textual transcript (Kvale & Brinkmann, 2009), the researcher decided to re-visit the audio recordings once more during this final stage of analysis. As mentioned in section 3.4.1, the audio recordings of the interviews were initially used as a way of proof-reading the auto-generated transcripts for inaccuracies and also as an early stage of data familiarization. In this final stage of data analysis stage, the researcher wanted to cross-check his understanding of key parts of the recordings, such as representative excerpts that support categories of description, and ensure that no nuances had been missed or intended meaning misunderstood in these vital segments.

3.4.4 Presentation of Data

This lengthy analytical process of engaging and re-engaging with the interview transcripts multiple times (Khan et al., 2019) eventually led to the presentation of findings according to

categories of description that are hierarchically related in an 'outcome space' (Cutajar & Montebello, 2018; Hajar, 2020). These description categories, explored in the next chapter, represent qualitatively distinct, yet structurally connected, perceptions of the target phenomena (Ashwin et al., 2014). Outcome spaces can take a variety of forms, however they tend to have two key elements: the final description categories after review and refinement, and some visual indication of the connection between these categories. Despite varying significantly from one investigation to another, Figures 3.2 and 3.3 below provide an indication of what shape outcome spaces can take.

Figure 3.2

Example 1: Zhao's (2015) Outcome Space Representing Postgraduates' Learning Experiences

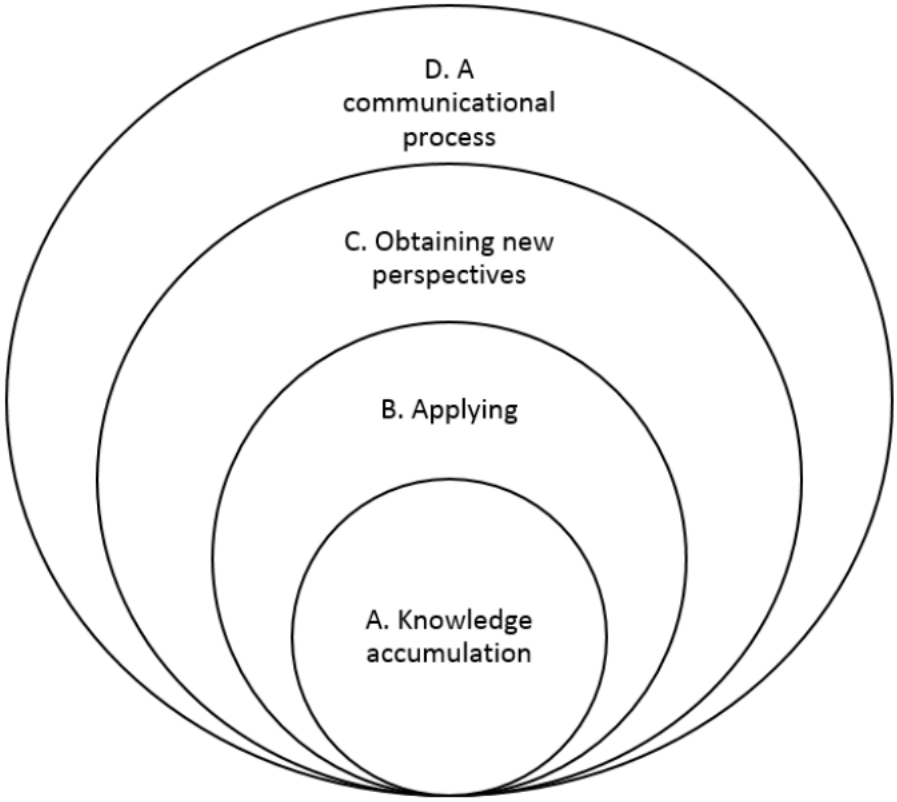
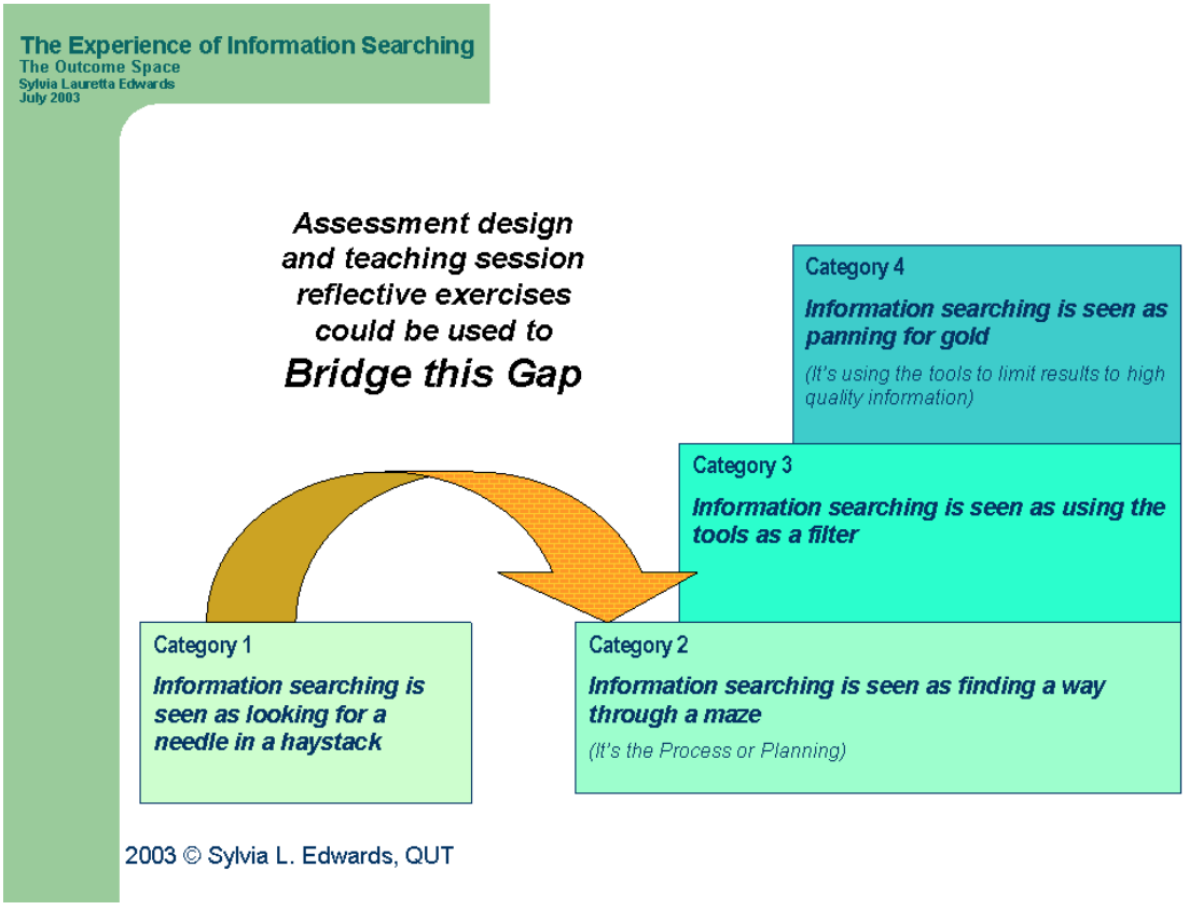


Figure 3.3

Example 2: Edward's (2006) Outcome Space Representing Faculty Members' Information-Searching Experiences



Examples of these outcome space styles in the context of this investigation could include a hierarchical pyramid diagram, where the narrow top represents the deeper and more complex uses of networks exploited by fewer teachers, versus the wide bottom of the pyramid that symbolizes more simplistic and shallower uses of networks that relate to the majority of teachers. Another example could be a figure with boxes and arrows, to symbolize the progression between the different uses of networks experienced by teachers, as their network perceptions or uses evolve from basic to more complex.

Marton and Booth (1997, as cited in Sin, 2010) explain that each category of description title should meet a three-point criteria, whereby it is distinctive from other categories, expressed succinctly and has a clear relationship to the other categories. Finally, it should be noted that these categories were not pre-determined (Hajar, 2020). Instead, the researcher was led by the data and used his own interpretation to determine qualitative similarities and differences by which the participants perceived the target phenomena (Ashwin et al., 2014). The fact that the study interviewed 18 participants did not result in 18 dramatically different perceptions, since, at a collective level (Bowden & Green, 2010), the researcher found only a handful of distinct, yet relationally connected, ways in which the target phenomena could be understood from the 18 interviewee sample.

3.4.5 Challenges of Data Analysis

In terms of overall challenges in the analysis stage, it is important to note that the researcher could only do his best to accurately comprehend what each participant's view of the phenomenon was, as he could not access this directly (Cutajar, 2014). This means that the analytical outcome consisted of the researcher's perception of the participants' perceptions of the phenomenon, since only an individual has direct access to their own raw perceptions. Moreover, the focus of phenomenography is not on describing participants' perceptions in pedantic detail or to produce as many variations in experiencing the phenomenon as possible. Instead, the objective of this investigation was to produce a finite number of qualitatively different forms in which the phenomenon can be perceived by individual participants (Åkerlind, 2005). This means that the focus was on producing a relatively low number of distinguishably different ways in which the interviewed HE

teachers perceived their use of networks throughout the ERT period, which is representative of the wider teaching community. The researcher therefore often found himself having to pause and discard categories of description that were deemed too similar to others, in order to avoid overloading the reader with too much overlapping information.

In addition to the above, two additional challenges specifically related to the coding of data emerged early on in the analysis stage. Firstly, the researcher noticed that he was highlighting too many excerpts from the transcripts. This was problematic, in the sense that it failed to condense and summarize information succinctly enough. That is to say, it took the researcher almost as long to review transcripts in subsequent iterations as it had taken him to make the initial review, due to the lack of information condensation that the large amount of highlighted information produced. A second concern became apparent in relation to the overlap between RQs. For instance, one utterance could be relevant both to RQ2 (coded in red colour) in that the interviewee expressed challenges encountered, but could also apply to RQ3 (coded in green colour), in that it described these challenges in the context of interacting with others.

Both of these hurdles were addressed gradually through a patient process of multiple iterations of re-engagement with the transcripts (Casey, 2016). In extreme cases, the researcher took a short break from the analysis and then revisited the coding with a relatively fresh pair of eyes. By the third or fourth attempt, the researcher had already condensed the amount of highlighted information significantly by un-highlighting less relevant excerpts. Chunks relating to multiple RQs were reviewed and highlighted according to the outcome space to which they most related to, while accepting that overlap between

these spaces was, on occasion, inevitable. In some instances when deciding on the most appropriate theme was too difficult, the information was partly highlighted in both colours as a compromise (Figure 3.1).

3.5 Ethics

Prior to collecting data, formal approval was obtained from the institution responsible for supervising this thesis, Lancaster University, in May 2021. This meant that the researcher needed to present the institution with details of the investigation: a checklist of ethical procedures, a sample participant consent form, a participant information sheet (see appendix 1) and finally a detailed explanation with answers to a range of questions designed to help the review panel gauge an accurate assessment of the level of risk involved in the study. After gaining formal approval from Lancaster University, the penultimate step involved the researcher's submission of this ethics approval to the host university in Kazakhstan where data was to be collected from, to request a deferral of oversight. This mean that the host university approved the data-collection under the oversight of Lancaster University as the supervising body.

The final step involved the researcher approaching potential participants individually via email, to provide details of what the study entailed and request their optional participation. Despite the low-risk nature of this study, on account that it did not require interaction with vulnerable groups such as minors (Israel & Hai, 2006), it was nonetheless crucial to ensure that informed consent (Wiles et al., 2015) was granted by each participant. This meant that they needed to be fully informed of what their participation specifically entailed, as well as

of the study's overall purpose, throughout the data-collection period. This was addressed by reminding participants throughout this period of their right to ask for further clarification.

The Covid19 period during which participants were recruited, along with the personal nature of interview questions, meant the researcher had to be particularly sensitive to the understandable stress that many of these potential participants were likely experiencing. For instance, one candidate's anxiety meant that she had clearly not read through the details of the study prior to agreeing to participate. The researcher was thus careful to re-explain the key commitments of her participation and asking her to take time to reconsider her response. Other examples of potential participants exhibiting signs of stress include an individual who was notably concerned about the anonymity of his participation. The researcher thus re-explained the security precautions, including the fact that no names would be used and that the recordings would be stored away from public access.

Chapter 4: Findings

The findings of this investigation are presented in this chapter in four RQ connected outcome spaces that are structurally linked and based on the categories of description generated in the analysis stage. Hajar (2020) clarifies that "the description of the participants' conceptions are the categories of description, and the graphical representation of the conceptions is the outcome space" (p.8). This means that the former is needed to understand the latter.

As highlighted in the RQ description section of the 'Introduction' chapter, the first two questions target teachers' perceptions of the advantages and disadvantages of network use, whereas the latter two questions centre on the actual network-related behaviours that they have adopted throughout ERT. This means that there will inevitably be overlap between the two sets of RQs, as an educator's perceived benefit of personal networks, for instance, is likely to influence how they actually use their web of contacts. That is to say, teachers will logically use networks in connection to others (RQ3) and online resources (RQ4) in a manner that they deem to be beneficial (RQ1) and likewise avoid uses that they believe to be challenging (RQ2).

The previous chapter offered samples of the early stages of data analysis, in order to lead the reader on a transparent journey to the findings presented in this chapter. The focus of this 'findings' chapter is thus to present the final categories of description according to their respective RQ-centred outcome spaces. Each category is supported by carefully selected evidence in the form transcript quotations (Ashwin, 2006) and the structural relationship

between categories (Rands & Gansemer-Topf, 2016) is discussed in the context of their corresponding outcome space. In the subsequent discussion chapter, the external connections between different outcome spaces will be tackled with the aid of supporting literature.

The focus of these outcome spaces is not on the direct perceptions of the interviewees, but rather on the variation in which these individual participants can perceive the target phenomenon. The purpose behind this is to make this emphasis on individual perception variation more applicable to other contexts and thus applicable to teachers outside of the specific scenario of EAP teachers in a foundation programme at a university in Kazakhstan. Therefore, the objective is *not* to dictate that, based on the findings of the study, all teachers first do X and subsequently do Y when it comes to network use in an ERT context. Instead, it is to present the variation of perceptions by individual teachers uncovered by the investigation and explore the implications this may have on multiple contexts and literature. Rather than a linear manual, the variation portrayed in these outcome spaces can therefore be used to show HE stakeholders the spectrum of ways in which certain aspects of the target phenomenon can be perceived depending on local contextual factors.

4.1 Final Outcome Spaces

The Figures below present the end-result of the seven-step data analysis process. This involved an intense process of reiteration, whereby the data was coded, summarized, initial description categories were identified, refined and finally converted into visually friendly diagrams.

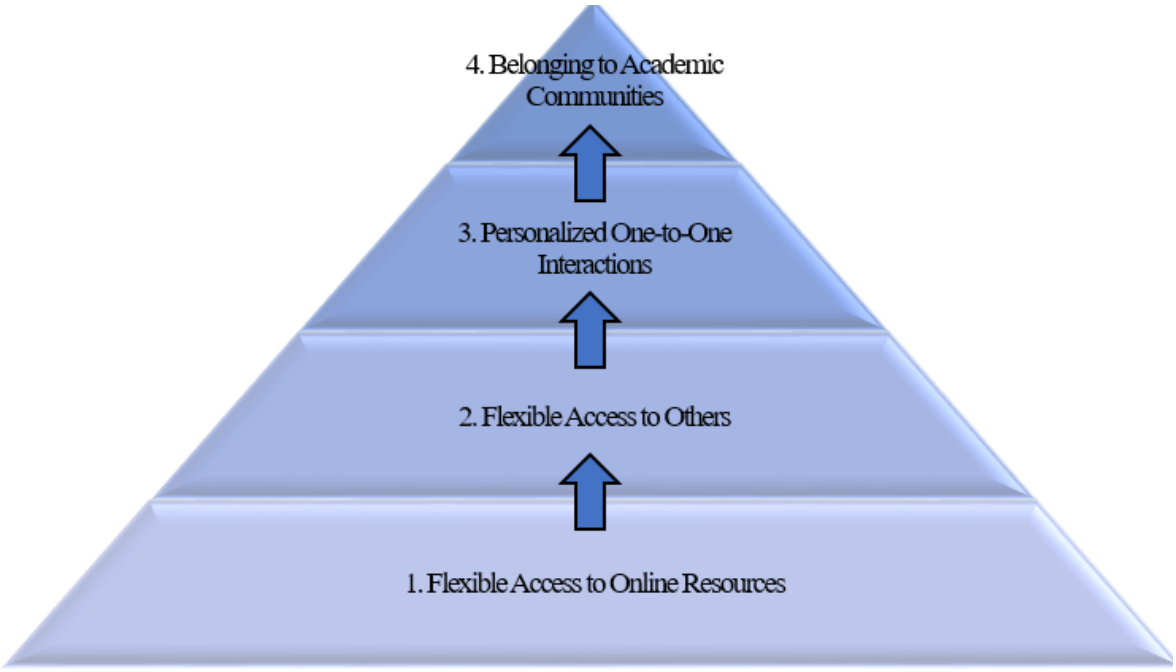
4.1.1 RQ1: Perceived Benefits of Networks Throughout the ERT Period

The categories of description presented below represent the refined themes that emerged at the end of the data analysis process for the study's first RQ: What are the qualitatively different ways in which HE teachers perceive that their use of networks has been beneficial for the purposes of learning and teaching during the recent ERT period?

The four inter-related themes below represent the individual respondents' perceived variation of how NL can be advantageous to them as teachers in one form or another. The hierarchical relationship between these categories is presented in ascending order of complexity and sophistication. That is to say, the first category represents the most basic and easy-to-come-by benefit associated with network use, whereas the fourth category depicts the most advanced NL reward that is hardest to achieve. In order to scale to the highest category, teachers must first perceive and access the first three themes. Before detailing each theme and presenting the corresponding evidence in the form of supporting transcript excerpts, a general overview is provided in the pyramid Figure below (4.1).

Figure 4.1

RQ1 Description Categories



4.1.1.1 Category 1: Flexible Access to Online Resources

The main features associated with this first description category revolve around the use of networks as a bridge to existing material that can be retrieved conveniently from one's home workstation. This appears to be the most basic benefit that teachers associate with their use of networks. These sources include official PD webinar recordings, that are part of ongoing developmental courses for teachers tackling the latest issues that have emerged or raising debate over current trends in practice. Despite there being other teachers on these online courses with whom to participate, teachers appear to exploit asynchronous engagement with the resource banks attached to the programmes instead, since this can be done more flexibly and without having to rely on another person. Some teachers even archive some of the course material themselves by recording or screenshotting important elements, to then be able to access flexibly at a later date.

> ... webinars and conferences that are almost weekly there Thursday one or two TELSIG [PD members group], I would go to those almost every week… Because yeah so everything was online and on zoom basically at this point so um I attended conferences webinars a lot more than I normally do… Almost every week, I was doing something oh yeah then also I also did two courses online courses for you know they were… professional development type courses specifically related with EAP [English for Academic Purposes] (Participant 1).

> I actually record the lessons… On my just on our little recorder, and I also um print the screen… So I made it So to that extent I'm doing something I'm engaging more I'm able to go over the lesson again and listen to what the teacher said and what we said and look at the print on the on the screen (Participant 3).

> My hours are a little bit more flexible now. I feel like I have a yeah it's mostly with time, I have a greater choice in when I want to do things (Participant 6).

> Professional development, I suppose it's made it easier in a way, because you can attend various conferences or seminars, or whatever from wherever you are, irrespective of where it's being held (Participant 7).

Online resources can also be accessed via comparatively informal channels, such as media-sharing websites like YouTube, for teachers to readily access at a time that suits them without the need to formally join an online course. These platforms contain instructional

videos that offer guidance to teachers on using the latest online platforms for instance. Similarly, teachers can access online material via other channels outside of a formal PD course, such as an editable wiki page or a forum that posts step-by-step guides on troubleshooting commonly used tools like Moodle.

> I'm being very thankful for Russell's Stannard's… website [online source of teacher training videos] where he goes through lots and lots of tutorials on things that I wasn't familiar with (Participant 11).

> I've learned a lot about Moodle [learner management system] through… almost like a wiki [website that can be edited by the public] they have this… Information page and that's kind of where I learned things and then also there's Moodle forums… And that's where that's where I usually find the answers to questions that I don't know (Participant 6).

Lastly, it can be noted that some teachers access online resources via social media repositories. These can come in the form of videos or instructions that are regularly uploaded to a popular platform such as Instagram or Facebook for instance. Teachers can 'follow' influential figures in their field and thus access their material asynchronously if and when they feel the need.

> When it came to this like psychology and hobby because I follow, like many… professionals in this field by Instagram they have… it's very useful in terms of

psychology and coaching… That they have their own lectures online and then they save it, you can watch it, so I think that was very helpful for me (Participant 18).

4.1.1.2 Category 2: Flexible Access to Others

This second description category is centred on teachers' use of their personal networks to interact with like-minded professionals, as opposed to only engaging with online resources as in the first category. Rather than limiting engagement to the basic asynchronous access of material, teachers describe their networks as tools with which they can keep their fingers on the pulse of current trends by staying informed on how other teachers are tackling emerging issues. This includes interacting with current colleagues and acquaintances, but also extends to connections from previous workplaces and institutions with whom some teachers seem to maintain contact even after having moved onto a new job.

> [online conferences] it's just great to hear what other people are doing out there… kind of cool just to see kind of compare yourself okay what how do I match up with what everyone else is doing… it's nice to hear that actually they face the same challenges that we do (Participant 1).

> By the way, I'm engaged each week I meet, I have a Russian course which up with another with our colleague from engineering… meet our Russian teacher online twice a week for an hour and that has been going on since the pandemic I also meet a cousin of mine and we studied Greek together and online… This is with zoom with

> it, no, this is with Skype [conference management software]… and so I, so I am engaged in online learning (Participant 3).

> Very well-developed network, like in this area yeah in this field, yet, so what I have is my professors and my teachers and the students, with whom I studied in Colorado [USA] so… We asked questions I asked about you know about different things it's like you know my it's my basically foundation (Participant 5).

Teachers describe how this interaction with others is often undertaken in a flexible manner that can be moulded around their individual commitments. Aside from being able to use online communication to eliminate physical geographical barriers that facilitate engagement with others in faraway destinations, NL also offers flexibility in terms of the number of participants that can join and then leave group activities at their own convenience depending on the evolution of their needs and preferences. It appears that the dipping in and out of online networks is more flexible that in traditional face-to-face engagement with others, given the reduction in planning and physical travel involved when switching between social groups online.

> I like the flexibility a lot… More flexible, I mean, for example, there are like some webinars that I had to attend and they were from because of time zone you different time zones, for example, some of them were I didn't know like… I could attend this webinar… And then I can switch to like 15 minute break and my lessons for us right which I wouldn't be able to do if I was in class, of course, or I had to go to my office or commute time you know preparation, all this paperwork printing bringing

> opening classroom and so on… I just found working from home, but as I said, more productive (Participant 13).

> There was a wider group, and then it a few people fell off and now it's just myself and this other colleague (Participant 3).

Lastly, it appears that some teachers value the flexibility of participation that they associate with online network interactions. Rather than face the pressure of being very actively involved in every discussion, some teachers appreciate the option of more passive interaction that online engagement facilitates. This can enable engagement not only between teachers, but also with their students.

> There's a bit of a distance, with this online, I think, which allows you a bit more breathing space to think about what you're going to say to prepare a bit without a person actually physically right in front of you observing you… Even for me that can make things easier and I think for some students, especially the shy ones that can make them feel about a lot more relaxed (Participant 15).

4.1.1.3 Category 3: Personalized One-to-One Interactions

Once teachers have been able to benefit from the increasingly flexible interaction with online resources and with other professionals as described in the previous two categories, they can progress onto the advantages of experiencing more personalized encounters with others. This category of description targets the intimacy that teachers often associate in

their use of networks to engage with individuals and small groups. Some of the participants mentioned colleagues by name, with whom they had experienced helpful and supportive personal interactions throughout what they perceived to be a challenging ERT period.

> Support from colleagues, I would say that was the key thing to get me through the year… I contact most [teacher 1], as I said, is a neighbour and a friend… And he's on the technology team [institutional working group] … And I see you know [teacher 2] and [teacher 3] went out for pizza the other night (Participant 2).

> And [teacher 4] too my supervisor [teacher 4] is very supportive and always you know… a phone call away (Participant 2).

> In a team meeting I would open the camera because I would like to see my co-workers that I would like them to see me it just feels like Okay, maybe we have to see each other… (Participant 12).

The interviewed teachers extended this favourable perception of one-to-one and small group interactions to include engagement with their students, as well as with their colleagues. It appears that individual tutorials for instance, whereby teachers meet their students to discuss bespoke feedback that applies uniquely to the individual pupil, have been notably more personal and intimate during the work from home period. Some teachers attributed this sensation of closeness to the notion that they are connecting to their students from one living room to another with minimal interruption. That is to say,

there are minimal physical distractions, such as waiting rooms or noise from the classroom next door, in between the teacher and the student

> I was amazed at how in tutorials one was able to relate to the students and to stay, true to a create, if you like, a pedagogic encounter are a personal encounter I was, I was taken aback by that (Participant 3).

> tutorials it was more personal… In the group, where you know you're talking to the group so they got into the habit of not putting their video on… But when it was one to one it probably felt more personal and they wanted to you know to see you (Participant 4).

> It was a bit, especially given feedback was a bit more direct and easier to do because it was right there the student or yourself could share the screen and you could see it at the same time (Participant 6).

> I think, being at home, being in whatever they chose to wear which was… Probably rather than formal attire… less formal than they would be in class, and you know just they're being able to have their snacks or whatever um… I think there was a lot more, it was a lot more personable and it was really valuable to see what was going on with the students' lives to be able to observe that in the room (Participant 14).

Some teachers associated these more personalized encounters as being the result of having longer periods of time to dedicate to the meetings. The eliminated travel time between

home and work for instance due to the WFH mandate, meant that tutorials could be extended.

> I think that the half hour tutorials are very good… felt was sort of more intimate in a way… they're facing you they've got to face you they've got to have their cameras on they gotta talk and you know you can ask direct questions, and they have to answer (Participant 9).

4.1.1.4 Category 4: Belonging to Academic Communities

The final and most sophisticated benefit associated with network use, once teachers have reaped the rewards of flexible access to resources, others and established more intimate encounters, is a sense of membership to professional communities. Teachers experience increased confidence as their networks enable them to compare their views and practice with those of others. This can help to validate their pre-existing approaches to teaching, as well as to expose them to novel ideas that they may have not had the imagination or assertiveness to test out without the feeling of protection and belonging to these communities.

> [online conferences] it's just great to hear what other people are doing out there… kind of cool just to see kind of compare yourself okay what how do I match up with what everyone else is doing… it's nice to hear that actually they face the same challenges that we do (Participant 1).

> To get you know different sources or different you know opinions, because you know, like it helps it helps me in anchoring my own decision (Participant 5).

> I had the opportunity to complete that course and explore different ideas and develop my own awareness, you know, both in terms of training, the learners on doing helping them… I found it quite useful professional development experience to apply some of the skills that I learned on that course… just checking your existing knowledge with others… Whether your interpretations are correct yeah engaging with the community to certain assumptions that you've built up over time, the extent to which… There is a consensus about them all, whether you need to adjust your own thinking is always useful (Participant 17).

Some teachers went further by extending their use of membership to these professional communities to cover personal, non-work-related matters also. This signals the increasing confidence and support that this sense of belonging to a wider group can offer teachers, as they feel safe enough to share views on aspects of a more personal nature.

> It was just mutually beneficial that we… help each other… teaching and learning so and then, in addition, just some things like personal things came… that are not directly related to work (Participant 5).

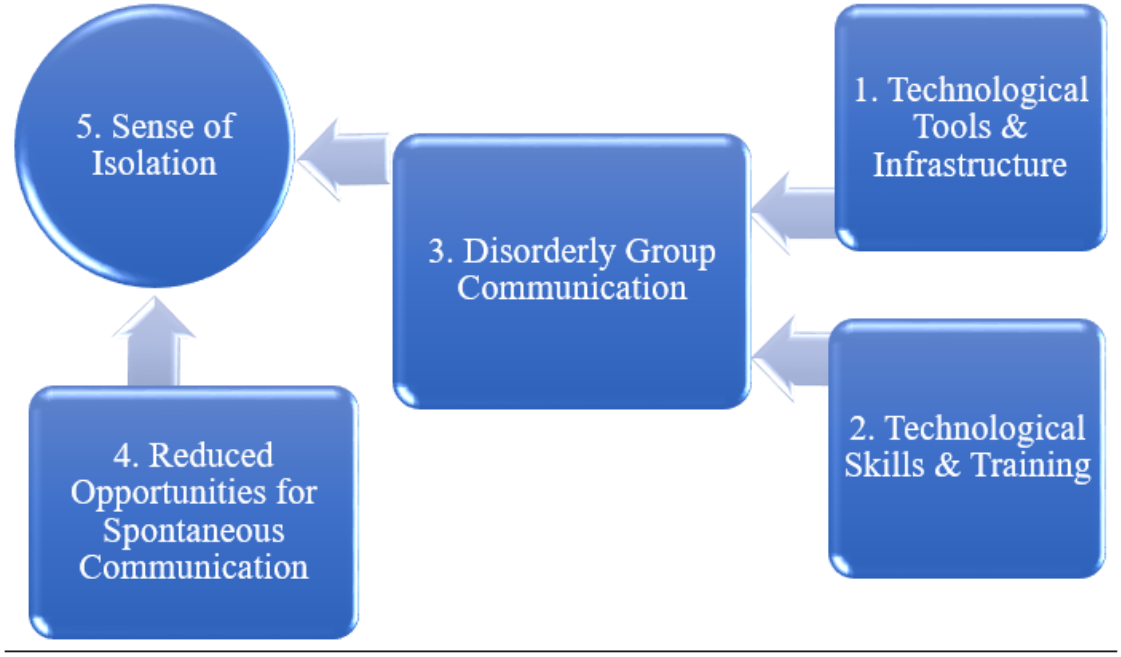
4.1.2 RQ2: Perceived Challenges of Networks Throughout the ERT Period

The categories of description presented below represent the refined themes that emerged at the end of the data analysis process for the study's second RQ: What are the qualitatively different ways in which HE teachers perceive that their use of networks has been challenging for the purposes of learning and teaching during the recent ERT period?

The five themes seen below in Figure 4.2 represent the relationship in which the obstacles depicted in the first four categories, seen in square shapes, collectively contribute towards the most significant difficulty, which is displayed in the circular shape in the top left hand-side. More specifically, the first two categories do not themselves directly lead to a sense of isolation, but rather combine to cause awkward and disruptive group interactions. This third category of inharmonious online group collaboration, in combination with the fourth category which depicts the lack of spontaneity in online interactions, that combine to cause the most significant perceived challenge of isolation that is presented in the fifth and final description category.

Figure 4.2

RQ2 Description Categories



4.1.2.1 Category 1: Technological Tools & Infrastructure

The main features of this first description category centre on the interviewees' perceptions that the instruments used for online teaching are inadequate in facilitating the recreation of the face-to-face experience that they were accustomed to pre-ERT. This refers to hardware components, such as a laptop or webcam, but also incorporates software programmes, such as Moodle or Zoom. Putting those elements to one side, the most significant contribution to this challenge seems to come from the connectivity, or lack thereof. The interviewed educators perceive that, regardless of the physical and software tools at a teacher's disposal, they are constrained by the speed and availability of the internet connection that

they themselves, as well as the other parties involved in the interaction, have access to. In essence, the teachers believe that they are limited by the tools required for online contact.

> I was stressed out in the beginning and… Then I guess that was replaced by frustration… Things like one class might be slow Internet you know students dropping in and out [of a Zoom meeting] (Participant 4).

> The technology is… In my opinion, it's sometimes not good enough to kind of mimic a real-life classroom I think that's what the technology is trying to do is to mimic it… as best as it can, but it obviously falls short and whether that's Internet connection (Participant 7).

> Teaching and tutorials for students it's better, I think, to be face to face, or at least… That they are on the campus because then they would have access to good Internet even though sometimes our Internet is not great, either, but better than their… In their villages (Participant 8).

> That little message I can't connect you know… So we had a… Blank screen, so the disconnection and I don't believe it was always you know intentional, there were very big problems with connections, so you lose students, they miss part of it or they're in and out [of the Zoom meetings] (Participant 9).

> The connectivity issue was a big problem, so if we all had 100% guaranteed no problem connectivity, it would have been a lot easier (Participant 16).

4.1.2.2 Category 2: Technological Skills & Training

This second description category is related to some of the participants' perceptions that, rather than the physical technology and connectivity itself being the challenge, it is often the teachers' and even the students' lack of training and thus limited understanding as to how these tools can be used optimally that poses the primary challenge. The increasingly growing number of applications with which teachers have to familiarize, and then re-familiarize, themselves with as they are updated is a notable example. This rapid development of technology results in a feeling of never-ending catching up, whereby some educators perceive that as soon as they feel confident with one tool, they will be required to start the process all over again with a new or updated one. Added to this is the perceived concern that there is a significant difference between the roles of professional teachers and online material developers, which means that not all teachers feel comfortable stretching to both roles during the ERT. Lastly, the increased cognitive load on teachers, as they are forced to learn and remember new elements of online technology use, results in the perception that there is an increased likelihood that they make relatively simple mistakes in their day-to-day tasks.

> There was some pressure would have come from the technology, especially at the beginning and I'm still working at mastering some of these apps to my satisfaction (Participant 3).

> The way that the materials that we've had to deliver have been cobbled together rather than smoothly fashioned in order to meet the requirements online teaching… Not having a professional or commercial platform much more geared up to online teaching we've had to create materials on Moodle… you know we're not professional online materials developers, therefore, it has been slow (Participant 11).

> The thing that was most difficult was for me, handling the bulk of digital information… Especially the newer organizational issues, the Google folders [cloud software storage] somehow completely blew my mind (Participant 14).

> We had so many technology issues of signals dropping out left, right and centre freezing… People logging on with you know their other email, so their names [on Zoom] were not matched to any names that I knew (Participant 16).

Aside from the technology itself and the training of users, some interviewees perceive challenges associated with the scapegoating of the use of these instruments. Examples of this include more passive students who may find that a 'connectivity problem' can serve as a convenient excuse for lack of participation, or technology-resistant teachers who may use the 'keeping it simple for my students/colleagues' defence to justify their lack of technology integration.

> Face-to-face I think they would have been forced to speak more because they are in class, you know they cannot hide away… or blame technology (Participant 13).

> It was quite clear that, there are several limitations, I mean firstly students technology skills, the number of students who actually take part… And what became very clear quite quickly was that the more ambitious, you are with your tech, the less likely, it was that the lesson will succeed, to some extent because… I think the students would just be overwhelmed (Participant 17).

4.1.2.3 Category 3: Disorderly Group Communication

This third description category encompasses the participants' perceived challenge in relation to the hosting of synchronous larger multi-party internet-mediated communication during ERT. Unlike one-to-one encounters, sizeable online meetings are perceived by teachers as being difficult to manage both with students, as well as with colleagues. This category is born out of the culmination of both previous technology-related categories combined. Part of the problem is connected to the notion that attendees cannot simultaneously mingle in a smooth capacity synchronously, which places pressure on the meeting's host to play the role of main actor while others passively listen. This category can be connected to the first description category, in that technological limitations associated with hosting large-scale meetings, which can experience lag as bandwidth struggles to support so many users or are constrained by underwhelming interactive features such as a virtual 'thumbs up.' It can also be linked to the second description category in that there is a perceived lack of expertise and training that some teachers have when it comes to managing numerous synchronous group participants online simultaneously.

> Just learning how to run a session with 16 people in the zoom totally I mean remember the first few weeks was rough and this is just this is hard it's hard to coordinate everything (Participant 1).

> Still generally much more difficult to have a class on Zoom and you kind of feel like an idiot because you felt like you have to speak, basically, most of the time because few students want to engage… I think that they don't want to engage in the breakout rooms… (Participant 8).

> You can't do that in an open zoom, you can look at a particular person, you can call them by name but that's somehow not enough, I think perhaps you need that actual physical face to face to face eye contact (Participant 15).

> The opportunities for interaction and monitoring on the part of the teacher… were probably the biggest challenges and then so yeah just trying to find a way to overcome that and to perhaps apply different types of comprehension checking instruction checking (Participant 17).

A common response in tackling the issue of passive attendance during larger online interactions is for the host to divide participants into smaller sub-rooms within the original meeting; known on the Zoom platform as 'breakout rooms.' However, many interviewees express the perceived challenges that they encounter when trying to manage these awkward virtual spaces. A frustrating sense of tunnel vision is perceived, as teachers temporarily lose complete contact with students or colleagues outside of the particular

breakout room that they are in. This is perceived as challenging, in that it makes online interactions feel fractured and disorientating for some teachers, as they struggle to engage with multiple parties simultaneously. Again, this can be related back to the first description category of technological tool limitations, as a teacher's laptop may not have the necessary hardware to enable rapid movement in between virtual rooms. This could also be perceived as skill-related, in connection the second description category, in that educators may not be up to date with the latest features of the particular programme they are using.

> … sometimes doesn't feel the same… And also usually, when they're chatting to you privately, you have to like stop talking and then start writing on the chat in the breakout rooms… let's say we were doing breakout rooms… you can walk from table to table, and you can you can kind of also hear… In the breakout room, you have to purposely go into each one and you can't monitor what's happening outside (Participant 6).

> You don't have that all seeing eye you know… I've got you know that little message I can't connect you know… So we had a blank screen [on Zoom], so the disconnection (Participant 9).

> You weren't 100% sure that they were fully engaged, they drop in and out of the zoom… the ability to manage and control the class is a little bit more difficult… the idea of going into a breakout room then you're obscured from all the other students who are in other breakout rooms… you're unable to monitor them, whereas, even if

> you join a group, a small group in a classroom and you're able to monitor what's going on around you (Participant 11).

Some of the participants express that the challenges they associate with larger online meetings are not necessarily a result of inactive participation, but rather on account of the over-active participation of some attendees. They perceive that ICT-mediated group interactions during the ERT period have generally been more time consuming, which is partly attributed to the trial-and-error approach to technology, but also to 'platform-hogging' by some individuals looking to vent in front of an audience. This results in an increasing level of resistance to group online interactions by faculty members who perceive this as not being the most productive use of their time. Aside from software interactivity limitations that require users to simply sit and watch, rather than enabling additional forms of active engagement while an individual is speaking for an extended period, this could also be perceived as (lack of) training-related, in that not all teachers may be aware of concepts such as 'Zoom fatigue.' Hence this can also be connected back to the first two description categories.

> The meetings which I'm obliged to attend and I find that… I don't like them, because I find that some people have the boasts they think out loud they don't express their ideas clearly they intrude on other people's time unnecessarily (Participant 2).

> That constant stress inside like, how can I do that, like 30 minutes it's not enough and you want to elaborate here, you want to extend here, you want to… 30 minutes

you know in my in my mind, it was not like, how can you fit everything… you are cutting off so many important things (Participant 5).

During our large meetings I feel like a lot of time is wasted, you know, on first of all, the small chitchat and the beginning… You know people kind of talking about not always relevant things in and I felt like you know you could email each other and talk about that privately… whereas in a small group like… fewer questions you know quick answers and off we go (Participant 13).

4.1.2.4 Category 4: Reduced Opportunities for Spontaneous Interaction

This fourth description category is based on the interviewees' perceptions that their engagement with others, be it colleagues or students, has become overly planned and rigid. The need for an agreement on a time and date, along with the laborious process of scheduling an online meeting contrast starkly with the informal micro-conversations that take place in an offline environment, whether it be in the office, staff room or corridor. The challenge perceived by the participants is thus partly to do with the inability to replicate these spontaneous 'water-cooler' interactions in the online medium during ERT.

When you're in your offices there is more of… instances where you would run into different colleagues, you see them, you have small talk so that obviously did not happen at all now, I mean I'm in a room all by myself (Participant 1).

> Physical human interaction, as you know, I go out for walks every day and then bumping into people as… You know I haven't seen you since last summer… and I just found it kind of disturbing, I'm not seeing people. I mean you know you're fortunate you're home with your wife and your son, but, like, for me, you can easily go on days without any kind of physical interaction (Participant 4).

> I think the missing informal element that you would have… if you pop in to see someone in their in their office or you meet them in the corridor is certainly missing (Participant 11).

> When walking into work when I don't know grabbing a cup of coffee just meet in the hallway so like people come into the office or we go into other people's offices… So I don't think that we have that we are interacting more than we did offline it's just like offline it was easier, we didn't really think about it, I would just walk to the next office, and I would just ask a question, a friend or co-worker asked him, something I wasn't sure about… yeah and that was something that we did every day, but it was it was informal, now, it feels like… There is there's a fixed time and everybody should be there (Participant 12).

Some teachers express the difficulty they associate with the newly added burden of having to initiate informal conversations with others during the ERT period. Through their eyes, something that used to be relatively effortless, such as touching base with a colleague over a coffee in the staff room or enquiring about a student's welfare as they pass by in the corridor, has now become a comparatively arduous task that not only involves multiple

programmes such as Zoom and Google Calendar, but also the confidence to initiate what now feels like a much more formal encounter. This appears to have resulted in some of the less confident teachers simply having to make do without this phatic talk that they relied on for bonding in the pre-ERT period.

> It's harder to quickly contact co-workers for a question you know when we're in the online space, you can't just turn to somebody and ask (Participant 6).

> If you're on your own… yeah you'd have to make a real effort to keep in touch to bounce ideas it's that informality of the office chat… You know those informal little interactions with officemates are invaluable to building your own confidence and making sure everyone's doing the same thing… And that's missing, and I think you're on your own (Participant 9).

> You would regularly meet for coffee and a chat and so on, but unless you go out of your way to initiate that it doesn't sort of happen regularly and that can be quite difficult… this online thing can be difficult to which can create pressures which spill over into your professional life (Participant 15).

Some of the interviewees go as far as distinguishing between 'colleagues' and 'friends' when elaborating on who they have stayed in contact with informally whilst working from home. They perceive that the lack of spontaneity in engaging with others that is associated with online teaching has had more of an impact on reducing communication between more distant colleagues. However, interaction between colleagues who share a closer personal

friendship seems to have been less affected. This means that teachers perceive that they have magnified contact with close connections, but reduced contact with distant ones during ERT in comparison to during face-to-face operations.

> Being in the office there were there was a certain amount of support involved that wasn't quite replicated online in part, because the communication through social media was based more on friend groups than officemates… colleague chat was more beneficial to keeping track of information different attitudes towards approaching things organizing things… Whereas a friend group we're sort of like minded and an equally faulty in the way we handle details (Participant 14).

4.1.2.5 Category 5: Sense of Isolation

This fifth and final description category represents the most significant challenge perceived by teachers in their use of networks during the ERT period. This takes into account the culmination of the comparatively minor stand-alone challenges represented in the previous four categories. When combined, these difficulties ultimately lead to a perceived sense of disconnection between teachers and both their colleagues as well as their students. It is important to note that, while the first two technology-related categories do not themselves directly lead to this sense of diminished bonding with others, their negative impact on the disrupted virtual group communication, described in the third description category, does. Therefore, it is this third category, combined with the previously described theme of diminished spontaneous communication, that directly lead to this ultimate sense of isolation that is perceived by teachers. Despite not all participants being able to pin-point

precisely what caused this lack of connection, the consensus remains that person-to-person bonding has been a prominent challenge throughout ERT.

> The gallery view [on Zoom] isn't much different to that, quite honestly, and of course they can talk and see each other, but it just doesn't work the same, the human contact was missing (Participant 2).

> The physical proximity there is something existential there in a way, I think there is it's something to do with our nature, we are, we are creatures of flesh and blood (Participant 3).

> Often you can't even see what they're really thinking you can't see if they've got what you're saying… there's a lot of issues of lag which makes any kind of natural flow or asking students questions in a you know, a smooth way is it's very hard to do that it's often very stilted and I think all of that compounded means that… it's just very hard to create those bonds (Participant 7).

> It just felt like it was all online and yeah I got I felt very frustrated I didn't have like any motivation, or like willingness to do anything else online… it feels quite isolated anyways I thought online courses for me it feels isolated (Participant 18).

Other teachers are more specific in attributing the causes of their feeling of disconnection from others. On the surface, it appears that teachers are quick to blame technology and connectivity limitations for this lack of cohesion between themselves and others. They

perceive that individuals are generally less willing to actively participate online and thus less likely to form and maintain bonds with others.

> I don't know the classroom you know they hadn't gelled properly there wasn't a classroom dynamics really because few students turned on their cameras (Participant 8).

> I don't get to know them that well I don't know their personalities that well or, for example, some students I don't see that often… face to face I think they would have been forced to speak more because they are in class, you know they cannot hide away or switch off the camera you know or blame technology (Participant 13).

Reviewing the transcripts more closely, factors outside of the technological limitations can be noted. For instance, some teachers perceive the lack of back-channelling feedback, such as a nod or eye contact, to be important when establishing rapport. These cues are clearly perceived to be more challenging to replicate in a larger group meeting online.

> I missed that eye contact, because sometimes I'm in the classroom we can even get someone's intention that way, maybe they're kind of zoning out… You can you can check comprehension that way you can see some light in their eyes… But when you're in a zoom just go dead face when you're listening… you just don't know that anybody's looking at you (Participant 6).

Lastly, the lack of regular, informal contact between teachers and others was noted as a significant cause of this state of diminished rapport with others. A notable example of this arises from teachers' perceptions that they barely know some of their teaching groups. Pre-ERT, they may have met some of these students in the corridor or elsewhere around campus. However, during the online teaching period, their synchronous contact is limited to short weekly Zoom meetings.

> It was definitely different with the with the listening and speaking [a class taught within the EAP course] because we only met with our listening speaking class… One time a week or 30 minutes honestly I can't even tell you one student name (Participant 1).

> You didn't get to know the second group [listening/speaking class]… But you know you just didn't get a half an hour a week in which other world would you have a class of 16 students for half an hour a week, it makes no sense at all (Participant 2).

4.1.3 RQ3: Perceived Uses of Networks to Connect to People Throughout the ERT Period

Before continuing into this section, it is worth remembering that the themes from the previous two RQs (perceptions) are predictably going to overlap to some degree with the description categories from the upcoming two RQs (perceived behaviours). For example, it is natural for a teacher who perceives community integration as a significant benefit of network use (RQ1) to then seek to use their networks for personal connection to others

within their professional community (RQ3). Likewise, it seems logical that a teacher who views a lacking in technological skills as a key challenge of NL (RQ2) to consequently use their network in a constrained manner by limiting their connections to online resources (RQ4) that are produced in-house by their own institution and thus deemed less daunting than the more complex online resources available externally.

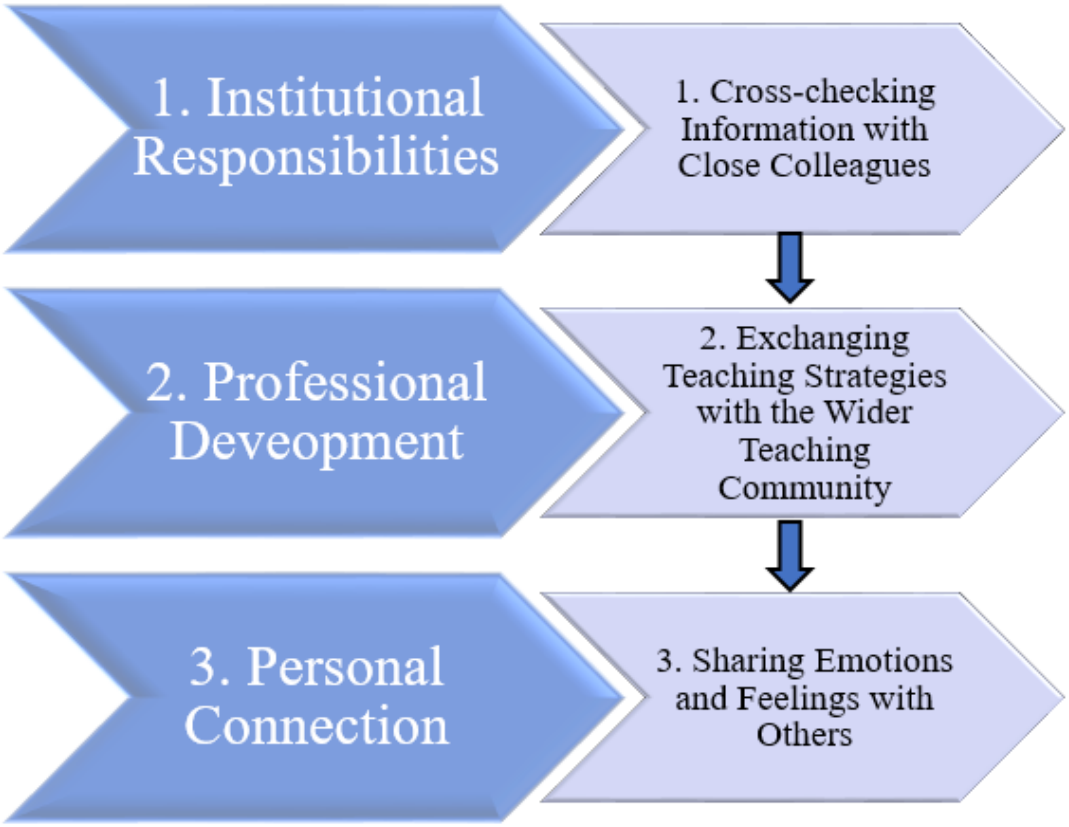
The categories of description presented below represent the refined themes that emerged at the end of the data analysis process for the study's third RQ: What are the qualitatively different ways in which HE teachers perceive their use of network connections to other people for the purposes of learning and teaching during the recent ERT period?

The three themes displayed below in Figure 4.3 below are inter-connected in a progressive relationship. Educators usually begin with the first work-related use of their personal networks to ensure they are meeting the minimum requirements of their role by moving in the same direction as the majority of their colleagues. Once teachers are satisfied that they have met this basic need and that their workplace practice is aligned with that of the collective, they may progress to the next objective of expanding their professional development network by engaging with like-minded professionals outside of their institution. In other words, professional development via external collaboration is only pursued once a teacher is confident with the fundamental teaching role that they have been hired to perform. Finally, once teachers have utilized their networks to satisfy both their institutional responsibilities and their PD, they are likely to tap into their closer connections, regardless of whether these people are internal or external to the teacher’s institution, to

socialize and take respite from the first two network uses. This intimate connection represents the most sophisticated network connection to others.

Figure 4.3

RQ3 Description Categories



4.1.3.1 Category 1: Cross-checking Information with Close Colleagues

This first description category is centred on teachers' use of their personal networks as an instrument for keeping their ear to the ground, in order to ensure that their practice consistently aligns itself with the institution's general direction. The overload of information

that teachers have received during ERT, coupled with a sense of uncertainty as changes are introduced at short notice by universities forced to pivot to adapt to the ever-changing effects of the pandemic on course delivery, has left many teachers members yearning for reassurance. By regularly checking in with their colleagues, teachers can sustain a sense of what the collective is doing and subsequently ensure that they themselves do not deviate too far from this norm. This is therefore perceived as the most basic use of a teacher's network in connection to others.

> Those informal little interactions with officemates are invaluable to building your own confidence and making sure everyone's doing the same thing… And that's missing I think if you're on your own… that's very important to have that kind of network that but, you know you, you have to build that yourself I think it's important (Participant 9).

> I feel very supported emotionally with the online stuff in terms of just plain kvetching about things and you know bellyaching [complaining] and to a certain extent problem solving with some things (Participant 14).

> In terms of within our department [EAP] yeah I mean we've got a very good support network with team leaders, who are very accommodating… so I've often discussed little things we've had regular meetings with the team so, that's actually been quite nice (Participant 15).

Teachers often tap into their informal networks by contacting specific colleagues, chosen either for their peer's institutional position, for instance a line manager or an experienced technology user, or for their social proximity to themselves, for example, someone with whom they used to share an office with or have collaborated with for an extended period. These interactions can take place across a range of communication mediums other than through a webcam, including phone calls and social media groups.

> My line manager is very supportive and always you know a phone call away. We talked and he would you know, sometimes I can't find things I forget how to get things… I'm just not clear how to do something, so my colleagues have been helpful (Participant 2).

> I have a group chat with the people in my office and that's a place where we could field questions just about work or stuff in general, because we have one maths person in our office too (Participant 6).

> I maintained direct communication with a couple of close colleagues on a regular basis, once a week with catch up just to see if anything's going on (Participant 11).

Some teachers articulated their perceptions of their network use as multipronged, in terms of who they contact and in what format they receive the information in. This results in a shift away from relying on single, individual collegial encounters for information-checking and towards larger group meeting interactions. These meetings are often supplemented with a written artefact, such as an email or a regular bulletin with key weekly information,

which enables teachers to cross-check and verify what they think they have understood from one source by corroborating it with another.

> Team meetings are great I mean absolutely necessary and productive, I also think that the E Bulletin is understood… keeps you on track also it's great for reference you know... I guess that the Bulletin provided background and then details were provided by the team meetings… you know so the Bulletin [a list of important reminders emailed out every week] like providing backup basically for the team meetings (Participant 4).

4.1.3.2 Category 2: Exchanging Teaching Strategies with the Wider Teaching Community

This second description category represents teachers' utilization of their networks for collaborative PD purposes and is likely to be carried out only after the core work-related network use described in the previous description category has been satisfied. Teachers describe their perceptions of engagement in a range of training and development activities that involve interacting with far-away professionals throughout the ERT period. These range from one-off events such as themed webinars, to more long-term commitments in the form of multi-event distance courses and even part-time PhDs.

> Both the courses that I did… the only people that I interact with are my peers on the course… And there we interact in the course in an important way because I was grading their work or their project, and they were grading my project… and then I

> saw the name of the person and the comments… there is room for discussion with other people during the course (Participant 3).

> My distance PhD in part time so, to be honest, for me, this year has been this pandemic year has been much better in terms of my participation and engagement with my studies and with my cohort… before no one really cared about you know the distance students, but this year when everything moved online… I have been regularly participating in all seminars all lectures conferences everything… Because you know everything moved online and it became a very vibrant online community (Participant 8).

> I've attended two or three webinars… We had the collaborative, not conference, but collaborative get together with another university (Participant 11).

Some teachers perceive their network uses for PD collaboration as having been largely propelled by the greater autonomy that working in the ERT period has facilitated for them. That is to say, the more laissez-faire attitude adopted by employers in their emphasis on 'getting the work done,' regardless of the specific time or physical location in which the duties are carried out, has resulted in some of the more organised and efficient faculty members being left with more free time and autonomy over their schedules. In contrast with the nine-to-five office presenteeism culture that was seen among universities before the pandemic, teachers working in the ERT period perceive that they have greater opportunities to attend PD events, as they are able to flexibly manage their work schedules around these opportunities to engage with external colleagues in a PD context.

> I like the flexibility to a lot because I could attend professional development webinars, for example. And then I completed the few online courses as well which I don't think I would be able to do when I was in my office, because in the office I was yeah with other people I would often get distracted (Participant 10).

Aside from simply having greater opportunity, schedule-wise, to attend these PD events, teachers emphasize the chances of engaging in dialogue with other like-minded professionals that is facilitated by the virtual nature of the meetings. The elimination of physical distance barriers on account of operating online means that teachers no longer perceive their own physical campus as the limit in terms of who they can interact with for self-development purposes. Teachers thus perceive the ERT period as an opportunity to use their networks to engage with geographically distant professionals from external institutions.

> We actually had a CPD session with another university like a joint CPD session… I really enjoyed that just talking about things, learning about what other teachers are doing, the challenges that they face, and so forth, and it's nice to hear that actually they face the same challenges that we do… I really like knowing what other people are thinking (Participant 1).

> In terms of professional development, I suppose it's made it easier in a way, because you can attend various conferences or seminars, or whatever from wherever you are, irrespective of where it's being held… So I have attended things which I probably

wouldn't have been able to otherwise… there was a seminar with another university. They wouldn't have all flown into Kazakhstan, we wouldn't have flown to them… (Participant 7).

Management sent us a lot of other external opportunities which was very helpful, like, for example, this summer I attended online conferences which took place, you know in England and somewhere else you know so that was helpful… So yeah that was some networking going on in both internally and externally (Participant 13).

Exploring different interpretations and I tend to find some common ground so, for instance, with a network learning workshop and… yeah it really just how everything kind of fits together in terms of institutional philosophy and then also the nature of professional development, as well, I think that was something that was very interesting in the discussion (Participant 17).

4.1.3.3 Category 3: Sharing Emotions and Feelings with Others

This final theme represents teachers' network use to escape the confinement that many of them attribute to their day-to-day work during the ERT period and seek interaction of a more intimate nature with close contacts. This network use is generally pursued after the previous two description category uses have been satisfied. That is to say, teachers are likely to tap into their networks with the objective of reposing from work by sharing personal emotions only once they perceive that they are up to date with their core work performance and PD collaboration, as described in the previous two categories. In a HE

environment where conference calling software, such as Zoom, is strongly associated with long meetings and the impersonal nature of online contact, it appears that educators often crave physical contact with closer colleagues as a form of therapy and escapism from the monotony of online work. This can take place in person at a public venue, such as in a bar or a restaurant and, though work topics may arise, the overarching purpose of tapping into these network connections is perceived as being for socialization and close bonding.

> Support from colleagues, I would say that was the key thing to get me through the year… I contact most [Teacher 1], as I said, is a neighbour and a friend and he's on the technology team… And I see you know [Teacher 2] and [Teacher 3] went out for pizza the other night… (Participant 2).

> Myself and this other colleague who happens to be a kind of friend of mine … We meet on Tuesday and Thursday and after the Thursday night session we go off to a bar… Just the two of us, not our teacher as she's been working during the day and she doesn't engage in that (Participant 3).

> It was just mutually beneficial that we help each other learn, we're learning from each other adjusting together to these not normal times mode… in addition, just some things like personal things came that are not directly related to work (Participant 5).

> We had opportunities to kind of meet with friends colleagues and go out… Well, everything that is work related is basically zoom and everything that is work related

> was online everything that was like related to just everyday life, like to have some fun time to have dinner to like go out, it was off Zoom… I think zoom is associated with work very much now (P18).

Teachers emphasize the importance of both the informality of these interactions, as well as the closeness of the connections with whom they engage with for this intimate purpose. The often spontaneous and unrecorded nature of these casual engagements with close network contacts therefore starkly contrasts with a typical Zoom work meeting that might take place with more distant colleagues. This kind of work interaction is likely to be put in the calendar well in advance and officially recorded in the form of documented minutes, which leaves little comfort for personal connection. This use of networks to share personal feelings with others that is represented in this third category can therefore be seen as the opposite.

> Like four or three colleagues that we're close we're you know, like work friends, so you know, through texts or whenever we meet offline it doesn't mean like we don't really meet offline we do… it's not a meeting that someone is taking the minutes of or something like that, so I like it's very informal and it doesn't have to be on a fixed time and it does, it has to be with people that I'm quite comfortable with… I speak, sometimes with former colleagues (Participant 12).

While some teachers have attempted these social-oriented interactions across online channels of communication during ERT, this has been relatively uncommon and is not perceived to be as successful as face-to-face communication for these intimate goals.

Another point to note is that most of these emotion sharing interactions reported by teachers tend to be with collegial, as opposed to student, contacts from their networks. Both points considered, it can be summarized that teachers are therefore more likely to unwind in an offline environment perceivably successfully with other faculty members.

> I also tried to get to know my students better by holding to movie nights, which were unsuccessful, but still I tried to like four students showed up… to see a movie you don't do anything there you just watched the movie together but it's kind of an experience some time you spend together… And you can you can talk about it afterwards, or you know just some quality time (Participant 6).

4.1.4 RQ4: Perceived Uses of Networks to Connect to Online Resources Throughout the ERT Period

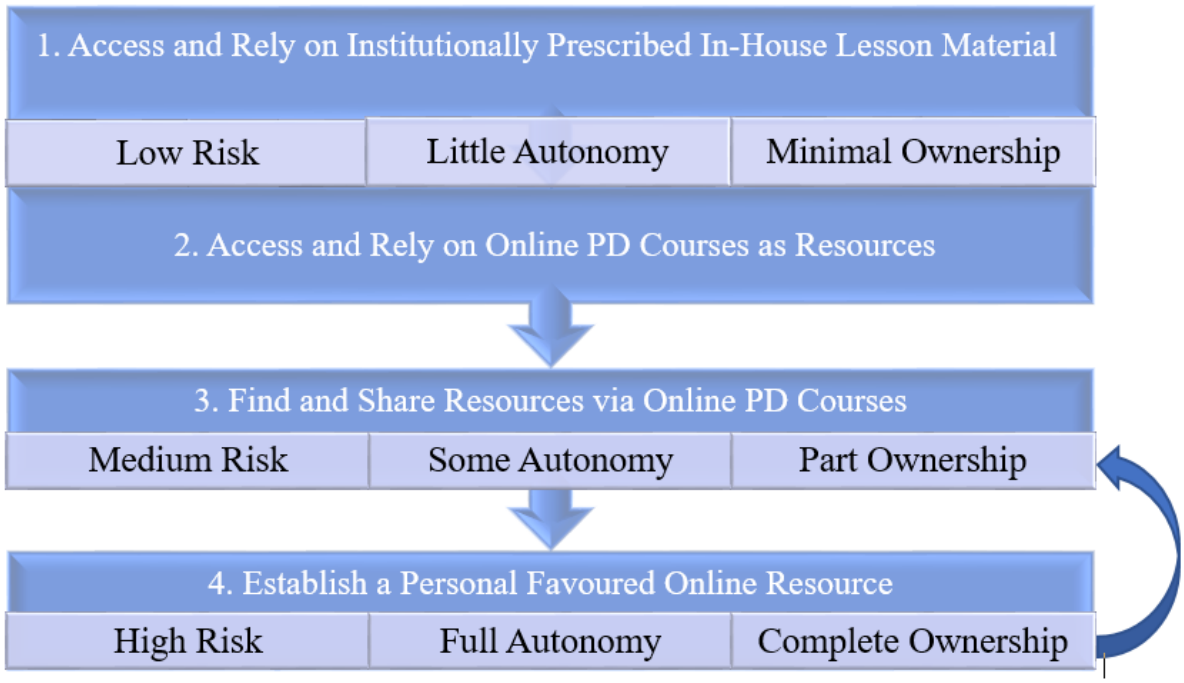
The categories of description presented below represent the refined themes that emerged at the end of the data analysis process for the study's fourth RQ: What are the qualitatively different ways in which HE teachers perceive their use of network connections to online resources for the purposes of learning and teaching during the recent ERT period?

Figure 4.4 below represents an evolving relationship between the four categories, whereby teachers rarely advance onto a subsequent category without having first used online resources in accordance with the previous theme(s). This means that, during the ERT period, teachers are likely to begin by adopting a minimalist approach to online resource use whereby they adhere to using the material endorsed by their institution. Only once they are

comfortable with this, do they begin to explore more creative uses of material by attending online PD events, albeit passively at first, in the hope of coming away with something new. Upon gaining more confidence, it is probable that teachers progress towards more active participation in these PD gatherings by engaging with far-away educators and adopting a more critical approach before accepting their external recommendations. Finally, after exposure to a wider variety of online resources, teachers tend to settle on favourite personal ones that works for them. These preferred tools are then likely to be updated over time, as teachers are exposed to newer and more creative sources as they return to the second category by actively debating them in further PD events.

Figure 4.4

RQ4 Description Categories



4.1.4.1 Category 1: Access and Rely on Institutionally Prescribed In-House Lesson Material

This initial description category encompasses teachers' perception of core university made teaching material as their main use of online resources throughout the ERT period. Most teachers stay within the confinements of this in-house material, stored centrally on the Google Drive cloud, without supplementing excessively or experimenting too broadly with external resources. These online resources are often created by a dedicated team of material-development colleagues and subsequently approved by management.

> I would say I'm pretty basic I don't use much extra… so I haven't relied on any other pre-made materials or things like that. I don't have a Google classroom [online teaching platform] I just basically use our course material on Google drive [cloud storage] for all that type of stuff… I can't recall there's anything else that I've used as a resource for materials (Participant 6).

> The only real outside technology, I guess that I really used was Quizlet (Participant 7).

> All our materials like, I mean online as in… In our on our drive so that didn't actually change… I haven't accessed anything new (Participant 8).

Various rationales were offered as to why teachers perceive that they do not often venture further away from the online resources prescribed to them by their home institution. These

include a fear of overloading their students, for whom the ERT is also unchartered territory, with too many new elements on top of what they have already been asked to adapt to. It appears that teachers try to uphold a sense of continuity and 'normality' by connecting to resources that they are already familiar with, at a time when so many other elements, including the course delivery mode, have changed. Using familiar resources is therefore perceived as a possible coping mechanism in an ERT environment that places many HE stakeholders outside of their comfort zone.

> Most of the materials were already provided by our materials team, you know everything was prepared well in advance and well prepared so I didn't I never struggled with any materials… I didn't want to overwhelm students with like here are 10 more YouTube videos you have to watch, you know (Participant 13).

> For teaching I didn't use anything outside of our like materials provided by the university… The reason for that is that I felt like… students were already like quite confused by what they've already been kind of presented with, and you know I didn't want to add anything like on top of that (Participant 18).

Some teachers feel that using their networks to connect to too many online resources would be overwhelming for themselves as practitioners, not just for their students. There is a tendency among interviewees to air on the side of caution, when it comes to trialling new material during an ERT period that they perceive as already being unchartered territory and straining in terms of increased contact hours. Teachers are thus concerned about

overloading themselves with too many different tools and resources during what they perceive as a disruptive and temporary stage in HE.

> I felt less able to use my own materials with those Moodle lessons I felt we had to fit in with this plan and there wasn't the time or the opportunity to use of my own materials (Participant 2).

> After a couple of trial and errors with materials… it was best to just to stick to what you know (Participant 17).

A final reason for the dependence on institutionally made online resource use is the perception that it can help to standardize teachers at a time when they feel most disconnected from one another. With an abundance of online material at their disposal, some teachers therefore perceive in-house material use as a safe base to keep themselves aligned with what their colleagues are doing in the virtual classroom. Their perception is that it is mandatory for all teachers to use this central material as a reference point, before considering the optional use of supplementary resources and thus risking straying too far from the 'norm.'

> I'm in the learning centre creating more material... Contributing to what should be a resource bank for everybody, so and then, at the same time I'm going to use it during the academic year (Participant 4).

So there's the material that was provided by our materials team, you know to meet the requirements… I understood that we had to make sure that we covered this material (Participant 9).

Beyond the prescribed teaching materials for the classes… I've only used add-ons, if you like, from personal past experience (Participant 11)

I personally haven't shared or nobody has shared with me apps resources you know, except the ones which are prescribed by the programme and that everybody should use (Participant 12).

It was strongly suggested the first year that I follow the lessons that were offered from the programme (Participant 14).

I would say, mainly stuck to prescribe materials… there have also been a few videos done by our technology team colleagues… Some of those are sort of compulsory viewing (Participant 15).

4.1.4.2 Category 2: Access and Rely on Online PD Courses as Resources

The second description category encompasses the initial steps taken by teachers seeking to tap into their networks to discover online resources outside of the safety, but also constraints, of their own institution's material repository. They perceive virtual PD events, such as a workshop or a debate club session, as potentially useful deposits of online

resources that can be accessed with minimal risk. This means that, as an online PD event attendee, a teacher can quietly attend in the background with minimal exposure or commitment to engage, but still walk away with the names of or links to previously undiscovered sources.

This type of network use requires little commitment on behalf of the educator, in the sense that they can simply 'lurk' by blending in with other non-contributors with their cameras off and perhaps even whilst multi-tasking by simultaneously conducting another activity, but still come away with the material shared by other professionals during the session. In other words, this type of network use to is very much one way in the sense that the teacher relies on others sharing their material, without having to reciprocate this themselves. This contrasts with the subsequent category that describes teachers' eventual transition towards actively commenting on others' contributions and even sharing their own online resources.

> ... webinars and conferences that are almost weekly there Thursday one or two TELSIG, I would go to those almost every week… Because yeah so everything was online and on zoom basically at this point so um I attended conferences webinars a lot more than I normally do… Almost every week, I was doing something oh yeah then also I also did two courses online courses for you know they were… professional development type courses specifically related with EAP (Participant 1).

> The conference happened during our marking period when we had very little time… but when the marking period was over, I did have a few weeks, when I was able to

> revisit a conference and look at a lot of things and I've got a kind of a folder with lots of things from that conference (Participant 3).

4.1.4.3 Category 3: Find and Share Resources via Online PD Courses

This third description category centres on teachers' perceived connections to online resources that have been unveiled to them at a virtual PD event that they have attended and actively participated in. This contrasts with the passive attendance described in the previous theme, as this category involves reciprocity in the sense that teachers attend these events to share online resources, as well as acquire them. Educators perceive PD in its various forms as a useful networking platform both to uncover, as well as to subsequently recycle, online resources with other educators. Many teachers perceive that their exposure to new online resources has taken place during a one-time event, such as a conference or webinar. These casual events require minimal commitment and can take place either within their own institution or externally.

> I know the teaching styles of my colleagues and I know that… Some of those colleagues will use and the way they use materials and often pass them on to people (Participant 11).

Other teachers describe their discovery of novel digital material via longer-term courses that they have taken part in. These require a more prolonged commitment of interaction with other like-minded professionals in the form of an online course or even a postgraduate qualification. There is often a mutual understanding of reciprocity whereby participants are

expected to actively contribute, in addition to listening to others. Teachers often retain access to these online resources in the medium and even long-term after having completed the qualification. The increased regularity of interaction with the same individuals over a longer period of time, which contrasts with the one-time events described in the previous paragraph, suggests that teachers may be more willing to trust resource endorsements made in this latter context.

> I do MOOCs [Massive Open Online Courses] and I've recommended many MOOCs to students… it's an introductory course to computer science at Harvard it's a very popular course at Harvard I've recommended that the students do… I recommended MOOCs on classic sociological theory (Participant 2).

> I use the Manchester University [UK] academic phrase bank quite a lot as a reference point and either to give examples… and also to refer students to… Because we have always been told in my master's degree, we were always told this is it use this (Participant 7).

> I certainly tried to apply what I learned on the course and I adapted a lot of the materials (Participant 17).

4.1.4.4 Category 4: Establish Personal Favoured Online Resources

This fourth description category revolves around teachers' perceived discovery and establishment of strong ties to a few online resources that they regard as working

particularly well for them as individual practitioners. These online resources differ from one teacher to another; however, they share the qualities of being digital and, in somewhat of a contrast with the first description category, these sources are often used in a supplementary fashion to the prescribed in-house material.

The first grouping of digital resources within which teachers perceive to have a personal favourite tool is that these resources are used in support of their overall teaching and interaction with their students. Teachers often adopt a trendy new app that can be used as a platform to engage with their students in a more balanced and democratic manner. Rather than lecturing students via a webcam in tandem with a commonly prescribed programme such as Zoom or Skype, teachers perceive that the use of alternative cloud-based collaborative platforms, such as the interactive virtual boards offered by 'Padlet,' facilitate more active participation from their students. Teachers' perceptions are often therefore that, by limiting themselves to learning to use a few online resources, they are compromising between promoting more student-centeredness in their lessons while at the same time not overloading themselves with too many new course elements as described in the first category.

> I use Padlet [collaborative web platform] a lot of course… it was very useful when you're doing a class on you know, a zoom class… works very well with groups, so they work in groups and then post their findings, or whatever in there, you know Padlet … And it was just very effective, so I don't know why but, but it was really helpful to get them just to communicate (Participant 1).

> I didn’t try to use too many different tools… Quizlet [online study tool]… yeah I used it for the for vocabulary learning for the academic word list, and we would have weekly tests on Quizlet (Participant 7).

> Zoho [PDF annotation software] is… But it's a platform where you can basically annotate pdfs so students can write on it, they can highlight it, they can draw whatever (Participant 16).

The second grouping of these personal favourite resources reflects teachers’ perceptions of online resources that they use to improve their own professional practice in relation to PD and interacting with other practitioners. Examples of these personal favourite go-to resources include simple advising websites, often created by fellow teachers, that offer guidance in the form of ‘top tips’ for educators who find themselves operating online for the first time as a result of ERT. These pointers can be delivered in the form of written notes but are more often disseminated via short engaging instructional videos. Some teachers interact with these websites via their corresponding social media pages, or even choose ‘wiki’ sites that are editable by the users themselves.

> I’ve learned a lot about Moodle through… almost like a wiki they have this… Information page and that's kind of where I learned things and then also there's Moodle forums… And that's where that's where I usually find the answers to questions that I don't know (Participant 6).

I'm… …being very thankful for Russell's Stannard's… …website where he goes through lots and lots of tutorials on things that I wasn't familiar with (Participant 11).

Other resources I think Instagram was very helpful when it came to this like psychology hobby because I follow, like many professionals in this field by Instagram… I think Instagram is like very useful in terms of psychology and coaching… They have their own lectures online and then they save it, you can watch it, so I think that was very helpful for me (Participant 18).

Chapter 5: Discussion

Having presented final description categories along with supporting evidence in the form of final outcome spaces in the previous chapter, this section focuses on the deeper exploration of these findings. This is achieved through the fusion of literature used to support, or question, these outcome space diagrams, in order to present the reader with a convincing answer to each of the RQs. That is to say, the findings are compared to the existing literature to determine which areas are already supported versus which ones can be considered potential new discoveries. Whereas the structural relationships between description categories were identified within the confinements of their respective outcome space in the 'findings' chapter, this chapter seeks to take a step back and highlight the possible relationships in between the different outcome spaces. This is achieved by looking at broader themes that cross the boundaries of the individual RQ-centred outcome spaces by fusing together description categories from different RQs under these common themes.

As mentioned in the previous chapter, it is important to note that the description categories presented in these outcome spaces are *not* intended to be prescriptive by suggesting that every teacher will necessarily perceive the benefits, challenges and uses of networks in a particular order. Instead, the emphasis is on perception variation, as is reflected in the subtitles, and how this range can be made applicable to various teachers depending on local contextual factors. Institutions are therefore likely to find the perception range in the outcome spaces presented in the previous chapter, as well the overarching themes presented in this one, relevant to their own environments after taking local factors into account.

5.1 Variation in Dependence to Proximal Communities

This first overarching theme brings together description categories that relate to teachers' perceptions and perceived use of networks with a limited sense of confidence or conviction. Depending on the degree of variation in which the individuals perceive networks to be beneficial, challenging and used, these teachers are likely to rely on connections and communities that are close to them either in physical proximity or overall accessibility. The subsection begins with the example of accessing online resources and then proceeds to discuss the basic challenges of tools and training that may restrict this depending on the degree to which this dependence on close-proximity connections is perceived. The subsection ends with a close look at the example of information cross-checks with close colleagues as a representative example of this overarching theme.

5.1.1 Flexible Access to Online Resources

At its most basic use to proximal and easy-to-access connections, personal networks are perceived as useful bridges to professionally relevant material that teachers can access in a bespoke manner according to their needs at a particular given time. This refers to both teaching material, such as individual classroom activities or even entire lesson ideas, as well to resources that focus more on teacher PD, including pedagogical advice videos or entire online courses. The relation to NL applies both to resource, as well as human connections (Goodyear et al., 2004), in the sense that the latter are often interacted with in order to obtain the former.

These findings are supported by scholars such as Gislev et al. (2020) and Kearney et al. (2018), who describe teachers from various locations and in different educational contexts collaborating in resource sharing in a tailored manner thanks to the online infrastructure offered by the cloud. These authors explain that, instead of exchanging sources one at a time clunkily via email for instance, the detailed series of uploaded files that can be organised in a cloud ecosystem facilitates the flexibility in which these online resources can be shared and accessed by the teaching community (Gislev et al., 2020). Likewise, they praise the enhanced efficiency of source-sharing online as 'working smarter' (Kearney et al., 2018; Schuwer & Janssen, 2018), in that a large number of teachers can benefit from the digital recycling of sources found by only a handful of contributors. This reflects how many of the teachers at the focus of this study used Google Drive to flexibly interact with resources made by a small team of in-house material developers. It is not difficult for one to imagine how popular cloud-based platforms such as Google Drive or Microsoft One Drive could be developed into a central storage depository for educators to dip in and out of throughout the academic year as their personal needs evolve.

While some of the current literature aligns with this theme derived from the findings chapter, it also presents hurdles towards the flexible use of online resources. The most basic of these being the digital divide (Correia, 2020; Romero-Hall, 2021) that makes the speed and ease of accessing online resources dependent on connectivity and hardware. While the teachers at the focus of this study found themselves working under similar technological conditions, the same cannot be said about a more global network of educators (Correia, 2020). It is therefore important to consider the technological inequality that may come to

surface as instructors in more connected environments are able to download large files at lightning speed, versus their less fortunate counterparts who may struggle to share even modest files using more dated devices.

A potentially more challenging barrier towards online resource sharing is the delicate perception of reciprocity (Dirckinck-Holmfeld et al., 2011), as collaborators may feel that not everybody is contributing equally to the communal pool of resources. For instance, Schuwer and Jansenn (2018) found that personal gains play a substantial role in the motivation for teachers to share resources and that many of them do so with the expectation that others too will contribute to the community. This ties back to NL´s greater emphasis on human connections (Goodyear et al., 2004), in the sense that failure to reciprocate the sharing of resources can place strain on person-to-person relationships. By not sharing one´s own resources with the community, a teacher is thus risking the fraying of personal connections to other community members.

A final complication associated with reciprocity in the context of resource-sharing is highlighted by Lee et al. (2021) in their explanation that teachers often encounter a crisis of authorship when obtaining sources from others. This means that material obtained from colleagues is sometimes considered as not truly being one´s own, which can in turn make teachers reluctant to accept these shared resources. This, taken together with the previously described challenges, means that the flexible use of networks to online resources is highly dependent on the strength of the relationship between community members.

5.1.2 Technological Tools & Infrastructure

This description category represents the most basic challenge that HE teachers associate with the use of networks during the ERT period, even when it comes to accessing proximal connections. This refers to the apparatus, both in terms of physical hardware but also in reference to software and connectivity speed, that educators depend on to make their online interactions with resources and people possible. While it is rare to find teachers that do not meet the minimum threshold requirements to, say, take part in a Zoom meeting, it is noted that the value of this online interaction varies significantly according to the calibre of the tools at the users' disposal. While an educator with limited connectivity and dated hardware will technically be able to collaborate with their online connections, this experience will be notably inferior to that of a colleague who has access to high-speed WIFI and state-of-the-art equipment. The latter conditions are more conducive to the NL practice of forming of new connections, as well as the habitual nurturing of existing ones (Jones et al., 2008).

The literature is generally in agreement that HE's shift towards a complex blend of increased technologization with the maintaining of certain face-to-face elements (Cutajar & Montebello, 2018; Darling-Hammond & Hyler, 2020), with or without ERT-events such as the recent Covid19 pandemic, means that teachers need access to reliable ICT infrastructure (Al-Samiri, 2021). While few authors agree on the specific type of technology or mode (synchronous vs asynchronous) that can be deemed universally 'best,' there is nevertheless agreement that some form of stable technology is crucial for individuals to interact online, whether this is video-conferencing software, chat channels or another alternative (El Said,

2021; Nuere & Miguel, 2021). This means that the ICT tools and infrastructure required for NL are not uniform across institutions, but rather each university can support online learning through whichever tool is available in their local context and meets their current needs. A recorded Microsoft Teams meeting conducted in crisp quality may feel technologically superior to a patchy WhatsApp call, but also result in comparatively low attendance, as not all individuals are likely to have the required tools to access the former.

Despite the above, it is important to remember that technology itself is not the focal point of NL (Romero-Hall, 2021), but rather the social process of learning by interacting with others. While technological elements can certainly facilitate these connections to others (Goodyear et al., 2004), there is little foundation to support the simplistic notion that an individual who possesses the latest technology necessarily equates to an effective networked learner. It is more likely to be a combination of the behaviours and strength of ties to a teacher's connections (Jones et al., 2008) that play a more impactful role in determining the extent to which teachers benefit from their use of networks. The physical communication tools are limited to a secondary role in lubricating these activities.

5.1.3 Technological Skills & Training

Once the rudimentary challenge of supporting equipment has been overcome, a subsequent hurdle that teachers often associate with NL, even with easy-to-access connections, is the personal capability to use these tools effectively. This refers to the increased level of digital competence required for teachers to be able to connect to one another, as well as online resources, in a confident manner that cultivates long-term engagement. In parallel with the

example provided in the previous description category, it is unlikely that a teacher will not possess the minimum expertise required to, for instance, take part in a Microsoft Teams video call. Nevertheless, there is still a stark difference between an educator with the bare minimum digital know-how to simply connect to a video call, versus a colleague with the technological confidence to dip in and out of virtual meetings at ease and flexibly engage with the ones that relate to their PD goals.

Scholars are quick to highlight their consensus that there is an overall lack of adequate faculty training in the use of technology to support their work roles (Krumsvik, 2014; Toquero, 2020) and there is evidence to suggest that teachers themselves are conscious of this professional deficiency (Basilotta-Gómez-Pablos et al., 2022). While the physical tools that support ICT-integration discussed in the previous section certainly play a role in lubricating HE's shift towards digitization (Darling-Hammond & Hyler, 2020), the teachers themselves as the operators of these devices arguably play a more pivotal role. The latest aeroplane is of little use, unless there are competent pilots that can operate it.

Some researchers explain that the technological competency required for a teacher to confidently cope with the permeation of technology into HE (Basilotta-Gómez-Pablos et al., 2022; Cutajar, 2018) far exceeds the basics of operating conference management software such as Zoom or uploading resources to a cloud provider such as Google Drive. In order to communicate effectively with groups of students for instance, educators would need to comprehend the nuances and intricacies involved in online teaching pedagogy. These combined variables include deciding on the balance between synchronous and asynchronous interaction, the frequency of the meetings (Kentnor, 2015; Vlachopoulos &

Makri, 2019) and designing the material that will be used in these meetings ahead of time (Rapanta et al., 2020). Even communicating in a one-to-one setting with a single colleague online requires considerations that may not be immediately obvious, such as the need to exaggerate one's non-verbal cues so that they can be picked up by the webcam or the increased value of back-channelling feedback to demonstrate engagement.

In summary, while most teachers possess a moderate level of digital competence (Basilotta-Gómez-Pablos et al., 2022), the literature suggests that this is unlikely to adequately support professionals seeking to maximize their interaction with online connections in an increasingly digital environment. The social aspects of learning on which NL is centred around (Ryberg et al., 2012) demands far more than minimal ICT-operating capacity from teachers.

5.1.4 Cross-Checking Information with Close Colleagues

This represents HE teachers' most basic perceived use of their networks to people connections, as opposed to links to online resources, and revolves around the notion of teachers keeping themselves in check in relation to the current practice of most other like-minded professionals within their proximal communities. This involves frequent alignment checks with colleagues for self-comparison purposes. For instance, a teacher may engage in a quick video call with a close team member to check their understanding of the latest instructions for an important upcoming assessment period or to seek advice on how to tackle a problematic student. The decision as to whether educators should tap into their networks for this purpose are influenced by factors such as social distance to the workmate,

meaning that a teacher is more likely to turn to a strong tie (Jones et al., 2008) that they know well, and the perceived authority of the individual, meaning that connections with elevated positions or who are long-established in the institution tend to be favoured.

Current research supports the notion that a significant proportion of HE teachers, despite technically being able to operate during ERT (Cutri et al., 2020), have been largely wrong-footed by this sudden online submersion (Hodges et al., 2020; Rapanta et al., 2020). It is therefore somewhat logical that teachers' first resort would be to tap into their network connections to close colleagues for this basic purpose of ensuring their alignment with the collective. By frequently comparing their own practice to that of the majority of colleagues, teachers ensure that they do not stray too far from institutional expectations. While this cross-checking behaviour likely occurs in the physical office environment as well, the increasingly urgent need for teachers to become ICT-fluent (Drucker & Fleischhauer, 2021) means that there are now additional areas which teachers must cover, in addition to subject and (offline) pedagogical expertise, as part of their online professional checklist; namely digital competence (Falloon, 2020). The general acceptance that universities have generally been ill-equipped to support their teachers in rapid online transformations, such as the one recently triggered by the Covid pandemic (Ontong & Waghid, 2020), means teachers' first port of call is often their strongest network ties (Jones et al., 2008).

Further exploration of use of networks for self-alignment, reveals that a high degree of familiarity to the connection often plays a crucial role. For instance, Kotera et al. (2020) describe the practice of 'morning huddles,' whereby HE colleagues would meet online on a daily basis to simply check-in with each other. While the central purpose of these

interactions was to examine each other's welfare during the unexpected thrust into the virtual environment caused by the Covid pandemic, they also proved useful for teachers to compare their approach to daily issues and even served as a platform for those wanting to ensure that their students did not stray too far from their assigned tasks (Kotera et al., 2020). In other words, briefly but regularly tapping into one's network connections can be a useful tool not only to seek support but also to strengthen existing ties.

5.1.5 Access and Rely on Institutionally Prescribed In-House Lesson Material

The initial and most rudimentary perceived use of networks by HE teachers to connect to online resources from within their proximal community is their dependence on institutional lesson material. HE organisations often have internal depositories stored in the cloud of lesson activities and plans that they encourage, and at times insist, that teachers use in their day-to-day teaching. While teachers' attitudes to the adoption of this locally produced material can vary widely in a face-to-face setting, with some teachers viewing these resources as helpful support in contrast with others who find it patronising that their institution would want to be so prescriptive in how their teachers operate, it appears that the ERT period has shifted teachers' opinion towards the former viewpoint. This is largely due to an innate desire by teachers for some form of continuity or 'normality' during an uncertain period such as ERT, both for their students' sakes as well as for their own interests as practitioners operating online unexpectedly. Teachers largely take comfort in the prospect of 'playing it safe' by relying on their close institutional network for endorsed material, to ensure alignment with the majority of their colleagues during online teaching.

Despite the notion that NL places greater value on connections to people than on resources (Carvalho & Goodyear, 2014; Acuyo & Lee, 2022), the relatively unchartered waters in which many faculty members have found themselves in as a result HE's expedited shift towards technologization (Basilotta-Gómez-Pablos et al., 2022) means that access to the latter type of connections cannot be overlooked. The added challenges associated with this paradigm shift, such as the digital competence gap (Veletsianos & Houlden, 2020) and the increased work stress (Leal Filho et al., 2021), means that now is a time when educators need as much institutional support as they can muster. An obvious form of support is for teachers to make use of communal online resource depositories offered by their own institutions. Aside from easing their increased workload (Lee et al., 2021), this can also help teachers to feel securely aligned with what the rest of their colleagues are doing in the classroom.

An obvious disadvantage of this basic use of networks to connect to online resources is that some of the greater opportunities associated with NL might appear to be under-exploited. Online space benefits such as the elimination of geographical distance barriers as teachers are able to connect to online resources shared by physically distant professionals, or the temporal hurdle elimination (Acuyo, 2022; Anders, 2018) whereby educators can engage with their network connections asynchronously at times that are convenient for them are examples of opportunities that this rudimentary use of networks does not take advantage of. By limiting themselves to the confinements of relying on institutionally produced (or at least prescribed) material, teachers are constraining themselves to the narrow pool of material that is produced by close colleagues from the same university and that are likely to be accessed during similar periods of the academic year. The rewards of networked

individualism that envision educators dipping in and out of a multitude of networks flexibly (Jones, 2012) are thus forfeited at the expense of this flexibility.

5.2 Variation in Extension to External Communities

Moving beyond the confinements of nearby and easily accessible communities, this second overarching theme weaves together description categories that relate to teachers' perceptions and perceived use of networks with a greater sense of confidence and willingness to reach beyond the borders of easy-to-reach connections. Depending on the degree of variation in which individuals perceive networks to be beneficial, challenging and used, these teachers are less daunted by the notion of engaging with more distant communities and are thus more likely to pioneer contact with connections outside of their immediate proximity and comfort zone. This part starts with a focus on engagement with people connections, as opposed to limiting oneself online resources, before proceeding onto the potential barrier of difficult-to-manage interactions at a larger scale that are more characteristic of the risk-taking network perceptions and behaviour that is associated with this theme. The challenge of reduced spontaneity is then presented as a difficulty that is often associated with extending one's network beyond a small group of close connections. Finally, this is counterbalanced with the perceived gains that can be made by branching out to the wider community in terms of teaching strategies and online resources.

5.2.1 Flexible Access to Others

Still at a fairly basic level of advantage but perceived to be above the previously described category of access to resources, HE educators often view networks as useful connection platforms to other professionals that can, as with online resources, be used flexibly according to an individual teacher's needs at a particular point in time. This aligns with the NL underpinning that human connections are more valuable than resource ones (Carvalho & Goodyear, 2014; Goodyear et al., 2004), since NL centres on the social aspects of learning (Romero-Hall, 2021) that cannot be replicated by a lone individual and also represents some teachers' potential to extend beyond their immediate collegial connections and towards external communities. This use of NL to receive general advice, rather than specific tangible resources, from other teachers is less likely to result in the ownership predicament described by Lee et al. (2021), as teachers benefit from social interaction as opposed to sources.

One of the online platform types that current literature highlights as being increasingly used by HE professionals to connect to each other is social media (Acuyo, 2022; Rowell, 2019). Aside from the obvious physical and temporal hurdles that social media helps to clear (Anders, 2018), as teachers use it to collaborate with like-minded individuals who may be geographically distant at asynchronously convenient times, there are less immediately apparent ways in which social media can facilitate teachers' flexible access to others. This refers to the tailor-made fashion in which these platforms can be used to nimbly 'follow' and 'unfollow' individuals according to a teacher's evolving professional needs (Acuyo, 2022). This is in line with the accounts of some of this study's interviewees, who expressed their perceived value of seeing how professionals external to their own institution are coping with challenges, such as ERT, but also in re-connecting with ex-colleagues from

previous workplaces or educational institutions. It seems that popular social media platforms such as Twitter (Rowell, 2019) or LinkedIn can facilitate the social activity that is crucial to NL (Romero-Hall, 2021).

Despite the ubiquity of online platforms that facilitate flexible access to others, some researchers again raise the issue of varying levels of participation. In reference back to the previous section, the potential issues of digital divide (Romero-Hall, 2021) and of unequal reciprocity (Schuwer & Janssen, 2018) are not only limited to the flexible connection between educators and online resources, but can also impact teacher-to-teacher collaboration. Going beyond the connectivity and hardware requirements of fluid online collaboration, Hu et al., (2011) describe the functional barriers to online cooperation in terms of the training required to ensure that teachers possess a sufficient level of digital competence to navigate online platforms confidently. One can therefore argue that the lively interchanges described by some of this investigation's interviewees, would not be possible without an abundance of teachers who possess the required willingness to actively contribute ideas (Schuwer & Janssen, 2018) alongside the physical technology and digital know-how to express these to like-minded professionals.

5.2.2 Disorderly Group Communication

As teachers develop their NL confidence and begin to shift away from the risk-averse mindset encapsulated in the previous overarching theme, a challenge that is perceived as significant is the notion of part-taking in larger-scale online interactions as teachers engage with a higher number of potentially more distant connections. This can include all-staff

meetings, conference panel discussions and other online events that typically involve more than a handful of attendees. Teachers often feel that these densely populated virtual meetings offer minimal opportunity for active contribution, result in interruptions along with other turn-taking improprieties and are thus generally challenging environments to manage. This is reportedly caused by the sense of tunnel-vision that is characteristic of a large online meeting, as attendees can only view a limited number of colleagues on the screen at any given time. The challenge is also catalysed by inadequate technological infrastructure, such as slow bandwidth or a dated device, as well as by a uneven levels of digital competence whereby some teachers still struggle with functions such as microphone (un)muting or virtual gestures like the 'hand-raise.'

Many authors agree that managing large groups of attendees has been more of a challenge online than in face-to-face settings. More specifically, there is a consensus that teachers feel partly blind when operating in large virtual meetings, as there is limited feedback from others (Kidd & Murray, 2020). A teacher accustomed to the sympathetic smile or approving hum from attendees at physical events is now forced to wince at the screen in an attempt to determine their audience's reception of what they are delivering. This semi-tunnel vision in turn makes it challenging to find opportune moments to invite people to speak, which can make others feel minimally engaged, or pin-pointing the moment in which a contributing member of the group has finished speaking, which can cause awkward interruptions. While some of these factors are technology-related (El Said, 2021), as limited bandwidth can increase lag for instance, the difficulties associated with virtual large-group events are also connected to lack of faculty preparedness for the differences between online and face-to-face environments. This is unsurprising given that some teachers had rarely collaborated

with others virtually until the Covid19 ERT scenario forced them to do so. In the same way that the 'pedagogic agility' (Kidd, 2020) that enables educators to effortlessly make on-the-spot decisions according to what they are faced with has taken time to develop in face-to-face settings, many teachers are now struggling with the challenge of acquiring this ability in an online setting.

Another point worthy of mention is that, despite the overall absence of the concept of asynchronous large-scale teacher-to-teacher collaboration via online forums from the interviews, this practice is strongly represented in current literature. Authors generally agree that mass asynchronous online discussions are ever-present across HE (Fehrman & Watson, 2020) and that they offer significant advantages to participating teachers, such as the exposure to multiple viewpoints and the creation of a sense of community membership (Decker & Beltran, 2016). These factors are in line with commonly accepted NL principles of dialogue and social learning (Romero-Hall, 2021). Despite this prominence and advantage of online forum interaction in current literature, it can be inferred that the urgent and stressful nature of the Covid-induced ERT period has resulted in a scenario where teachers generally favour the support offered by instantaneous communication channels. Instead of waiting for an online forum reply that could take hours if not days, teachers have generally preferred synchronous support in dealing with the challenges of online teaching, as well as the increased personalisation of speaking to a collegial connection in real-time. This means that teachers could expect a gradual return towards the ubiquity of virtual forum interaction (Fehrman & Watson, 2020) as the status quo of HE shifts away from ERT and once again returns to the more gradual penetration of technology into the practice (Cutajar, 2018).

Researchers recommend a multi-pronged approach to tackling the issue of disorderly group communication in larger-scale online interactions. Aside from further technological training, teachers would benefit from planning their lessons or PD workshops in a way that takes interactivity into greater consideration (El Said, 2021). This means that lesson plans should include not only sections for 'objectives' or 'material used,' but also detail the type of pre-empted interaction that the teacher expects of their students at each stage of the lesson. Likewise, rather than merely including content-based points in their preparatory notes for an upcoming panel discussion, a teacher might also include a reference to which parts of the discussion engage directly with the audience versus debate that is expected to remain between panel members. An example of an increasingly popular strategy used to combat the challenges of large-group events is for participants to be sub-divided into smaller groups to facilitate interaction (Kidd & Murray, 2020), such as the 'breakout room' feature on Zoom. This is something that can and should be planned for.

5.2.3 Reduced Opportunities for Spontaneous Communication

This challenge is perceived as being closer to the more complex end of the spectrum and refers to the overall reduced spontaneity of interchanges between individuals within personal networks that can be particularly prevalent as teachers expand their networks. Teachers perceive online connections to others during ERT as having to be planned significantly ahead of time, which in turn reduces the opportunity for the natural day-to-day encounters that are typically associated with face-to-face workspaces. Educators therefore draw a contrast between the artificiality of scheduling an online Zoom meeting using an

online calendar, with the comparatively unpremeditated experience of bumping into a colleague by the water dispenser and the unforced exchange that often follows. Teachers note that this reduction of informal interactions most negatively impacts their relationships with more distant colleagues or work acquaintances, as relationships with very close contacts appear to remain less affected by this phenomenon. Despite strong ties being perceived as more valuable than weak ones in NL (Jones et al., 2008), the reduction in the latter type of connections is still likely to have a long-term negative effect on a teacher´s network.

This reduction in unplanned interactions within online meetings can be linked back to the partial blinker effect described in the previous section, whereby educators do not have the same 'feel' for the virtual room that they would have in a physical setting. This disconnection from others in an online space (Kidd & Murray, 2020) makes it more challenging for teachers to gauge the appropriate time to spontaneously insert a joke for instance, or when to lighten the content of their speech as they perceive fatigue among the listeners for instance. In other words, the opaque conditions of a typical Zoom or Microsoft Teams meeting results in a restrictive setting whereby the teacher is more likely to stick to the script and thus reframe from unplanned interactions as a result of their relative lack of confidence in this virtual space. Teachers are less likely to tap into their 'pedagogic agility' (Kidd, 2020) by making in-the-moment decisions whilst collaborating with others in this nebulous online space.

5.2.4 Exchanging Teaching Strategies with the Wider Teaching Community

Once teachers feel satisfied that their core work responsibilities are being met, they are likely to branch their network use out towards focussing on more PD-oriented goals by entering dialogue with a greater number of more distant connections. This entails taking advantage of the geographical and temporal hurdles that virtual communication can overcome, as educators collaborate with physically distant professionals over approaches to teaching. This could be done via online conferences, webinars and even through cohort interaction by teachers committed to the completion of a distance course. The online nature of ERT has meant that teachers have benefitted not only from access to a larger pool of connections that would otherwise have been logistically challenging to connect with face-to-face, but the flexible nature of virtual work has also created an opportunity for well-organised teachers to fit a greater number of these PD events into their online work schedule.

Scholars argue that, despite the potential for online PD to meet HE teachers' professional developmental needs, this area is still under-researched and consequently under-implemented across institutions in comparison with face-to-face PD (Wynants & Dennis, 2018). In addition, some authors distinguish between PD, that they see as one-off events or courses (Oddone et al., 2019), versus professional learning, which is viewed as the incremental development associated with a teacher's day-to-day practice within their learning community (MacPhail et al., 2019). While NL certainly lends itself more to the social learning elements (Romero-Hall, 2021) implied by the latter, there is undeniably overlap between the two. A teacher can, for instance, develop a teaching strategy through day-to-

day collegial collaboration within their institution and then share this insight with far-away professionals at an online conference.

While there is evidence to suggest that many teachers prefer the exchange of teaching ideas through informal interactions with others (Wynants & Dennis, 2018), such as a casual WhatsApp message or via another form of social media, there appears to be an issue connected with the lack of formal recognition of these interchanges. That is, some teachers worry that their collaboration with network connections via informal channels, such as social media, is unlikely to be validated by their institutions as a professional activity (Acuyo, 2022). It is therefore understandable that many educators still favour formal PD events (Oddone et al., 2019), such as webinars or certificated online courses, as the arenas in which teaching strategies can be exchanged with the wider professional community. It is after all comparatively easier for a teacher to show their supervisor an attendance certificate as proof of their 'engagement' in PD, than it is for them to un-pack the nuances of their casual collaboration within their personal network connections (Casey, 2016).

5.2.5 Access and Rely on Online PD Courses as Resources

Remaining at a relatively simplistic level, a natural progression from the reliance on the in-house material category described in the previous overarching theme is a dependence on external sources that teachers obtain from attending online PD events, such as panel discussions or webinars. While this broadens educators' networks to the range of online resources that exist outside their own universities, this perceived network use is still comparatively basic, in the sense that teachers are not required to actively participate in

these PD events as a prerequisite to obtaining resources. This can be seen as akin to 'poaching' online material, as teachers use these PD events as external resource banks that they can withdraw from without having to pay this back with any of their own material or expertise. Translated into practice, a teacher could attend a webinar with their camera and microphone off and still come away with new online resources that have been donated in good faith by others. It does however represent a step away from reliance on proximal connections and towards engagement with a greater number of potentially more distant ones.

Contemporary research shows that teachers often seek to recycle online resources that have been found and shared by other professionals (Gislev et al., 2020; Kearney et al., 2018) in a bid to make efficient use of their working time. Rather than laboriously attempting to search for and locate every single additional online resource themselves, teachers cope with the increased workload associated with online teaching (Lee et al., 2021) by collecting material that has been found by other members of their community. By attending large-scale PD events, such as online reading groups or panel discussions (Oddone et al., 2019), teachers are exposed to such a high number of resources that they are able to flexibly cherry-pick the ones that best complement the developmental stage in which they find themselves at that specific time.

Despite the above, scholars highlight the obvious limitations associated with this basic use of a teacher´s networks to connect to online resources. As previously mentioned, the passive practice of attending meetings without active participation (Speily et al., 2020) can cause tension among some members of the community, who take issue with not everyone

benefitting proportionally according to what they invest into the community. This practice of 'lurking' (Speily et al., 2020) is not necessarily malicious, as it could be that the educator feels vulnerable in front of so many connections (O'Keeffe, 2018) or is simply more introverted than others. Less confident teachers may even encounter authorship worries over the resources that are shared with them, given the fact that this material is originally not their own (Lee et al., 2021). This scenario whereby connections are reluctant both to share and accept resources is undeniably incompatible with the social interaction that underpins NL (Romero-Hall, 2021).

5.3 Variation in Integration Within Communities

For teachers who have established a sense of identity and rapport with a range of communities, the third overarching theme joins together description categories that relate to their perceptions and perceived use of networks as a form of cementing a sense of a longer-term bridge to network connections that goes beyond the initial 'visitor' role. Depending on the degree of variation in which teachers perceive networks to be beneficial, challenging and used, they may experience a sense of belonging to these communities that can facilitate certain types of more meaningful interactions. This subsection commences with insight into close-knit small-scale interactions and then proceeds onto the feeling of membership itself that some teachers associate with their network communities. A sense of disconnect from connections is subsequently presented as a risk for teachers who do not achieve community integration, which is counterbalanced with the reward of being able to use these groups as a channel through which teachers can share topics of a more personal nature. Lastly, the potential to exercise reciprocity in sharing online resources with

established communities and the consequent benefits establishing a bespoke collection of these tools is explored.

5.3.1 Personalised One-to-One Interactions

Moving closer towards the sophisticated end of the perceived benefits spectrum for community integrated teachers, they view networks as particularly advantageous in small-group and one-to-one settings. This is because online communication can be used to create a sense of intimacy between collaborators, away from the physical distractions of a typical shared office scenario. Whether the interaction is between a teacher and their colleagues or between themselves and their students, the convenience of a typical Zoom or Microsoft Teams meeting often results in an interchange between parties that is not only more personalised, but also longer in duration. That is to say, the focussed environment along with the heightened sense of comfort that is typically associated with online meetings, given the removal of travel requirements or the formalities of office attire for instance, are likely to produce lengthier and more meaningful interactions and thus promote the person-to-person connections that are such a valuable part of NL (Carvalho & Goodyear, 2014). This setting is more typical for teachers who have established a degree of membership to their network groups.

Scholars point towards the relative levels of safety and comfort attributed to small-scale online engagement, versus the risks that many professionals associate with the interaction between community members on a larger scale (Acuyo, 2022). Online social hazards, such as the feeling of embarrassment experienced by a teacher who has asked a question that

nobody responds to or even the experience of being publicly rebuked by another teacher who holds an opposing view (Ranieri, 2019), are significantly magnified in large-scale virtual arenas like online forums or social media. This sense of exposure and vulnerability that some educators attribute to large-scale online participation (O'Keeffe, 2018) results in a yearning for a more private setting, in which teachers can interact in what they feel is a safer and thus more intimate online space. Therefore, instead of using their personal networks to connect to multiple individuals simultaneously, teachers often favour quality over quantity when it comes to virtual cooperation.

Despite the availability of literature supporting the notion that networks can be used to reap the benefits of personalised small-scale collaboration, other researchers raise the question of HE teachers' competence in this arena. Aside from the basic technological competence requirements that have long been associated with facilitating a smooth online interchange (Falloon, 2020; Toquero, 2020), scholars question whether all teachers possess the more advanced online communication skills that are required to create a personalised online interaction. This refers to the holistic management of the blend of synchronous and asynchronous communication with others (Nguyen, 2017; Vlachopoulos & Makri, 2019) that is associated with longer-term online communication. For example, an online Microsoft Teams meeting is likely to be preceded or followed up by an email or WhatsApp message. This means that the competence to navigate the mechanics of ICT alone is not enough to sustain intimate small-scale interactions, as teachers will need to develop their competence in a wide range of strategies required for effective online communication that include timely responses and continuous peer encouragement (Vlachopoulos & Makri, 2019).

5.3.2 Belonging to Academic Communities

For teachers who have achieved a certain level of frequency and intimacy with their network communities, the most advanced perceived benefit is this innate sense of membership in itself. Whereas the aforementioned advantages in previous description categories refer to short-term personalised interactions as a teacher downloads a source that is befitting for a lesson that they are about to teach or engages in a Zoom debate with a colleague to discuss the upcoming assessment period, the sense of belonging at the centre of this final category centres on the long-term combination of these interactions. This means that educators attach a sense of identity and presence to their online groups that is born out of a history of collaboration with its members and resources. Their individual social identity is linked to their sense of belonging to various communities (Dohn, 2016). Rather than limiting themselves to interchanges with a handful of professionals or a modest collection of resources, teachers perceive overall attachment to these communities as the ultimate benefit of NL. While both types of connections are valuable in achieving this belonging, relationships with other members play a more integral role than connections to mere resources (Carvalho & Goodyear, 2014).

The rewards associated with a sense of solidified membership to online communities, in contrast with a weaker sense of simply playing a 'visitor' role to online communities (Cutajar, 2018), are clear from the current literature. Peacock and Cowan (2019) for instance, highlight engagement, achievement and even attribute an increased sense of self-confidence to teachers who have attained a strong sense of belonging to their online

communities. Translated into a real-life example, the benefits of this feeling of a shared cause with other community members (McMillan, 1996; Rovai, 2002) means that a professional with strong ties to their community is more likely to attend meetings regularly (Kotera et al., 2020), achieve their PD goals based on what they learn from the group (Lee & Brett, 2015) and feel more self-assured in their professional role with the weight of their supporting peers behind them.

Current literature also points towards the uphill climb required to achieve this sense of community attachment. Rowell (2019) describes a range of activities that can be used to build a sense of shared identity, such as writing communal blogs and even meeting offline several times a year. However, these shared acts require significant time and possibly even financial investment on behalf of individuals, which would undoubtedly only be undertaken by teachers who felt significant buy-in to a particular online group. In addition to this high level of commitment required for network embedment, some teachers may consciously choose not to pursue it. As detailed in a previous category, engaging with multiple members of an online community en-masse, say by sharing an opinion via a Twitter 'tweet' or an Instagram 'post,' exposes teachers to the social risks associated with whole-community interaction (O'Keeffe, 2018; Ranieri, 2019) that include public judgement and even scolding.

5.3.3 Sense of Isolation

For teachers who are unwilling or unable to progress towards a sense of integration within their network communities, the hurdle that they perceive to be most significant is the overall sense of seclusion that has been experienced during the ERT period. Rather than

placing blame on one factor, teachers describe a range of components that combine to magnify this loneliness. These elements are often connected, such as the lack of social cues that can be used in online interchanges caused by poor connectivity that cannot support the screen definition required to recognize subtle nods or gestures for instance. This may also be connected to a teacher's technological competence, as they lack awareness of the use of digital back-channelling features, such as a virtual 'thumbs up' emoji or the use of the chat-feature. One of the more notable contributors to this sense of disconnect experienced by teachers is the overall lower frequency and duration of online group exchanges, as educators struggle with the novel challenges of 'Zoom fatigue' for example, or endure the physical pressure associated with being sat in front of a computer for extended periods. The one-to-one tutorials that teachers experienced with their students seem to be an anomaly in this regard.

Current research accepts that, as online learning accelerates its permeation into HE, it is becoming ever more important to explore the currently under-researched areas of community and connectedness within this increasingly digitized environment (Trespalacios et al., 2021). This is because a failure to grasp the subtleties involved in creating a sense of community connection can lead to teachers feeling isolated. Among the various, and often woolly, definitions of community belonging, there is general agreement that members should feel a sense of contributing value to one another and share similar goals and expectations (McMillan, 1996; Rovai, 2002). There is also agreement that regularly checking-in with network connections, no matter how brief the interaction, can be an effective countermeasure to the sensation of online isolation (Kotera et al., 2020).

A novice teacher with relatively little to contribute to their community is therefore more likely to feel isolated from their connections than a more experienced and confident colleague with plenty to share. This uneven reciprocity (Dirckinck-Holmfeld et al., 2011), whereby a less experienced teacher evidently takes more from their networks than they put back into them through active participation may raise eyebrows among community members who perceive this as unjust. Even if these feelings of inequity are not actually voiced by community members, the individual's own realisation that they are not pulling their weight within their network can be enough to evoke feelings of alienation from others. A sense of imposter syndrome (Jaremka et al., 2020) is likely to develop, whereby the teacher doubts their own professional self-worth. These emotions are magnified for teachers who dip into multiple vast networks in a manner that is akin to networked individualism (Jones, 2012), rather than confining themselves to the fewer and more intimate communities typical of CoPs (Hofer et al., 2021). It is harder to actively participate in and align one's goals and expectations (McMillan, 1996; Rovai, 2002) with the former type of looser network use than with the latter. A final catalyst to this sense of isolation is a teacher's reluctance not only to share material with others, but also to accept sources that others share with them due to a sense of lack of ownership over these tools (Lee et al. 2021). This reduced frequency in exchange between a teacher and community members is only likely to widen the social distance between them.

5.3.4 Sharing Emotions and Feelings with Others

After using their networks to support their day-to-day work activities, as well as their PD objectives, NL's most sophisticated perceived use is as a counter to the sense of isolation

that is attributed to working from home. Through gradual integration within their network communities and by using their personal networks for more social and recreational purposes, teachers attain a sense of respite from the common gripes of ERT, such as screen fatigue or a sense of disconnection from others. Teachers typically favour closer connections with whom to interact with regarding topics of a more personal nature. Whether this consists of letting off work-related steam or simply discussing hobbies that have little relation to their job, teachers often feel comfortable doing this with stronger ties (Jones et al., 2008) represented by close friends, as opposed to more distant colleagues. A sense of belonging to communities is thus a key pre-requisite to the sharing of personal feelings in this regard.

Much of the literature concurs that the digitization of HE inevitably leads to fatigue, along with other negative sentiments such as stress and loneliness, and that this has been magnified by the recent Covid pandemic (Leal Filho et al., 2021; Van Der Feltz-Cornelis et al., 2020). A common complaint from teachers is that this increasingly accelerated permeation of technology leads to longer working days (Lee et al., 2021), as they try to compensate for gaps in not only in their own digital competence (Toquero, 2020) but also for their students' technological shortcomings by putting in extra hours. Another frequent grievance is that teachers feel ever more disconnected from their colleagues (Leal Filho et al., 2021), as they attempt to acclimatize to the diminished social cues involved in online interaction. The culmination of these day-to-day stresses associated with online teaching makes the availability of a reliable channel for venting feelings and emotions increasingly more important.

A prominent example of how the sharing of sentiments with one's network connections can be a lifeline for teachers struggling to cope in virtual environments is the previously mentioned 'morning huddles' routine, whereby a small group of teachers would meet every morning to listen to each other's problems (Kotera et al., 2020). This exemplifies HE teachers' tapping into their personal network connections as a coping mechanism to help deal with the day-to-day tensions of online teaching. Despite knowing that colleagues are unlikely to have quick fixes to their problems, often the visceral feeling of connectedness (Oddone et al., 2019) to their workmates that these regular check-ins create are enough to lighten teachers' professional burdens. This suggests that brief, but regular, collegial welfare meet-ups that offer an opportunity to share emotions is perceived as an important use of personal networks.

5.3.5 Find and Share Resources via Online PD Courses

The natural progression from the passive dependence on online PD events for resources that was described in the previous overarching theme as a teacher's confidence grows, is for them to morph into active contributors within these gatherings. For teachers who have established a sense of long-term attachment to their network connections, this involves them attending PD events and using the newfound confidence from their sense of membership to actively participate in these meetings. This means that teachers are not solely retrieving online resources shared by other members, but they are in-turn donating their own material for the network´s communal benefit. Teachers engaged in longer-term and more frequent PD contact with stable membership groups are more likely to perceive their use of networks to this effect. An educator that is committed to a part-time

qualification that involves weekly virtual meetups with their established cohort group for instance, is more likely to trust their network connections and thus share resources than a teacher who engages in sporadic one-off events such as webinars with little buy-in.

Current literature highlights the previously mentioned notion of reciprocity among networked HE teachers and how important this can be for longer-term collegial collaboration (Schuwer & Janssen, 2018). Aside from simply exchanging views and offering advice on various professional issues, the exchange of resources is something that can be deemed particularly valuable to educators (Gislev et al., 2020; Kearney et al., 2018), as this offers them a specific artefact born out of this network collaboration. Teachers are more likely to share their most prized resources with connections that they deem to have stronger ties to (Jones et al., 2008), than they would with a barely known acquaintance. They are more likely to see this as an investment into future reciprocity with a close connection and hope that the same person would eventually return the favour. These teachers are in turn more likely to overlook ownership doubts (Lee et al., 2021) and thus accept resources from others in a community that they themselves have actively contributed to.

While advocating the value of NL, it is prudent to remember that many teachers will take time to shift away from more traditional forms of PD events (Oddone et al., 2019), such as online presentations, because they are more widely recognized and easier to record. This means that the connections to online resources can be particularly prized among these teachers, as it offers them something measurable and specific to walk away with after engaging in these PD events. This shows that, despite connections to other people generally

being perceived as more valuable than to online resources (Goodyear et al., 2004), the latter type of connection can still be crucial for teachers seeking tangible artefacts from network collaboration.

5.3.6 Establish a Personal Favoured Online Resource(s)

The most advance stage of a teacher's perceived use of networks to connect to online resources once they have exploited their connections to institutional material and to virtual PD-events, is to solidify a collection of tailored resources that they are likely to use in the near future. This requires a level of trust and collaboration with their contacts that is often only achieved by teachers who have developed strong links to their personal networks. These digital tools are likely to differ from one teacher to the next, as the objective is to find something that is tailored to the individual. For instance, a teacher looking for innovative ways to test their students might look for a quiz-making tool such as 'Quizlet,' whereas a teacher who recognizes their struggle with organisation could seek a note-taking aid like 'Google Keep' instead. These online aids fall into two broad categories: classroom support and general PD. An example of the former would be a teacher looking for a classroom add-on like the popular game-based quiz platform 'Kahoot' to help their students, whereas the latter could entail a pedagogical advisory website such as the 'Edutopia' foundation.

Researchers argue that access to ample educational resources has been an important element in being able to cope with the covid19 ERT period (Almazova et al., 2020). This implies the perception that having a wide personal arsenal of online resources at an

educator´s disposal is perceivably more useful than a single favoured tool. This could explain the consensus that teachers are often keen to share and archive online resources that are shared by others (Gislev et al., 2020) and that this only works if there is a certain level of active membership among educators whereby reciprocity (Schuwer & Jansenn 2018) is the norm as opposed to the exception within these networks. This desire for a personalised bank of multiple online resources (Almazova et al., 2020), rather than relying on a single tool, could be explained by the overall sense of stress and shock that many teachers faced at the start of the ERT period (Van Der Feltz-Cornelis et al., 2020). A significant bank of online material could therefore act as a coping mechanism for educators dealing with HE's shift towards digitization.

Once again, the literature seems to support the notion that, while connections to online resources are certainly of some perceived value to many teachers, this value is often magnified through the connection to other individuals. That is, connections to people are generally more useful than links to online resources (Goodyear et al., 2004; Acuyo & Lee, 2022), as the former often leads to a scenario in which networked learners come away with more of the latter. A teacher is more likely to find useful resources that they can store for future use via tried and tested collegial recommendations than they are by connecting directly and solely to OERs (Rahayu & Sapriati, 2018; Tuomi, 2013). Potential ownership misgivings over the acceptance of sources from others (Lee et al., 2021) can be minimized in a participative coterie of teachers with an established culture of resource-sharing.

While the use of OER certainly has advantages, such as its value for money in comparison to the purchase of physical resources and a growing acceptance of the practice across

institutions (Hilton, 2020), OER still lacks the dialogue and personalisation that is associated with NL. While accessing online resources independently offers a vast amount of potentially high-quality resources (Baas et al., 2019; Hilton, 2020) along with greater independent flexibility than having to rely on others, it completely overlooks the connection to other professionals (Goodyear et al., 2004) that makes NL so valuable to many. A teacher is therefore more likely to develop a personalised collection of tailor-made sources from personal recommendations made by like-minded network connections, than by independently searching for these sources without input from community members.

5.4 Discussion Summary

A condensed reflection of the above can be subdivided into two interconnected parts: teachers' overall perceptions of NL (RQ1 and RQ2) and their perceived uses within the ERT period (RQ3 and RQ4). From this, two key take-aways can be observed: the precedence of people connections over resource ones and a parallel prioritization of stronger connections over weaker ones.

The perceived benefits of personal networks are centred on the long-term two-way cooperation between teachers and the development of relationships that this produces. More specifically, the top three perceived advantages of NL are all related to person-to-person connections, whether it involves asking a peer a quick question at the most basic level or the long-term accomplishment of attaining a sense of belonging to the community at the higher end of the reward scale. This contrasts with the single and perceivably most basic NL benefit as the only one related to person-to-online-resource connections (Figure

5.1). This heightened sense of value that teachers attach to sustained collegial collaboration is strongly aligned with their actual uses of networks in the sense that they all involve social interaction of some kind, whether this involves a mere cross-check of one´s own understanding of information against what others have understood or reaches the heights of exchanging more personal and intimate feelings (Figure 5.3). It is also worth underlining that the higher-order network uses to connect to online resources all require some form of person-to-person cooperation as a prerequisite to obtaining the material. The exchange of resources via online PD courses and the collection of a personal arsenal of favoured tools both require users to participate much more actively with their network connections than the lower-order network uses of relying on in-house and external material repositories (Figure 5.4).

The perceived hurdles of network use can be separated into the relatively easier to overcome barriers that centre on possessing the adequate tools and training to access connections, versus the relatively more imposing obstacles of managing online group interaction and the sense of isolation born out of the irregularity of social contact that is typical of an online space (Figure 5.2). While this may not be as neatly aligned with the uses of networks as the perceived benefits in the previous paragraph, there are notable inferences that can be made. On the one hand, lower-order network uses, such as a quick information cross-check with a workmate (Figure 5.3) or the extraction of an online resource from an institutional material bank (Figure 5.4) only require teachers to possess the basic tools and training needed to operate in a virtual space. The more sophisticated uses on the other hand, such as the interchange of personal emotions (Figure 5.3) or the proactive sharing of resources at online group events (Figure 5.4) are only feasible once all

the perceived challenges have been addressed. A teacher cannot expect to attain a deeper connection to a peer that is sustained via continual two-way interaction if they feel isolated from the group on account of irregular contact with other members.

Chapter 6 Conclusions

This concluding chapter begins with a summary that answers each RQ individually. The four RQs are then reflected on from a more collective stance, in order to provide a well-rounded overview of the contributions to research that they make, before using these contributions to outline evidence-based suggestions as to the direction of future investigations that relate to NL within an ERT context. Subsequently, the chapter is concluded with the exploration of the limitations associated with this research and how these can be used to steer future research.

6.1 RQ Summaries

Beginning with teachers' perceptions of networks, the first RQ asks 'What are the qualitatively different ways in which HE teachers perceive that their use of networks has been *beneficial* for the purposes of learning and teaching during the recent ERT period?'

The investigation has revealed that, above all, teachers value the long-term sense of integration into various professional communities that the use of personal networks can facilitate. Instead of limiting themselves to online resources, educators prefer to extend their use of ICT to form long-term online bridges to like-minded professionals. To achieve this in its most perceivably beneficial form, these connections to others ideally take place flexibly across a range of different online communities enabling teachers to dip in and out of each one pliably according to their specific temporary needs. Rather than engaging with members of these communities through single large-scale events, teachers perceive that

multiple smaller-scale and consequently more personal interactions are key to unlocking the ultimate benefit of solidified membership to some of these online groups.

The second RQ asks 'What are the qualitatively different ways in which HE teachers perceive that their use of networks has been *challenging* for the purposes of learning and teaching during the recent ERT period?'

It can be concluded that a sense of seclusion from others is perceivably the most challenging aspect of network use for teachers. This segregation is caused by a culmination of factors that start with inadequate access to the technological infrastructure required for networked interaction to flow. This tool-availability challenge is then compounded by the lack of uniform competence in the use of this technology that is often seen across teachers, particularly in larger institutions. Combined, these factors make online group communication challenging at a larger scale in synchronous form, as teachers have neither the tools nor the know-how to manage these single mass interactions. A final, though less inter-connected, contribution to this culmination of challenges is the reduced spontaneity that is characteristic of online network use. The rigidness of needing to plan engagements in advance, along with the other described factors, ultimately results in a scenario whereby teachers feel disconnected from others as they struggle to tap into their network connections with fluidity.

Shifting towards teachers' perceived networked behaviours, the third RQ seeks to identify 'What are the qualitatively different ways in which HE teachers perceive their use of

network connections to other *people* for the purposes of learning and teaching during the recent ERT period?'

The research concludes that two-way exchanges of a personal nature between a teacher and a smaller group of connections to whom they have strong ties is perceived to be the main use of personal networks. Before this state of intimate dialogue is achieved however, teachers are more likely to exchange views on strictly work-related topics with others or simply use these connections to ensure that they are well-informed on current events in the workplace. These latter network uses do not require the higher levels of trust and hence strength of connection ties necessary for emotion-sharing purposes. This means that a teacher's use of their personal networks in relation to people connections is likely to be highly contingent on the level of trust and closeness that they attribute to these community members.

The fourth and final RQ inquires 'What are the qualitatively different ways in which HE teachers perceive their use of network connections to online *resources* for the purposes of learning and teaching during the recent ERT period?'

The investigation has unveiled that teachers use their personal webs to negotiate and update their own personal repertoire of favoured online resources. The complexities associated with this subjective task requires teachers to proactively engage in regular dialogue with other community members via online PD events. However, teachers are more likely to work their way to up this level of interaction by first gaining confidence through more passive involvement with their network connections. Rather than starting out as fully

contributing members from the outset, teachers will likely start by using PD events, perhaps even at a local in-house level for the least confident individuals, as depositories from which they can obtain material without necessarily returning the favour via their own contributions. This means that a teacher's use of personal networks in connection to personal resources heavily depends on the level of autonomy and reciprocity that they are willing and able to exercise.

Reflecting on the RQs combined, it becomes apparent that teachers' perceptions and uses of networks can be aligned to the variation in their willingness and ability to integrate with a greater variety of different connections. While some teachers may choose or only be able to access close easy-to-reach connections, others will begin to stretch their networks to extend further by reaching out to external nodes and eventually cement ties to these communities. The variation in how they perceive and use these networks will therefore be influenced by their level of confidence and ability to attach to different communities in accordance with what is permitted by taking their local contextual factors into account.

Furthermore, it is clear that personalised connections to other people are perceived as more valuable than ties to online resources. Connections to the latter are often facilitated via connections to the former, in the form of bespoke source recommendations from a colleague for instance, however the same cannot be said in vice-versa. Online sources alone are therefore not perceived to be most useful by teachers, as people connections add a level of trust and security. Moreover, there seems to be a paradoxical tension between the sense of intimacy with others and belonging to communities that teachers seek from networked practice, versus the flexibility and access to wide-ranging connections in the

form of small-scale interaction that they also stride for. The regular contact and commitment to individual groups required to achieve a sense of belonging would no doubt place pressure on teachers to compromise on their desire for flexible small-group interaction across multiple communities as they grapple to compromise between the quality and number of their connections. That is to say, teachers will need to choose between the establishment of a sense of belonging to fewer connections, versus the possibility of engaging with a vast number of communities flexibly.

6.2 Research Contributions

This investigation has made a number of important contributions related to HE teachers' everyday practice, NL theory and institutional policy as the integration of digital technologies into HE continues (see Table 1.1 in the first chapter).

Firstly, the practical issue of the relatively low awareness of networked practices among HE teachers has been tackled by offering a qualitative insight not only into teachers' perceptions of their personal networks, but also of their actual networked behaviours. By shedding light on aspects of NL that teachers perceive to be useful, as well as challenging, in relation to people and resources, the findings of this investigation will help teachers to make the most of their networks as HE continues down its path of technologization. By avoiding the pitfalls of isolation and passive engagement with others, educators can strive to gain a long-term sense of membership to online communities that produces dialogue and tailored online resources via small group interactions of a personal nature. The insight provided by this study not only into the range of different NL perceptions and behaviours,

but also into the specific reasons that motivate each individual, offers significant phenomenological practice contributions.

Secondly, the theoretical problem regarding the minimal representation of face-to-face teachers grappling with unexpected ERT scenarios in existing NL publications has been addressed by the in-depth phenomenographic insight that this research has produced. By providing teachers who were abruptly forced online by the Covid19 pandemic with a platform through which to voice their views and behaviours related to NL, this paper has uncovered a range of their perceptions in qualitative detail. These newly discovered voices have shown that NL has and will continue to play an important, albeit informal and not always well-supported, role in HE as the trend towards digitization continues. Again, the detailed insight into the logic behind individual teachers' perceptions of NL can enable researchers to tailor future research with these existing phenomenological contributions in mind. This study can therefore be used as a building block for future investigations that seek to go further into faculty perceptions of NL and use this to help them adjust to the digitization of HE.

Lastly, the institutional concern in respect to the absence of NL from pre-existing PD planning has been targeted by showcasing the prominence of networked practice throughout the recent ERT period. By uncovering the sense of community achieved through intimate interactions with others as the most valued rewards that teachers associate with NL, this research has provided institutions with the incentive to invest and integrate NL into their long-term PD planning. Moreover, by uncovering the underpinnings associated with the ultimate pitfalls of isolation that teachers attribute to NL for instance, the investigation

has also offered universities insight as to what should be avoided when tailoring future PD. The in-depth insight of how different educators experience NL unearthed by this investigation can help universities to develop teachers support programmes that align with the perceptions of their teachers.

Reflecting on the context of the different research contributions combined, it is worth noting that the Covid19 ERT period which forms the background of this investigation may have varying degrees of relevance to the evolving post-Covid19 period, according to each institution's specific circumstances. The application of the investigation's results will surely depend on whether universities have already returned to in-person operations, as many have in the UK for instance at the time of writing, or whether they have adopted a hybrid form or even remained online, as is the case in China at the current time. While prominent themes, such as isolation for example, are certainly applicable in the case of the latter, it is important to reflect on how these changes may need to be re-interpreted in the case of the first two non-ERT scenarios. Teachers are unlikely to perceive this sense of seclusion in the same way in a face-to-face setting, as they would in an online one for instance.

A final reflection on the contributions combined is the manner in which the phenomenographically-informed research methodology has had to be adapted to work within the physical constraints imposed by the Covid19 ERT period. Notably, the way in which the interviews were conducted online and how this originally posed challenges, such as the diminished social cues and presence caused by the virtual medium. The researcher's internal position within the institution from which the data was collected and high level of familiarity with some of the participants helped to mitigate some of these challenges. On

the other hand, this also resulted in a number of unexpected opportunities, such as the ease of recording these exchanges automatically on the Zoom platform and the use of software to facilitate the initial stages of transcription. These experiences have implications on future research conducted in similar online conditions or can even be exploited in face-to-face settings, depending on how researchers balance the strengths and weaknesses for their own investigations.

6.3 Future Recommendations

In response to the above conclusions, a number of future guiding points have been established to steer teachers and institutions as they continue moving forward in the increasingly digitized future of HE.

Firstly, institutions should provide their teachers with the necessary scaffolding required to facilitate a transition from the well-established forms of PD that many teachers recognize in the form of conferences and workshops, to the lesser-known practice of NL. By accepting the notion that networked practice is a comparatively more complex undertaking than, say, attending a training seminar, universities need to pave the way for educators to make this transformation. It would therefore be unrealistic to simply expect teachers to form these complex connections on request. Instead, institutions should guide these networked interactions by showcasing examples of NL successes and failures, examples of resources that can be obtained via collegial collaboration, offering weekly discussion topics to spur dialogue, allocating dedicated time slots for collegial mingling and so on. While this may appear rigid and artificial at first, it is likely necessary in the early stages of NL

implementation, given the low levels of awareness and recognition of networked practices among many teachers. Once teachers become more familiar with PLNs, some of this scaffolding can gradually be removed to promote greater autonomy.

Secondly, universities should steadily promote diversity in teachers' personal connections to ensure enough variation within their networks and thus discourage the silo effect currently seen across some institutions. Simple steps, such as the encouragement of dialogue within small groups where members are regularly rotated, does not only serve to expose educators to a broader range of colleagues and online resources, but does so in a manner in which most of them would find comfortable by avoiding large-scale interactions. For smaller institutions with fewer available teachers or for those looking to push the boundaries of connection diversity, ICT should be exploited to promote interactions with like-minded professionals from external universities. Maintaining the scaffolded approach described above, this external contact should be promoted gradually in accordance with the evolving comfort levels of teachers. Instead of leaping from close in-house collegial contact to collaboration with a university from a different part of the world with vastly different approaches and resources, it is recommended that institutions moderate their approach to promoting connection variety by stepping from in-house to regional and finally to contact with geographically distant institutions.

Finally, universities should promote long-term community integration among their teachers, in order to achieve a balance between the benefits of the diversity of connections described above and the innate sense of belonging to an individual group that many teachers highly value. It is therefore recommended that institutions encourage record-keeping, to provide

teachers with tangible evidence of ideas and resources that they have taken from or contributed to a particular group. Likewise, teachers' networked practices should form part of regular reviews or appraisals that are conducted with management, in order to encourage teachers to reflect on their involvement within specific communities, rather than simply over-generalise their use of networks. Both these written logs and the managerial consultations are likely to encourage teachers to contemplate their engagement with online communities from a long-term perspective. This will not only promote a sense of membership to some of these groups but will also help combat the pitfalls of online seclusion that many teachers suffer from in the context of the increasing digitization of HE.

6.4 Limitations

Despite the important findings, this study has faced a range of both predictable, as well as less easy to foresee constraints. For instance, it has been little surprise that the temporal and word restrictions have limited the scope to data-collection from a single institution, albeit with a focus on findings that are representative of other universities. Similarly, while the sample size of 18 participants fits comfortably within Trigwell's (2000) recommendation for phenomenography, it is difficult to guarantee perception-variety saturation and the absence of anomalies with this relatively modest sample size. In short, the labour constraints imposed by the researcher's own time limitations with which to conduct challenging interviews that subsequently required lengthy data analysis all within the confinements of a single institution, has left room for broader larger-scale follow-up studies.

In terms of the timing of the investigation, the fact that it was conducted throughout the ERT and immediate post-ERT time periods inevitably means that the longer-term implications of networked use during this time are yet to be seen at the time of writing. Despite making evidence-based predictions of the effects that this use of networks is likely to have as the trend towards HE digitization continues; the prolongation of this study would undoubtedly have facilitated clearer answers beyond what could be seen during ERT and in the immediate term afterwards.

6.5 Future Research

The above limitations provide a springboard for future investigations to study the paper's carefully formed predictions on the longer-term impacts of network use for teachers tackling HE's shift towards technologization. This could be achieved by following-up with the future interviewing of the same faculty members that were targeted by this study. This would offer insight into the extent to which the benefits of long-term community membership are still perceived to be as strong a few years down the line for instance, or whether these teachers still perceive the feeling of physical seclusion to pose a significant challenge long after the Covid19 ERT period. Given the practical challenges of interviewing the same teachers, a more pragmatic option would be for future studies to interview new teachers, but with interview questions that specifically target the long-term impacts.

More generally, future studies with fewer temporal and word-length restrictions would facilitate a multi-institutional study that would help to guarantee the wider representation of the results. In addition to this wider scope, larger sample sizes along with the multiple

interviewing of participants would likely add weight to the existing findings and perhaps even produce greater perception variety to add to the wealth of themes that can now be attributed to NL in an ERT context and its long-term implications. The richness of the categories produced by the one-off interviewing of 18 teachers at a single institution certainly suggests that there is ample room for future studies seeking to increase the collective body of knowledge explaining how NL can help educators to cope with the increasingly overt digitization of HE.

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Appendices

Appendix 1

Participant Invitation Document Samples

1.1

Snapshot of the Information Sheet

Participant information sheet

Title: An Insight into Higher Education Teachers' Perceptions During Emergency-Remote-Teaching Through a Networked Learning Lens

For further information about how Lancaster University processes personal data for research purposes and your data rights please visit our webpage: www.lancaster.ac.uk/research/data-protection

I am a PhD student Lancaster University and I would like to invite you to take part in a research study about teachers' use of personal networking throughout the emergency remote teaching period caused by the Covid19 lockdown.

Please take time to read the following information carefully before you decide whether or not you wish to take part.

What is the study about?

This study aims to explore the qualitative differences in higher education teachers' accounts of their processes of teaching and learning in a networked learning environment, during the Covid19 emergency remote teaching period, in order to better-inform future professional development.

Why have I been invited?

1.2

Snapshot of the Consent Form

CONSENT FORM

Please adapt this consent form for your study, for example if you are not using focus groups, delete all references to focus groups from this form.

Project Title:

Name of Researcher: Alejandro Acuyo Cespedes

Email: a.acuyocespedes@lancaster.ac.uk

Please tick each box

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily	
2. I understand that my participation is voluntary and that I am free to withdraw at any time during my participation in this study and within 4 weeks after I took part in the study, without giving any reason. If I withdraw within 4 weeks of taking part in the study my data will be removed. If I am involved in focus groups and then withdraw my data will remain part of the study.	

PLEASE NOTE: Withdrawing from a focus group can be difficult and if your study involves focus groups you may want to add the following: I understand that as part the focus group I will take part in, my data is part of the ongoing conversation and cannot be destroyed. I understand that the researcher will try to disregard my views when analysing the focus group data, but I am aware that this will not always be possible.	

Appendix 2

Participant Spread Table

Participant	Gender	Age Category	Experience
P1	M	32 to 45 years	5 to 10 years
P2	M	46+ years	10+ years
P3	M	46+ years	10+ years
P4	M	46+ years	10+ years
P5	F	32 to 45 years	Less than 5 years
P6	F	Less than 32 years	Less than 5 years
P7	M	Less than 32 years	5 to 10 years
P8	F	32 to 45 years	5 to 10 years
P9	F	46+ years	10+ years
P10	F	32 to 45 years	5 to 10 years
P11	M	46+ years	10+ years
P12	F	Less than 32 years	5 to 10 years
P13	F	32 to 45 years	10+ years
P14	F	46+ years	10+ years
P15	M	46+ years	10+ years
P16	F	32 to 45 years	10+ years
P17	M	32 to 45 years	10+ years
P18	F	Less than 32 years	Less than 5 years

Appendix 3

Interview Plan

Introduction to the interview:

Thank you for agreeing to take part in this optional interview about NL during this recent Covid19 ERT period. I would like to know about your teaching and learning activities throughout this period, in terms of how you may have engaged with other people as well as with online resources. I would also like you to talk about your perceptions of these activities and whether you found them useful or not.

Could you please confirm that you have read the 'participant information sheet' and 'consent form' that I sent you and that you still consent to participate in this interview?

Thank you. Let's begin…

Questions	**Notes**
1. Overall, how has the recent ERT period been for you? Would you describe it as a positive/negative/mixed experience? Why?	1. This is an easy to answer lead-in question to put the participant at ease, but also to activate their schemata with regards to ERT and NL.
2. How did you go about learning and teaching during the ERT period? Can you provide an example as to how this has differed from the face-to-face learning and teaching that you experienced before the recent Covid lockdown?	2. This is a deliberately broad question that gives the participant freedom to discuss any aspect(s) of their learning/teaching practice during the ERT period that they deem prominent.
3. Can you tell me more about your interaction with other people during this period? Have you collaborated much with others?	3. This targets the participant's connections to other people within their networks (RQ3).
4. Can you tell me more about your use of online resources during this period? Have you used much online material?	4. This targets the participant's connections to online resources within their networks (RQ4).
5. Reflecting on your engagement with other people and with online resources throughout this ERT period, what do you perceive as having been	5. This specifically focuses on network practice(s) that the participant feels have

most useful or helpful for your learning and teaching?	helped their learning and teaching in some way (RQ1).
6. Thinking about the other side of the coin now, could you describe any challenges or obstacles that you have encountered in your engagement with other people and online resources? Anything that hasn't really helped your learning and teaching?	6. This specifically focuses on network practice(s) that the participant feels have not helped their learning and teaching in any particular way; or have perhaps even hindered it (RQ2).
7. Before we conclude the interview, is there anything else that you would like to add about what we have discussed?	7. This is a wrap-up question to ensure a smooth closing of the interview, that also acts as a final opportunity for the participant to add anything else related to the topic.

Provided the participant stays loosely on topic, the interviewer should be flexible by allowing them to lead the interview as much as possible, in accordance with phenomenograhic principles. The above questions represent the main focal points of the investigation, however these should be supplemented with follow-up questions where relevant, in order to obtain further relevant detail.

Appendix 4

Transcription Sample on Microsoft Word

4.1

Participant 1 Snapshot

10

00:01:09.660 --> 00:01:17.430

P1: And it's actually it's kind of hard, because it kind of changed so, for example, when we first started.

11

00:01:19.500 --> 00:01:21.720

P1: Moving to online.

12

00:01:23.880 --> 00:01:25.380

P1: It was hard to.

13

00:01:26.490 --> 00:01:31.320

P1: Just find a good location so first I was trying to.

14

00:01:32.340 --> 00:01:42.960

P1: I was actually doing classes in I started off in my home so so I have the you know separate bedroom, but I have a young daughter, she was.