HOW THE MULTI-LEVELS OF INDIVIDUAL LEARNING AND TEAM LEARNING INTERACT IN PUBLIC HEALTHCARE ORGANISATIONS

By

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ETHICAL DECLARATION

I declare that this thesis is wholly my own work except where I have made explicit reference to the work of others. I have read the DBA guidelines and relevant institutional regulations and hereby declare that this thesis is in line with these requirements. I have discussed, agreed, and complied with whatever confidentiality or anonymity terms of reference were deemed appropriate by those participating in the research and dealt appropriately with any other ethical matters arising.

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Louise Doyle Date

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ABSTRACT

This study seeks to increase understanding of organisational learning by researching actual learning processes in public healthcare organisations to enhance understanding of how the multi-levels of individual and team learning interact. A preliminary conceptual framework is developed, drawing upon the multi-levels of learning within organisational learning and the Crossan *et al*. (1999) 4I framework. A single interpretive case study in the public health service in Ireland is carried out, involving three rounds of semi-structured interviews with Non-Consultant Hospital Doctors (NCHDs), supported by a review of relevant professional documentation and researcher reflective log entries.

The findings suggest a greater proportion of individual and team learning occurs in informal settings where interpreting and developing understanding takes place either in dyads, small groups, or with the whole team. The willingness and confidence to share insights, intuitions and to ask questions are triggers for learning. This learning occurs in a public healthcare context where an experience hierarchy, interpersonal relationships and social dynamics form the backdrop to all learning interactions. The training received by NCHDs may vary depending on how effectively they build interpersonal relationships, take advantage of informal spontaneous learning opportunities and manage the social dynamics within their team. A revised learning framework is presented which provides greater insight into how the multi-levels of individual and team learning interact in public healthcare organisations, thereby extending organisational learning theory in the public healthcare setting. The findings have practical relevance to those interested in the effectiveness of post-graduate training and learning of NCHDs in the public healthcare system. They also have practical relevance for enhancing the effectiveness of teamwork and learning interactions, contributing to high quality safe healthcare and responsiveness to change. While the study was carried out in the public hospital system, it may also have relevance within the private hospital sector, community healthcare settings and potentially other contexts. Including other members of the multi-disciplinary team (MDT) within future studies could also help to enrich understanding of how the interaction of individual and team learning occurs within teams.

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LIST OF ABBREVIATIONS

HSE – Health Service Executive (Ireland)

MDT – Multi-disciplinary team

NCHD – Non-Consultant Hospital Doctor

SHO – Senior House Officer

SpR – Specialist Registrar

GLOSSARY OF TERMS

Collective learning – the interaction of two or more individuals leading to learning.

Community of practice – within organisational learning theory communities of practice come about within organisations when individuals often within the same profession or who share the same work or practice area learn to function together, their identities being shaped through participation in and contribution as part of the community. Individuals take on the behaviours of the community, learn its language and its stories as they develop and become practitioners (Brown and Duguid, 1991).

Health Service Executive (HSE) - The Health Service Executive was established by Ministerial order on 1 January 2005 in accordance with the provisions of the Health Act 2004, as amended by the Health Service Executive (Governance) Act, 2013 as the single body with statutory responsibility for the management and delivery of health and personal social services to the population of Ireland. It replaced 10 regional Health Boards, the Eastern Regional Health Authority and a number of other different agencies and organisations in the Republic of Ireland. The HSE is a large organisation employing over 100,000 people delivering public health services to the population of Ireland. In 2017 its annual budget is over €14 billion.

Knowledge – In the context of this research, knowledge is defined as something which has been learned.

Learning - as a social process that occurs between individuals leading to shared understanding.

Non-Consultant Hospital Doctor (NCHD) - refers to persons employed in the public health service in Ireland as Interns, Senior House Officers, Registrars, Senior Registrars, Specialist Registrars or otherwise for the purpose of providing medical or dental services and/or the pursuance of medical or dental training who for the purposes of such employment are not employed as Consultants.

Organisational learning - "the process of change in individual and shared thought and action, which is affected by and embedded in the institutions of the organisation" (Vera *et al*., 2011: 154).

Organisations – "interactively and/or discursively produced, existing over time, having a degree of continuity through artefacts, routines, stories, discursive practices, language systems, etc" (Cunliffe, 2008: 127).

Social constructionism - a theory that provides an explanation for how common forms of understanding come about. A key aspect of social constructionism is that our identities and social realities are constructed and maintained through interaction and conversation primarily with dominant others in our lives (Berger and Luckman, 1966).

Team learning - an emergent process (Kostopolous *et al*., 2013) that results in collective understanding which in turn can facilitate action.

Section 1

INTRODUCTION AND DBA RESEARCH OVERVIEW

INTRODUCTION

The aim of this research is to understand how the multi-levels of individual learning and team learning interact in public healthcare organisations. The two resultant research questions are: How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels? Based on a review of extant literature, the researcher develops a preliminary conceptual framework to explore the multi-level interaction of individual learning and team learning. An interpretivist paradigm is adopted which is in sympathy with the social constructionist theoretical underpinnings of the study. A single case study approach is put forward as a suitable method to investigate a contemporary phenomenon, such as learning in organisations, in its natural context, as it allows for the subjective and contextual experiences of the participants to be incorporated. Non-Consultant Hospital Doctors (NCHDs)[1] working in the public health system in Ireland are the research participants. Three rounds of semi-structured interviews with eleven research participants were carried out by the researcher over an eight month period from October 2015 to June 2016, supported by a review of relevant professional documentation and researcher reflective log entries.

This section begins with an overview of organisational learning research before describing the origins of the research study, setting out the research aims and objectives together with an overview of the research process and finally presenting the thesis structure.

ORGANISATIONAL LEARNING RESEARCH OVERVIEW

Organisational learning is a field of study which has given rise to a range of research perspectives. Easterby-Smith and Lyles (2011), identify the first reference to organisational learning as being by Cyert and March in 1963. Since then the research

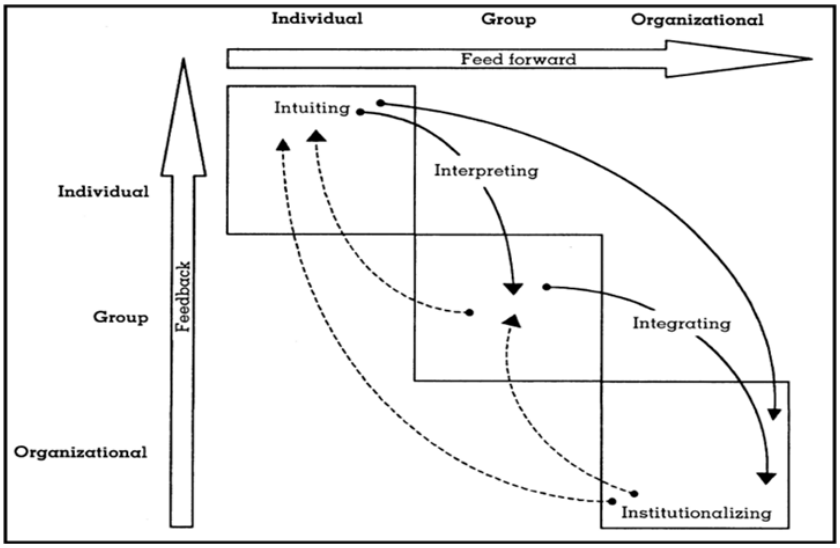
[1] Non-Consultant Hospital Doctor (NCHD) refers to persons employed in the public health service in Ireland as Interns, Senior House Officers, Registrars, Senior Registrars, Specialist Registrars or otherwise for the purpose of providing medical or dental services and/or the pursuance of medical or dental training who for the purposes of such employment are not employed as Consultants.

perspectives have included; organisational learning through adaptations (Cangelosi and Dill, 1965), organisations as interpretation systems (Daft and Weick, 1984), error detection and correction and single-loop and double-loop learning (Argyris and Schon, 1978, 1996) and Senge's (1990) learning organisation, among others. Fiol and Lyles (1985) drew a distinction between organisational adaptation and organisational learning, and the tensions between exploring new learning and exploiting existing learning were captured by March (1991). Although each aspect of organisational learning as detailed in the above trajectory warrant further investigation in their own right, these are outside the boundaries of this study.

Individual learning theory was introduced by Argyris and Schon in 1978 and has since become a dominant influence in the organisational learning field (e.g. Brandi and Elkjaer, 2011; Kim, 1993; Nonaka, 1994; Richter, 1998). Over time the use of individual learning theory to explain organisational learning was questioned (Easterby-Smith *et al*., 2000) and a number of perspectives emerged. Collective and organisational learning began to be seen as more than individual learning (Argote and Miron-Spektor, 2011; Fiol and Lyles, 1985; Swart and Harcup, 2012). This paved the way for recognising the role of the social environment in organisational learning, which had not previously been considered in individual learning theory (Richter, 1998). Lave and Wenger (1991) and Brown and Duguid (1991) were to the fore in presenting the role of social processes in learning, encapsulating the concepts within the community of practice theory. However, the links between the origins of learning in an organisational setting and its eventual embeddedness within that organisation had yet to be fully explored.

In 1999, Crossan *et al*. (1999) advanced the 4I framework which would go on to become a seminal model in the organisational learning literature, see Figure S1.1 below. The framework incorporates the individual, group and organisational levels of learning, which it is widely agreed are involved in understanding organisational learning (Easterby-Smith *et al*., 2000). These three levels of learning are linked by four psychological and social processes of intuiting, interpreting, integrating and institutionalising. Intuiting and interpreting occur at the individual level, interpreting and integrating at the group level and integrating and institutionalising at the organisational level (Crossan *et al*., 1999).

Through these processes learning both feeds forward from the individual level to the organisational level and feeds back from the organisational level to the individual level. The 4I framework has received significant attention from researchers in the organisational learning literature (cf. Berends and Lammers, 2010; Crossan and Berdrow, 2003; Di Milia and Birdi, 2010; Hilden and Tikkamaki, 2013; Kostopolous *et al*., 2013; Lawrence *et al*., 2005; Lehesvirta, 2004; Vera and Crossan, 2004; Zietsma *et al*., 2002), however, the mechanisms and processes that underpin the interaction of the individual level and the team level of learning are still not well understood (Salk and Simonin, 2011; Swan *et al*., 2010).



Source: Crossan *et al*., 1999: 532

Figure S1.1 The 4I Framework

Despite the proliferation of perspectives on organisational learning it appears that a broadly accepted theory of organisational learning has yet to emerge (Crossan *et al*., 1999, 2011; Fiol and Lyles, 1985). Some suggest this is as a result of a lack of integration amongst the work of organisational learning researchers (Huber, 1991; Shrivastava, 1983), arising from differing definitions of organisational learning, inconsistent use of terminology and ambiguity in the underlying assumptions (Crossan *et al*., 1995; Fiol and Lyles, 1985; Kim, 1993; Vera *et al*., 2011). This study seeks to shed additional light on the understanding of organisational learning, and specifically how the multi-levels of individual learning and team learning interact in public healthcare organisations.

Within this study learning is viewed as a social process that occurs between individuals leading to shared understanding. The seed from which the social process begins is cognitive and arises in the form of an intuition which prompts an individual to interact with one or more individuals to develop and share understanding of what has been intuited. The social process that ensues may involve the use of metaphor, teasing out the idea, sensemaking, conversation and discussion which leads to shared understanding and the ability to take action. The output of this process is knowledge (e.g. something that has been learned), which may be new or an enhanced understanding and is available to the individuals involved. The focus of this study is to understand more about the social process of learning and how the interaction of individual and team learning occurs in public healthcare organisations. While knowledge is the output of this learning process it is not part of the process, and as such it is outside the scope of the study.

Learning must move or flow beyond the individual to the group and organisational levels in order to be experienced as more than just individual learning. Individual learning is seen as the catalyst for team learning. Intuiting occurs first within an individual and that leads to the interpreting phase which is the social process between individuals that leads to team learning. It is possible for individual learning to occur without team learning, however, team learning cannot occur without individual learning occurring. While there are differing definitions of organisational learning, the more recent definitions recognise this multi-level nature (Mazutis and Slawinksi, 2008; Swart and Harcup, 2012; Vera *et al*., 2011). The movement or the flow of learning appears to be part of a dynamic organisational learning process (Bontis *et al*., 2002; Crossan *et al*., 1999; Kim, 1993) in which social processes play a key role. Viewing organisational learning through the lens of social constructionism (Berger and Luckmann, 1966; Cunliffe, 2008) provides a fuller explanation of the process of organisational learning.

Social constructionism is a theory that provides an explanation for how common forms of understanding come about (Berger and Luckmann, 1966). It has its roots in several fields of study in particular sociology, social philosophy and the sociology of knowledge (Cunliffe, 2008). Berger and Luckmann's (1966) work is often acknowledged as the beginning of social constructionism (Cunliffe, 2008). They propose that social order is a

human product and the existence of society is as a result of the interaction of both a subjective and an objective reality (Cunliffe, 2008). A key aspect of social constructionism is that our identities and social realities are constructed and maintained through interaction and conversation primarily with dominant others in our lives (Berger and Luckmann, 1966). Viewed through this lens, organisations are seen as "interactively and/or discursively produced, existing over time, having a degree of continuity through artefacts, routines, stories, discursive practices, language systems, etc" (Cunliffe, 2008: 127). The learners in organisations are seen as being "social beings" (Easterby-Smith *et al*., 2000: 787) who through social interaction in a specific context develop understanding and learn (Easterby-Smith *et al*., 2000). Conversation, discussion and sense-making are central to the emergence and development of insights (Richter, 1998), and the production of meaning (Cunliffe, 2008), and stories are also frequently used (Brown and Duguid, 1991). Storytelling both increases the individual's own understanding while at the same time adding to the community's collective understanding by becoming "part of the repertoire available to all" (Brown and Duguid, 1991: 44). Language is the means through which this interaction leading to shared understanding is made possible. From this perspective organisations are produced through discussion and interaction and have continuity over times through language, stories, routines and artefacts (Cunliffe, 2008). This research study views organisational learning from a social constructionist perspective and defines organisational learning as "the process of change in individual and shared thought and action, which is affected by and embedded in the institutions of the organisation" (Vera *et al*., 2011: 154). The key theories and learning perspectives to be applied in this study are summarised in Table S1.1.

Theories/ Perspectives	**Summary**	**Literary Support**
Organisational learning (OL)	A field of study that encompasses a range of research perspectives such as; adaptations, interpreting systems, error detection and correction, single-loop and double-loop learning. Sees a tension between the exploration of new learning and the exploitation of existing learning. Encompasses individual learning theory and social or collective approaches to learning through for example communities of practice. Recognises levels of learning. 4I framework is a seminal model in the field.	Argote and Mirron-Spektor, 2011; Argyris and Schon, 1978, 1996; Brandi and Elkjaer, 2011; Brown and Duguid, 1991; Cangelosi and Dill, 1965; Crossan *et al*., 1999; Daft and Weick, 1984; Easterby-Smith *et al*., 2000; Fiol and Lyles, 1985; Kim, 1993; Lave and Wenger, 1991; March, 1991;

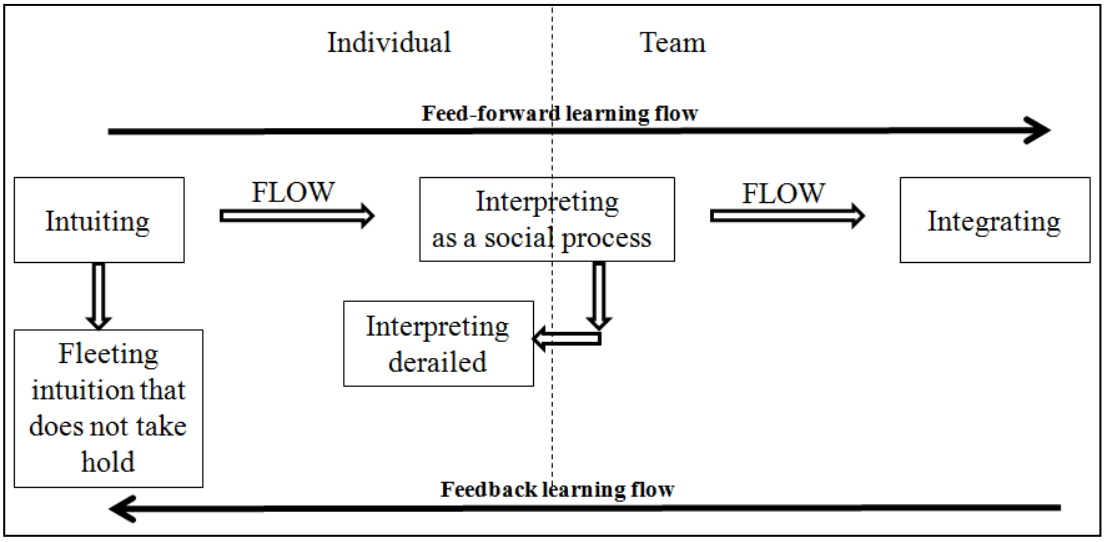
Theories/ Perspectives	Summary	Literary Support
	Broadly accepted theory yet to emerge and various definitions of organisational learning exist in the literature, more recent ones incorporate the multi-level nature of organisational learning e.g. Vera *et al*., 2011.	Mazutis and Slawinksi, 2008; Nonaka, 1994; Richter, 1998; Swart and Harcup, 2012; Vera *et al*., 2011
Individual learning (IL)	A dominant theory in the field of organisational learning. Also known as cognitive learning theory. IL theory does not consider the social environment's role in learning which led to it being questioned as an appropriate explanation for collective learning.	Argyris and Schon, 1978; Brandi and Elkjaer, 2011; Easterby-Smith *et al*., 2000; Kim, 1993; Nonaka, 1994; Richter, 1998
Social constructionism	An explanation for how common forms of understanding come about. Our identities and social realities are constructed and maintained through interaction and conversation primarily with dominant others in our lives. Organisations are seen as "interactively and/or discursively produced" (Cunliffe, 2008: 127). Learners are "social beings" (Easterby-Smith *et al*., 2000: 787). Language, conversation, discussion, sense-making and storytelling are used to produce meaning and develop understanding. Interpreting is seen as a social process.	Berger and Luckmann, 1966; Brown and Duguid, 1991; Cunliffe, 2008; Easterby-Smith *et al*., 2000; Richter, 1998
Organisational learning levels	OL theory acknowledges that individual, group (labelled 'team' in this study) and organisational levels of learning exist in an organisational setting. This perspective is linked by the psychological and social processes of intuiting, interpreting, integrating and institutionalising. Learning feeds forward and feeds back through these levels, assuming the social construction of learning.	Crossan *et al*., 1999; Easterby-Smith *et al*., 2000

Table S1.1 Organisational learning research overview summary

Having established the organisational learning research overview to date, the following section seeks to increase our understanding of organisational learning and further theory development.

ORGANISATIONAL LEARNING EVOLUTION WITHIN THE CURRENT STUDY

More research is required on actual learning processes (Easterby-Smith and Lyles, 2011; Shrivastava, 1983), how individuals interact (Holmqvist, 2004), and on how the multi-levels of learning interact (Crossan *et al*., 2011; Noe *et al*., 2014; Swan *et al*., 2010). This research aims to contribute to these research gaps by focusing on the interaction of the individual and the team levels of learning in public healthcare organisations. To this end a preliminary conceptual framework to represent how the multi-levels of individual and team learning interact is presented in Figure S1.2 below (see Section 2, Paper 1 for further details). The preliminary conceptual framework draws on both the multi-levels of learning within organisational learning and the Crossan *et al*. (1999) 4I framework.



Source: Current Research

Figure S1.2 Multi-levels of individual and team learning interact: preliminary conceptual framework

The preliminary conceptual framework positions the individual as the starting point for collective learning (Argote and Miron-Spektor, 2011; Richter, 1998), and provides a basis for exploring how the interaction of individual and team learning occurs. It seeks to illustrate learning flowing successfully, and also unsuccessfully between the individual and team level, through the first three processes of the 4I framework; intuiting, interpreting and integrating (Crossan *et al*., 1999). If learning occurs it can become individual learning and possibly go on to also form part of team learning. For learning to begin the intuition must be grasped, the proposed conceptual framework incorporates fleeting intuition in recognition that this may not always occur. Interpreting is conceived

of as a social process at the intersection of the individual and the team levels of learning. The proposed conceptual framework depicts how the process of learning moving from the individual to team learning is not always effective and it can breakdown and stop. The framework also captures that the processes of learning at individual and team levels are influenced by a feedback flow of learning from higher levels.

ORIGINS OF THE RESEARCH STUDY

This study is in partial fulfilment of the academic requirements of a Doctorate of Business Administration (DBA). When the researcher began the DBA she was working as Head of Learning and Development in a large public teaching hospital in Ireland. A central aspect of that role was the design, development and delivery of leadership and management programmes for a variety of postgraduate healthcare professionals at various stages of their careers, along with short practical professional development programmes, action learning and also team development interventions. Her experience of working in the healthcare setting with a variety of healthcare professionals led her to believe that there was scope to enhance the manner in which learning occurs in a team setting through researching how the multi-levels of individual and team learning interact in this context. This, the catalyst for this research was the assumption that if team members can develop insights and learn together through more effective team working then they will be equipped to better respond to the high levels of change occurring in their organisations (Doyle, 2014; Fleming, 2010). This research should lead to greater insight as to how the individual and team levels of learning interact thereby facilitating the movement of learning in an organisational setting. From the findings, understanding could be shared so as to enable teams to work together more effectively. Since team learning is considered a cornerstone of organisational learning (Edmondson *et al*., 2007; Roloff *et al*., 2011), the potential exists for enhancing the effectiveness of organisational learning in the public healthcare sector and perhaps other sectors also.

During the course of the DBA the researcher moved from the academic teaching hospital to a national role as a business manager in the National Doctors Training and Planning (NDTP) department of the Health Service Executive (HSE). The HSE was established in

January 2005 as the statutory body with responsibility for managing and delivering public health services to the Irish population. It employs over 100,000 people and its budget in 2017 is over €14 billion. See Appendix 1 for an overview of the HSE. NDTP supported the study given that it has the potential to develop understanding as to how to enhance the effectiveness of learning interactions in medical and other healthcare teams. This understanding could then be used to improve the learning experiences of NCHDs and other health professionals in the Irish public healthcare system. Working in NDTP meant that it would be possible for the researcher to seek volunteers from amongst Non-Consultant Hospital Doctors (NCHDs) working in public hospitals in Ireland to participate in the research, a group that it would not have been possible to access in her previous role. The researcher has since moved role again within the HSE and is now General Manager – Leadership, Education and Talent Development. In this role the researcher has the opportunity to shape national learning and development initiatives for the Irish health service.

This research study takes place against the backdrop of a health system that is complex (Brady, 2010) and has been undergoing reform and improvement over many years to shape it to meet the needs of the Irish population (Department of Health, 2012; Department of Health and Children, 2003; Health Service Executive, 2007, 2015, 2017; Malone, 2010). Due to the Irish negative economic situation from 2009 to 2011 and its subsequent economic recovery programme (Fitzgerald, 2014), the health service has undergone a reduction in resources and in funding available to it, leading to a requirement to do more with less (Health Service Executive, 2011, 2014). Between 2008 and 2013 the budget for the health service reduced by 22% or €3.3bn, and in 2014 the budget was reduced by €272m and additional savings of €619m were requested of the HSE in that year (Health Service Executive, 2014). While initially efficiencies emerged in the face of the reductions endured by the health service e.g. reductions in some waiting lists, the duration of the austerity programme (2009-2012) has resulted in services being spread too thinly and the gains in reductions in waiting times have been eroded (Thomas *et al*., 2014).

Healthcare organisations are complex service organisations relying on the successful interaction of interdependent departments to deliver the service (Tucker *et al*., 2007). Delivering high quality care for patients is often challenging as these organisations are operating within limited budgets and funding allocations over which they have little control and which may be insufficient to meet the demands for their services (McAlearney, 2006). Complexity in healthcare has led to the need for teams to deliver care to patients and service users (West and Markiewicz, 2016). Healthcare organisations are relying on teams to learn in a way that will reduce errors and improve how services are delivered (Ortega *et al*., 2014; Richardson *et al*., 2010). While working in teams has become common place in hospitals and public healthcare organisations, the interest in the connection between learning and how effective teamworking can increase patient safety is growing (Ortega *et al*., 2014; Lewis and Tully, 2009; West and Markiewicz, 2016). Teams in the healthcare environment are not always effective and this can lead to medical errors (West and Lyubovnikova, 2013), and the team working can be of variable quality (West and Markiewicz, 2016). West and Markiewicz (2016) argue that the quality of team working is actually poor in the National Health Service (NHS, the equivalent agency of the HSE in the United Kingdom), and identify effective teamwork as an area that requires development.

Teams are configured hierarchically in the public healthcare setting (Lewis and Tully, 2009) and status differences and hierarchies can perpetuate the occurrence of errors and more junior members of the team are reluctant to challenge their senior colleagues (Lewis and Tully, 2009; Nembhard and Edmondson, 2006). The composition of the team will vary depending on the size of the service and the specialty in question. For example, a team of doctors could consist of three consultants, three registrars (one of whom would be the senior registrar), two/ three senior house officers (SHOs) and two interns. A multi-disciplinary team could consist of three consultants, a senior registrar, two registrars or SHOs, three psychologists, three nurses and two administrative staff. When doctors are on-call, a typical configuration would be a consultant, a registrar and an SHO. The SHO maybe the only team member on-site, they can contact the registrar and consultant if necessary. A doctor's learning is heavily influenced by the context in which they work and the colleagues with which they work (Medical Council, 2014). The art of medicine

is role modelled, and role models are important in influencing the level of collegiality that exists in the workplace (Cruess and Cruess, 2006).

The professional affiliations amongst doctors and other healthcare professionals are pronounced, and develop through a long process of socialisation which shapes the professional sense of identity (West and Markiewicz, 2016). The development of a professional identity has both a social and a personal dimension (Mann, 2011). It grows from "learning *to* talk, and learning *from* talk" (Mann, 2011: 65), primarily through work based learning, much of which is informal learning (Swanwick, 2005). The individual's professional identity cements as their clinical experience grows allowing them to contribute more within their group (Swanwick, 2005). The way in which a team learns influences the performance of that team, so nurturing team learning in the healthcare context could enhance the effectiveness of healthcare teams (Ortega *et al*., 2014), and in turn patient care.

In summary, NCHDs and other healthcare professionals work within a complex environment often as part of a team to deliver high quality patient care. It is intended that teams will through learning together improve services and reduce errors. However, while there is a prevalence of teamworking it is acknowledged that teamworking in healthcare is not always effective. Hierarchical structures, professional affiliations and professional identity may play a part in this. If team learning can be enhanced, through the study of how the multi-levels of individual and team learning interact in this context the potential to enhance the performance of teams also exists.

RESEARCH AIMS AND OBJECTIVES

The design implementation of this multi-level learning study took place over a twelve month period from October 2015 to September 2016. The research aims to study how the multi-levels of individual learning and team learning interact in public healthcare organisations.

The resultant research questions are:

1. How does the interaction of individual and team learning occur?

2. What are the processes and conditions that facilitate or hinder the movement of learning between the two levels?

OVERVIEW OF THE RESEARCH PROCESS

The philosophical determination for the study is interpretivist in approach. It is an appropriate philosophy for the study as interpretive research encompasses the broad philosophy of social construction (Holden and Lynch, 2004; Prasad and Prasad, 2002) which is the theoretical basis for this study. Individuals are not separate to the social reality that surrounds them, but instead are interlinked with it and influence and are influenced by it as part of their everyday life (Cunliffe, 2008). It is individuals in co-operation with other individuals that construct organisations (Granovetter, 1992), so organisations can be viewed as socially constructed (Berger and Luckmann, 1966; Campbell, 2000) and the learning that takes place within them is also socially constructed (Easterby-Smith *et al*., 2000). A single case study approach is put forward as a suitable method to investigate a contemporary phenomenon, such as learning in organisations, in its natural context, as it allows for the subjective and contextual experiences of the participants to be incorporated (Crossan and Berdrow, 2003; Kelliher, 2005; Yin, 2014).

Given the research aim and the resultant research questions an interpretive case study incorporating three rounds of semi-structured interviews was deemed the optimum means to extract meaning. Prior to data collection, the researcher obtained ethical approval (Appendix 2) and developed a case study protocol (Appendix 3), a data collection plan (Appendix 4) including a literary-informed interview guide for each round of interviews (Appendix 5). The researcher also planned to; review relevant professional documentation using a protocol for document identification and review (Appendix 6), maintain a case study database (Appendix 7) and log researcher reflections (see Section 4 of this thesis for relevant extracts from the researcher's reflective log) for the duration of the study.

The researcher sought to recruit between ten to fifteen Non-Consultant Hospital Doctors (NCHDs) as participants. The selection of interviewees was non-random (Eisenhardt, 1989) and the selection criteria sought to recruit two NCHDs from each of the following specialties; surgery, anaesthesia, psychiatry and radiology, one to be in basic specialty training and one to be in higher specialty training or streamlined training if relevant alongside two participants undertaking their internship. The researcher obtained the support of the Director of National Doctors Training and Planning (NDTP) for the study, who agreed to facilitate access to the relevant post-graduate training bodies/ co-ordinators to enable the researcher to seek the necessary study volunteers/ participants. The researcher provided an ethics-approved participant consent form (Appendix 8) in PDF format to the training bodies and intern networks so that they could use this documentation to inform their NCHDs of the study. Anyone who was interested in participating in the study was asked to email the researcher directly. Despite the positive response from the training bodies and intern networks, recruiting volunteers was a much slower process than the researcher had envisaged. After eleven weeks the researcher had been contacted by thirteen NCHDs interested in participating in the research, eleven of whom actually did participate in the study. In total, three rounds of semi-structured interviews were carried out over an eight month period with these eleven participants (P1-P11), each of whom is a Non-Consultant Hospital Doctor (NCHD) working in the HSE. These findings are supported by the identification and review of relevant professional documentation (D1-D20) and the subsequent coding of eight of these documents (D1-D8); maintenance of a case study database and entries in the researcher's reflective log.

Following recruitment of the research participants in late 2015, the researcher carried out the first of three rounds of semi-structured interviews using an interview guide (Appendix 5). The researcher then familiarised herself with the data in the typed transcripts and this led to the extraction of emergent themes. Following this familiarisation process, the transcripts were then imported into NVivo and coded. This iterative coding process was supported by memoing. The researcher began to create the code hierarchy, identifying possible themes and sub-themes. See Appendix 9 for an example of a node in NVivo.

From analysing the first-round interview transcripts the researcher identified the areas for inclusion in the second-round interview guide, which was used when conducting the second round of interviews. The researcher also familiarised herself with these transcripts prior to coding them in NVivo. Once transcribed the researcher compared the sources and references for each node for each interview separately, and then across both interviews. While conducting and transcribing the second round interviews the researcher reviewed the organisational documents using a document protocol. The researcher concluded that one document was highly relevant and that nine were somewhat relevant and the document protocols for these ten documents was analysed further. Ultimately eight document protocols were coded in NVivo. The researcher revised the code hierarchy to incorporate new codes created from coding the second-round interviews and the document protocols. The researcher then reviewed the themes with a view to seeing whether saturation (Brinkmann and Kvale, 2015; Guest *et al*., 2006; Eisenhardt, 1989; Mason, 2010) had been reached, which continued the iterative nature of the process and resulted in additional coding, un-coding and recoding of data. The researcher concluded that a small number of nodes required follow up and clarification with the participants and developed the clarification interview guide to do this. These eight interviews were transcribed and coded and the researcher continued to use memoing to record her thoughts and observations about the coding.

When extracting the findings from the data the researcher made some further changes to the coding hierarchy which resulted in some data being un-coded or recoded and some themes being split or altered. To assist with visualising the relationship between themes and between themes and sub-themes in the context of the research questions, the researcher utilised thematic maps, which further consolidated the findings into seven key themes. The findings were discussed in the light of relevant literature. The researcher then considered the preliminary conceptual framework and the thematic map together to identify the key differences. This allowed the researcher to develop a refined learning framework for how the multi-levels of individual and team learning interact. Throughout the researcher maintained the case study database and her reflective log.

THESIS STRUCTURE

This thesis consists of four sections and is structured as follows:

Section One: Introduction and Research Overview, provides an introduction to the research study aim and associated research questions. It introduces the field of organisational learning, social constructionism as the theoretical basis for the study, the context in which the study takes place and how it relates to the researcher's professional practice. It also provides an overview of the research process.

Section Two: Cumulative Paper Series, provides a bound copy of the four papers produced during the DBA programme alongside preface notes for papers two to four to explain the research evolution as it occurred between the production of these four papers over a two-year period:

1. Paper One is the conceptual paper. It explores the organisational learning literature, including the 4I framework (Crossan *et al*., 1999) and identifies the research gap regarding the multi-levels of learning, greater insight into which would increase understanding of the field of organisational learning. Having discussed alternative options, the paper identifies social constructionism as the theoretical underpinning of the study. It illustrates a preliminary conceptual framework developed by the researcher through relevant literature engagement. The preliminary conceptual framework depicts the multi-levels of individual and team learning. It provides a basis for how the interaction of individual and team learning occurs and how it can be explored, thereby shedding light on how the multi-levels of individual and team learning interact in an organisational setting.

2. Paper Two is the methodology paper and it sets out an interpretivist philosophical position for the study. It outlines the research approaches that were considered prior to an interpretive case study being selected as the optimum method. The case study design is elaborated upon, justifying the single case design approach, how participants are to be accessed, and what techniques are to be used for data

collection. Thematic analysis is proposed as the qualitative data analysis strategy to be adopted. Finally, ethical and other research considerations are addressed.

3. Paper Three presents the implementation of the research design over the initial five-month period (October 2015 to February 2016 inclusive). This process involves a number of stages; obtaining ethical approval for the study; development of a data collection project plan; recruiting the research participants; conducting the first round of semi-structured interviews; developing the document protocol for the organisational document review; conducting a search for relevant documents to be reviewed; maintenance of a case study database and entries in the researcher's reflective log. This paper also includes the emergent themes resulting from a high level review of the initial findings arising from the first round of semi-structured interviews. It concludes with the next steps required to complete the data collection and commence the data analysis.
4. Paper Four presents the research findings. To assist with visualising the relationship between themes and between themes and sub-themes in the context of the research questions, the researcher utilises thematic maps, which consolidates the findings into seven main themes. These themes are; intuitive capacity, interpreting learning, integrating learning, flow of learning, experience hierarchy, social processes and their role in learning and reflection.

These papers were presented and assessed by examiners as per WIT DBA examination regulations and each was recommended by the examination panel. The papers document the design and implementation of the research journey and the preface prior to papers two, three and four offers insight into how the research evolved and the application of reviewer comments at each juncture.

Section Three: Discussion, Conclusion and Recommendations begins with the articulation of key insights based on the research in interaction with prevailing literature, leading to the presentation of the refined learning framework exhibiting how the multi-levels of individual and team learning interact in public healthcare organisations. This is followed by the research conclusions, resultant contributions to knowledge,

recommendations for both practitioners and researchers, research limitations and suggested areas of further research.

Section Four: Reflective Log Extracts. Reflection is central to how individuals can learn, grow and develop as professionals (Hilden and Tikkamaki, 2013) and throughout the research process the researcher maintained a reflective log. The reflective log provides a means for recording insights, reflecting on the research process, documenting the evolution of the researcher's thought processes which became a useful aid for theory development. Section Four offers a chronology of extracts, exemplifying the research journey through the eyes of the researcher in this instance.

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Section 2

RESEARCH PAPER SERIES

Paper 1

CONCEPUTAL PAPER

PAPER 1

Student Name	Louise Doyle
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Email Address	l.doyle@svuh.ie
Paper Name	Conceptual paper – DBA – Class of 2017
Title of Paper	How the Multi-levels of Individual Learning and Team Learning Interact in a Public Healthcare Organisation: A Conceptual Review
Date Submitted	12th January 2015

ABSTRACT

There is much still to understand about the processes and conditions that facilitate or hinder the flow or movement of learning in organisations. To further this understanding the nuances of how learning flows between the individual and the team in a public healthcare organisation will be explored in this study. A preliminary conceptual framework to represent how the multi-levels of individual and team learning interact is presented. The conceptual framework draws upon the multi-levels of learning within organisational learning, along with the Crossan *et al*. (1999) 4I framework. A single case study approach is advanced as a suitable method to investigate a contemporary phenomenon, such as learning in organisations, in its natural context, as it allows for the subjective and contextual experiences of the participants to be incorporated. The contribution of this research will be to enhance understanding as to how the process of individual learning within teams, a key component of organisational learning, could become more effective through a greater awareness of how the individual and team levels of learning interact. This would be of benefit to organisations and learning and development practitioners in the health sector and beyond, as it is intended to give insight into the context that provides the maximum opportunity for learning to arise and be integrated within a team environment.

KEYWORDS

Organisational learning, individual and team learning, multi-levels of learning, healthcare, case study

INTRODUCTION

Organisational learning was first referenced by Cyert and March in 1963 (Easterby-Smith and Lyles, 2011) and since then has given rise to a range of research perspectives. Cangelosi and Dill (1965) saw organisational learning arising from adaptations made by individuals and groups interacting with organisational level adaptations. Organisations as interpretation systems was proposed by Daft and Weick (1984), who also differentiated interpretation from learning which they saw as involving action. The detection and correction of error was how Argyris and Schon (1978, 1996) defined learning. Their thinking on theories of action and theories-in-use and the characterisation of learning as single-loop, double-loop and deutero-learning established them as influential theorists. How organisational learning differs from organisational adaptation was the focus for Fiol and Lyles (1985), while Senge (1990) popularised the concept of the learning organisation, a concept beyond the realms of this paper. The role of social processes in learning emerged via the work of Lave and Wenger (1991) and Brown and Duguid (1991) and represented a departure from the views of learning as a cognitive activity. March (1991) explored the tensions between exploitation and exploration in organisational learning. Kim (1993) advanced a model to explain how individual learning becomes organisational learning, which encompassed shared mental models and Argyris and Schon's (1978) single-loop and double-loop learning. Finally, Nonaka (1994) recognised the role of individual, group and the organisational levels in his model of knowledge creation, which is depicted as a dynamic process (Nonaka, 1994) as is organisational learning (Bontis *et al*., 2002; Crossan *et al*., 1999; Kim, 1993).

Against this backdrop Crossan *et al*. (1999) proposed the 4I framework which would go on to become a seminal model and one we will return to below. The framework incorporates the multi-levels of learning, which it is widely agreed are involved in understanding organisational learning (Easterby-Smith *et al*., 2000). It also proposes four psychological and social processes that link the three levels of learning (as depicted in Figure 1.1 below). Despite these endeavours (Argyris and Schon, 1978; Brown and Duguid, 1991; Cangelosi and Dill, 1965; Crossan *et al.*, 1999; Daft and Weick, 1984; Kim, 1993; Lave and Wenger, 1991; Nonaka, 1994) it would seem that a broadly accepted theory of organisational learning has yet to emerge (Crossan *et al.*, 1999; 2011; Fiol and

Lyles, 1985). This may be due to, a lack of integration amongst the work of organisational learning researchers (Huber, 1991; Shrivastava, 1983), and perhaps a lack of clarity as to the underlying assumptions, inconsistent terminology and differing definitions of organisational learning (Crossan *et al*., 1995; Fiol and Lyles, 1985; Kim, 1993).

To further theory development and our comprehension of organisational learning, a deeper understanding of how the multi-levels of learning interact is required (Crossan *et al.*, 2011). While there has been some multi-level research to date (Berends and Lammers, 2010; Casey and Goldman, 2010; Di Milia and Birdi, 2010; Holmqvist, 2004; Kostopolous *et al.*, 2013; Lehesvirta, 2004; Swart and Harcup, 2012; Vera and Crossan, 2004) more is necessary to delve into the interactions between the levels (Crossan *et al.*, 2011). This study seeks to understand the processes and conditions that facilitate or hinder the flow or movement of learning between the levels, which will contribute to theory development and practice. It will attempt to contribute towards addressing gaps in our understanding of how the multi-levels of learning interact (Crossan *et al.*, 2011; Noe *et al.*, 2014; Swan *et al.*, 2010) by focusing on the interaction between the individual level and the team level of learning, and offers a conceptual framework for exploring this interaction. While knowledge does play a part in the nuances of interpreting and in learning it is outside the focus of the paper and the proposed research.

The research aim is to study how the multi-levels of individual learning and team learning interact in a public healthcare organisation. The resultant research questions are: How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels? It is envisaged that the research will be carried out by means of an interpretive case study, which is highly suited to investigating a contemporary phenomenon in its natural context (Kelliher and Henderson, 2006). From a theory development perspective it is intended to shed light on the mechanisms that facilitate the flow of learning (Swan *et al*., 2010). From a practitioners' perspective the study has the potential to develop understanding as to how to enhance the effectiveness of learning interactions within organisations in the health sector and potentially, in other sectors. The remaining sections of the paper outline the context for the study, then discuss what is organisational learning. A description of

the 4I framework (Crossan *et al*., 1999) and its application by researchers and theorists follows. The need for more multi-level research is highlighted, leading to a presentation of the conceptual framework for how the multi-levels of learning interact. Finally, the research approach and 'next steps' are outlined.

CONTEXT

The Irish health system is complex (Brady, 2010) and reform has been underway to transform it to meet the needs of Ireland's population (Department of Health, 2012; Department of Health and Children, 2003; Health Service Executive, 2007; Malone, 2010). As a result of the recent Irish economic situation (2008 to present), the public health system in Ireland has experienced an extreme reduction in resources and finances and has had to adjust to doing more with less (Health Service Executive, 2011; 2012; 2013; 2014). As the Irish hospital sector is beginning to transition to a new model of hospital trusts (Higgins, 2013), the ability of employees to collaborate successfully with and to learn from colleagues both within their own hospital and in other hospitals within their trust will become more important. Working in teams has become a central feature of how healthcare is delivered to patients (Fleming, 2010; Lemieux-Charles and McGuire, 2006; Ortega *et al*., 2014). Increasing understanding about how healthcare teams can learn more effectively is seen as a means of improving the provision of patient care, enhancing patient safety and adapting quickly to changing and uncertain environments (Ortega *et al*., 2014). The learning that takes place in healthcare teams should result in reduction of errors and improved service effectiveness (Ortega *et al*., 2014). Members of a healthcare team are required to respond quickly and to adapt to working environments that are both demanding and dynamic (Ortega *et al*., 2014). The ability to learn on an on-going basis is central to a team's ability to adapt and respond flexibly to changing conditions (Burke *et al*., 2006). Burke *et al*. (2006) observe that team learning is influenced by self-regulatory processes within teams and that more insight and learning is required about these processes and how to promote them within teams. This study's contribution regarding multi-level movement of learning between the individual and the team seeks to contribute to this debate.

Healthcare organisations are complex service organisations relying on the successful interaction of interdependent departments to deliver the service (Tucker *et al*., 2007). Many are challenged to deliver high-quality patient care while operating with limited budgets and funding allocations over which they have little control and which may not be sufficient for the patient demand that presents (McAlearney, 2006). The organisational and managerial structures in healthcare organisations differ considerably from other organisations and this in turn creates a different type of culture within healthcare (Malone, 2010; Seren and Baykal, 2007). As a result, there can often be several cultures present in the one healthcare organisation. There may be a dominant culture amongst the senior managers in the organisation, and at lower levels in the organisation other cultures co-exist and may compete with one another (Waldman *et al*., 2003). These sub-cultures can be perpetuated by the varying nature of the work within different sections of the organisation (Malone, 2010) and by allegiances among healthcare professionals to their own profession (Braithwaite, 2006). Communication problems may arise due to status hierarchies between professionals which can impact on implementing practice changes (Tucker *et al*., 2007). Sense making processes may not materialise in some public sector contexts such as the health service due to structural and professional boundaries (Rashman *et al*., 2009). The social structure in place within a healthcare organisation can be a strong influence on the interactions within that organisation despite efforts to engender greater levels of co-operation amongst different professionals through the structuring of the organisation (Braithwaite, 2006). In addition to sub-cultures within the one organisation, the cultures between healthcare organisations also vary (Malone, 2010), with the public hospital setting being more associated with a power or autocratic culture and greater bureaucracy than private hospitals (Malone, 2010; Seren and Baykal, 2007). The nature of the interaction of the individual and team levels of learning would be influenced by the type of sub-culture at play in the organisation as are the processes and conditions that facilitate or hinder the movement of learning between the levels.

As Head of Learning and Development in a large public teaching hospital the researcher believes there is scope to enhance the manner in which learning occurs in a team setting through researching how the multi-levels of learning interact in this context. Effective team working can be nurtured so that team members can develop insights and learn together which will equip them to respond to the high levels of change in their

organisations (Fleming, 2010). Should greater insight emerge as to the mechanisms, processes and conditions that facilitate or hinder the movement of learning between individuals and the team, it would allow for that understanding to be shared so that teams can work together more effectively. This should create the potential for the process of team learning, which is considered a corner stone of organisational learning, (Edmondson *et al*., 2007; Roloff *et al*., 2011) to become more effective both in the healthcare sector and perhaps in other organisational settings also. The potential also exists to address a gap regarding the lack of guidance emerging from research as to how to improve the effectiveness of organisational learning (Huber, 1991; Tsang, 1997).

WHAT IS ORGANISATIONAL LEARNING?

Individual learning theory, also known as cognitive learning theory, inspired much of the approach to learning in the organisational learning literature (Brandi and Elkjaer, 2011). Individuals are the actors in the organisation and therefore it is their learning outcomes that become part of how things are done in the organisation (Argyris and Schon, 1978; Nonaka, 1994; Richter, 1998). A change in thought process even in the absence of a change in behaviour is learning as far as cognitive theorists are concerned (Crossan *et al*., 1995; Huber, 1991). However, learning is not always a conscious process and it may not necessarily lead to increased effectiveness for the learner (Huber, 1991). Other theorists believe behaviour change is part of learning and several definitions of organisational learning include both a cognitive and a behavioural component (Argyris and Schon, 1978; Crossan *et al*., 1995; Daft and Weick, 1984; Fiol and Lyles, 1985) while others contain a cognitive component along with the potential for behaviour or action to occur (Huber, 1991; Lehesvirta, 2004; Slater and Narver, 1995). Over time some theorists began to question the appropriateness of the use of individual learning theory to explain organisational learning (Easterby-Smith *et al*., 2000), arguing that it is not a full explanation of organisational learning (Brandi and Elkjaer, 2011). Individual learning is the starting point for collective learning, but collective and organisational learning is more than individual learning (Argote and Miron-Spektor, 2011; Fiol and Lyles, 1985; Swart and Harcup, 2012). Collective learning raises the issue of the social environment of organisations which is something that individual learning theory as the basis for organisational learning ignores (Richter, 1998). Individual learning theory does not

adequately capture how the learning moves or flows beyond the individual to the other levels of team and organisation, nor does it explain how learning that has been institutionalised feeds back through the organisation or influences the future feed forward of learning. Viewing organisational learning from the social constructionist perspective provides a fuller explanation of the dynamic process of organisational learning.

Social constructionism has its roots in several fields of study in particular sociology, social philosophy and the sociology of knowledge (Cunliffe, 2008). Berger and Luckmann's (1966) work is often acknowledged as the beginning of social constructionism (Cunliffe, 2008). They proposed that social order is a human product and the existence of society is as a result of the interaction of both a subjective and an objective reality (Cunliffe, 2008). Social constructionism is a theory that explains how common forms of understanding (Berger and Luckmann, 1966) come about. Organisations viewed from the social constructionist perspective are seen as "interactively and/or discursively produced, existing over time, having a degree of continuity through artefacts, routines, stories, discursive practices, language systems, etc" (Cunliffe, 2008: 127). The learners in the organisations are "social beings who construct their understanding and learn from social interaction within specific socio-cultural and material settings" (Easterby-Smith *et al.*, 2000: 787). Producing meaning through conversation and discussion and/or by sense-making are essential processes in social constructionism (Cunliffe, 2008) as are the use of stories (Brown and Duguid, 1991). Insights and understanding emerge and develop through stories, conversation and discussion (Richter, 1998). Language is key to this as it allows us to make sense of the 'here and now' but also to draw meaning from and to discuss things that have happened before that we are aware of either through our own experience or through familiarity with other events. As understanding increases, it gets added to the whole community's understanding and in turn becomes accessible to all the members (Brown and Duguid, 1991).

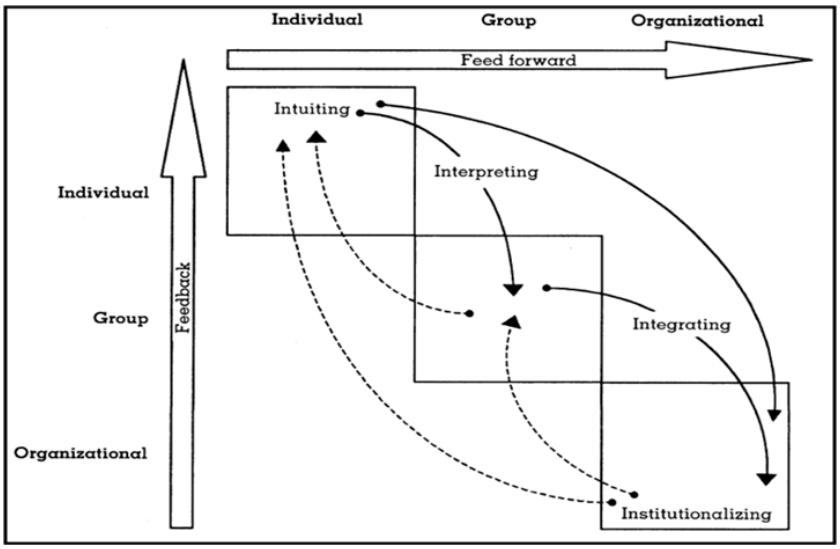
For learning experienced at an individual level to have an impact at a wider level in the organisation then the learning must flow or transfer beyond the individual to the other levels. More recent definitions of organisational learning recognise this multi-level

nature (Mazutis and Slawinski, 2008; Swart and Harcup, 2012; Vera *et al*., 2011). For flow to happen it would appear that social processes must play a role. The opportunities must be there for the individual to engage with others in the organisation in a way that allows their learning to come to the surface, to be discussed, further shaped, adapted, trialled or actioned in conjunction with their colleagues and peers. Viewing organisational learning from a social constructionist perspective "offers rich insights about the more subtle and mutually creating nature of the relationship between individuals" (Richter, 1998: 300). In the context of this study which aims to shed light on the processes and conditions that facilitate or hinder the flow of learning between the individual and the team, at this stage organisational learning is defined as "the process of change in individual and shared thought and action, which is affected by and embedded in the institutions of the organisation" (Vera *et al.*, 2011: 154). This definition alludes to the three levels of learning within organisational learning (individual, team/group and organisational), and encompasses the role of the individual and also the development of shared understanding with others which can influence and become part of how things are done in an organisation. It also acknowledges that organisational institutions in turn impact on the learning that takes place in the organisation.

THE 4I FRAMEWORK

The need to build upon and integrate the development of theory in the field of organisational learning was called for on a number of occasions prior to the 4I framework (Huber, 1991; Shrivastava, 1983). Crossan *et al*. (1999) responded to this need through the development of the 4I framework, which has become a seminal model in organisational learning. It proposes that the three levels of learning are linked by the four psychological and social processes of intuiting, interpreting, integrating and institutionalising. The framework envisages the processes of intuiting and interpreting taking place at the individual level, interpreting and integrating at the group[2] level and at the organisational level integrating and institutionalising (Crossan *et al.*, 1999). The 4I framework (Crossan *et al*., 1999) is shown at Figure 1.1 and outlined in sequence below.

[2] Group is the term used for team by these authors.



Source: Crossan *et al*., 1999: 532

Figure 1.1 The 4I Framework

Intuiting involves recognising patterns and possibilities from personal experience that are at the preconscious stage. This can take the form of expert intuition that draws upon the individual's knowledge and experience or entrepreneurial intuition that creates innovative insights (Berends and Lammers, 2010). The individual's own behaviour can be affected by what has been intuited but the behaviour of others is only affected when they interact with that individual. When an individual begins to explain an insight to themselves and/or others the second process of interpreting takes place. Language is critical here as the process moves from being pre-verbal to verbal. Conversation and dialogue continue in the third process of integrating. They facilitate the development of shared understanding amongst individuals which leads to joint action (Crossan *et al*., 1999). Integrating is often informal to begin with but if the actions that are arising are successful and repeated they will often become institutionalised. When learning is institutionalised in the final process, it becomes embedded into the rules, procedures, systems and structures within the organisation. Institutionalised learning exists separately to the individuals and groups in the organisation, but can influence their actions (Crossan *et al*., 1999; Fiol and Lyles, 1985).

It is the feed-forward and feedback flows of learning that connect the processes of intuiting, interpreting, integrating and institutionalising (Berends and Lammers, 2010). The feed-forward learning flow "is about whether and how the learning at individual level feeds forward into the learning at the group and organisational levels (e.g.: changes to structure, systems, products, strategy, procedures, culture)" (Vera and Crossan, 2004: 225). The feedback learning flow "is about whether and how the learning embedded at the organisational level (e.g.: systems, structure, strategy) affects individual and group learning" (Vera and Crossan, 2004: 225). A tension can exist between the feed-forward flow of learning from individuals and groups through to become institutionalised at the organisational level, and the feedback flow of institutionalised learning which affects groups and individuals (Crossan *et al*., 1999). Institutionalising the learning is like a double edged sword, if it does not occur the new learning cannot be exploited by the organisation, however, when institutionalisation has occurred it may also inhibit future learning (Crossan *et al*., 1999).

Application of the 4I Framework

Various authors have used the 4I framework (Crossan *et al*., 1999) both in research and to develop it conceptually. Tables 1.1 and 1.2 summarise the main contributions in respect of both.

Application of the 4I Framework (Research)	
Authors	**Contribution**
Berends and Lammers, 2010	Sought to build on the 4I framework and found that changes in social structure and temporal context were both important to the operation of the processes in the framework.
Bontis *et al*., 2002	Examined the relationship between business performance and learning at individual, group and organisational levels using the strategic learning assessment map (SLAM). Found that the organisational level had the closest association with organisational performance and that a misalignment between the stocks and flows of learning will have negative association with business performance.
Crossan and Berdrow, 2003	Application of the 4I framework to the study of strategic renewal at Canada Post Corporation. Shows the tension between exploration and exploitation in an organisation experiencing change/renewal.

Di Milia and Birdi, 2010	Examined linkages between learning practices at each of the three levels and business financial performance. Found that only organisational learning practices had an influence on performance.
Kostopolous *et al.*, 2013	Used multi-level equation modelling to develop measures of the processes of team learning. Showed that team learning emerges through intuition, interpretation, integration and codification.
Lehesvirta, 2004	Found there were three links between the individual and group levels of learning: intuition that can be started through conflict or confusion, recognition of the need to share information and an understanding by management of the learning processes.
Swart and Harcup, 2012	Studied coaching as a means of understanding the mechanisms involved in individual learning being translated into collective learning. Proposed the 3E-Model.
Zietsma *et al.*, 2002	Added attending and experimenting as additional processes in the 4I framework. Found that when organisations rely too much on institutionalised knowledge in the face of external challenges they face a legitimacy trap. Recognises the role of power in the process of organisational learning.

Table 1.1 Application of the 4I Framework (Research)

Application of the 4I Framework (Conceptual)	
Authors	**Contribution**
Jenkin, 2013	Proposes extending the 4I framework with the addition of information foraging before intuiting.
Lawrence *et al*., 2005	Integrates the role of power into the 4I framework.
Mazutis and Slawinski, 2008	Links organisational learning and authentic leadership and argues that authentic dialogue can enable both the feed-forward and feedback of learning.
Sun and Anderson, 2010	Proposes a model that links the 4I framework with Zahra and George's (2002) conceptualisation of absorptive capacity.
Vera and Crossan, 2004	In integrating organisational learning and strategic leadership suggest that both transactional and transformational leadership styles can be effective in facilitating organisational learning in different situations.

Table 1.2 Application of the 4I Framework (Conceptual)

Despite the 4I framework's (Crossan *et al*., 1999) appearances in the organisational learning literature, the mechanisms and processes that underpin the interaction of the individual and team level are still not well understood. When it comes to research on

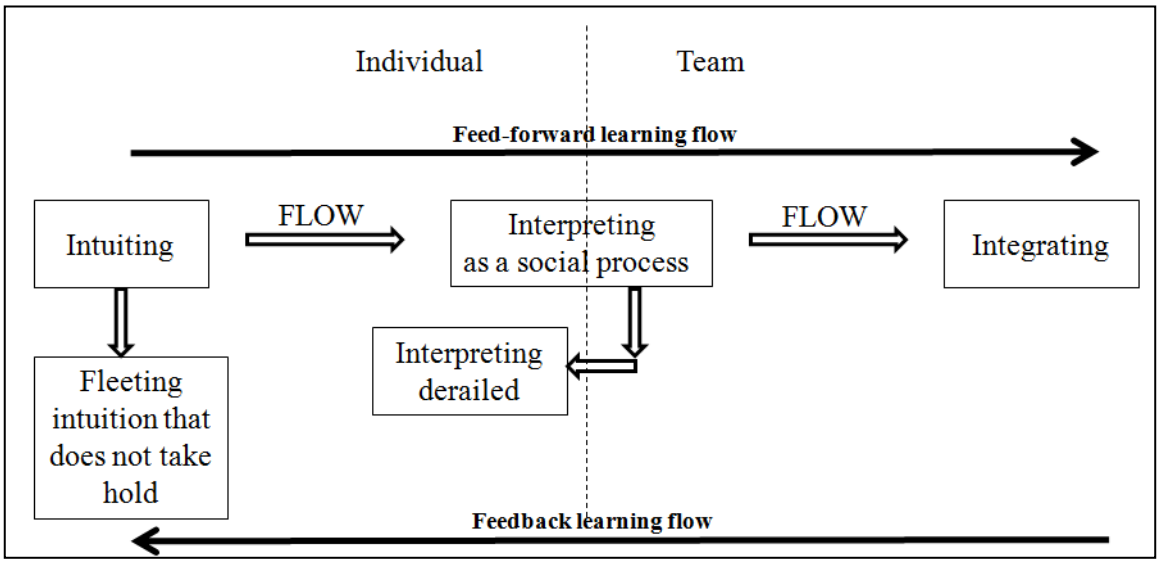
actual learning processes that help us understand organisational learning, more needs to be known (Easterby-Smith and Lyles, 2011; Shrivastava, 1983). According to Kostopolous *et al*. (2013) theirs was the first empirical study that applied the 4I framework to team learning. While it did conclude that team learning is composed of intuition, interpretation, integration and their addition of codification, it does not explain what underpins those processes, or how they may be derailed, interrupted, or affected by the feedback flow of learning. Organisational learning research therefore needs to include how individuals interact to develop a full understanding of it (Holmqvist, 2004).

THE NEED FOR MULTI-LEVEL LEARNING RESEARCH

While there is agreement on the multi-levels of organisational learning, multi-level research in organisational learning is lacking (Crossan *et al*., 2011) and while there has been some multi-level research, delving more deeply into how the levels interact to form organisational learning is required (Crossan *et al*., 2011). See Appendix 1 for a summary of the multi-level research carried out to date (2014). Crossan *et al*. (2011) draw on Kozlowski and Klein's (2000) argument that theorists tend to either think micro or macro but not in a way that is multi-level that encompasses both the micro and the macro as a possible explanation for why there has not been more multi-level research. This issue is also recognised by Noe *et al*. (2014) who argue a similar point that research on human capital development requires a "cross-level or meso-level perspective" (2014: 262). Swan *et al*. (2010) state that while Crossan *et al*. (1999) refer to the flows of learning within the 4I framework, they do not describe the mechanisms at work that facilitate this flow. Crossan *et al*. (1999) took the first steps in teasing out the 4I processes, however they believe there is scope to go deeper and to gain a more thorough understanding of the processes (Crossan *et al*., 2011). This research will attempt to contribute towards addressing these gaps by focusing on the interaction between the individual level and the team level of learning to shed light on how the multi-levels of learning interact in a public healthcare organisation.

PRELIMINARY CONCEPTUAL FRAMEWORK

The preliminary conceptual framework for how the individual and team levels of learning interact is shown in Figure 1.2.



Source: Current Research

Figure 1.2 Multi-levels of individual and team learning interact: preliminary conceptual framework

The conceptual framework provides a basis for investigating how the interaction of individual and team learning occurs and how it can be explored. If learning occurs it can become individual learning and possibly go on to also form part of team learning. Team learning is envisaged here as an emergent process (Kostopolous *et al*., 2013) that results in collective understanding which in turn can facilitate action. This process of learning moving from individual to team learning is not always effective and it can breakdown and stop, as displayed in Figure 1.2. The processes of learning at individual and team levels are also influenced by a feedback flow of learning from higher levels. The research aims to illuminate the processes and conditions that facilitate or hinder the movement of learning between the multi-levels of individual and team learning.

Crossan *et al.* (1995) contend that it is not the levels themselves but what happens between the levels that is the most intriguing. However, since Crossan *et al*.'s (1999) article was published there has been greater interest in research regarding the stocks of

learning than in the flows of learning (Crossan *et al*., 2011). As organisational learning is a dynamic process, understanding the flows of learning between the levels is an area that would enhance understanding of organisational learning (Crossan *et al.*, 1999). The proposed conceptual framework (Figure 1.2) seeks to illustrate learning flowing successfully and also unsuccessfully between the individual and team level, through the first three processes from the Crossan *et al.*, (1999) 4I framework, intuiting, interpreting and integrating. It also shows the feedback flow of learning from the organisational level when learning is successful at the team level.

The framework acknowledges that it is individuals who learn in organisations (Richter, 1998) and individual learning is the starting point for collective learning (Argote and Miron-Spektor, 2011). For learning to occur some pattern or possibility must take shape at the preconscious level and the individual must recognise it and grasp hold of it and begin to make sense of the insight either by themselves or in conjunction with others. This process of intuiting, the germ of learning, could occur during a conversation, when reading, during a training course, while reflecting on something, during a meeting, having an idea etc. However, while the potential for learning exists in these instances learning does not always materialise, and if it does become learning at the individual level, it may not always progress to form team learning. This research aims to understand the processes and conditions that facilitate or hinder this movement or flow between the levels.

Intuiting merges into interpreting which is conceived of as a social process at the intersection of the individual and the team levels of learning. For the interaction of the multi-levels of individual and team learning to result in the flow of learning interpreting of insights in conjunction with others must occur. In this way interpreting is viewed as "a social activity that creates and refines common language, clarifies images, and creates shared meaning and understanding" (Crossan *et al*., 1999: 528). Interpreting allows for meaning to arise (Daft and Weick, 1984) and is often facilitated through the use of metaphors (Srivastva and Barrett, 1988). This can allow individuals to stay with the experience more easily than literal language (Tsoukas, 1991) while expressing an insight to themselves and others (Crossan *et al*., 1999). Interpreting allows an individual's

cognitive map to develop and is influenced by the context or the environment in which the individual resides (Crossan *et al*., 1999). The composition and interaction of the team also affects the individual's ability to engage in interpreting (Crossan *et al*., 1999). Through language, hunches, sensations or feelings can be described and in naming things more definite connections can be drawn between them (Crossan *et al*., 1999). The choice of metaphor and the type of language that comes into use during the conversation or dialogue can have a significant impact on the outcome (Crossan *et al*., 1999). Through the interpreting process a shared sense of understanding is facilitated which results in reduced equivocality, a shared grammar and a shared sense of the possible (Crossan *et al*., 1999; Daft and Weick, 1984). Action can follow to bring the possible to life as the process moves to integrating (Crossan *et al*., 1999).

Delving more deeply into the interpreting process is seen as essential to further the understanding of how learning flows between the individual and the team. The mechanisms that underpin this flow remain unclear (Swan *et al*., 2010). Salk and Simonin (2011) note that learning mechanisms are often indirectly inferred and are not observed. This implies that there are structures and processes involved in learning at the organisational and sub-organisational levels, which include contacts within social groups and closeness of groups and individuals (Salk and Simonin, 2011). This research aims to shed light on the role these factors play in the interaction between the individual and team levels of learning.

Understanding why an individual does or does not share an intuition or learning with others is an important part of understanding how interaction between the two levels can be facilitated or inhibited. Lehesvirta (2004) sees two parts to an individual sharing an intuition, firstly the individual must see the intuition as being significant and secondly they must be willing to and able to share it. If the individual chooses not to engage in interpreting an insight with others in the team then the learning either stays with the individual or can become unrealised learning. Either way its potential is diminished. Also the feedback flow of learning may inhibit the exploration of new learning as the tension between the exploration and the exploitation of learning arises (Crossan and Berdrow, 2004; Zietsma *et al.*, 2002). On the other hand if an individual is willing to

share learning, or to develop new insights with others but the opportunity or the conditions to do so do not arise then their ability to share will be limited. The learning can become stockpiled at the individual level (Bontis *et al*., 2002). This may result in the individual becoming disengaged and in turn less inclined to share learning in future. This highlights the role of social processes in the organisation which can support or detract from organisational learning. Who talks to who in an organisation is heavily influenced by the organisational structure. Opportunities to develop shared learning could be impeded by a number of things including; the organisational structure (Crossan *et al*., 1999), or defensive routines such as withholding, manipulating or spinning information (Mazutis and Slawinski, 2008).

Social processes, organisational structure and defensive routines may emerge as playing a role in helping or hindering the flow of learning between the individual and the team. Thus, the proposed framework (Figure 1.2) conceptualises the complete or partial interruption of learning processes which may occur at any level (Berends and Lammers, 2010). The interruption or derailing of the process of interpreting is key to understand in this research as it is the bridge between individual and team learning. This conceptual framework provides a basis for understanding the interaction of the multi-levels of individual and team learning. It is possible to conceive of team learning differently. For example, Edmondson (2002) depicts team learning as an iterative cycle of action and reflection and the concept of transactive memory systems has also been proposed as having a role in team learning (Argote and Miron-Spektor, 2011; Edmondson *et al.*, 2007). While these are alternative approaches, it would appear that neither of these views of team learning include the multi-level aspect which the framework presented here attempts to do.

In summary, the conceptual framework illustrates that there are processes and conditions that facilitate or hinder the interaction between the individual and the team levels of learning that are not yet fully understood and these are the main focus of this research.

RESEARCH APPROACH – INITIAL THOUGHTS

The philosophical determination for the study is interpretivist in approach. This philosophy is fitting as it encompasses the broad philosophy of social construction (Holden and Lynch, 2004; Prasad and Prasad, 2002), which sees individuals as part of the social reality that surrounds them, interlinked with it and influence and are influenced by it as part of their everyday life (Cunliffe, 2008). For research where the aim is to explore, in depth, complex issues in their real-life context, as in this study, then the case study approach is appropriate (Crowe *et al*., 2011). Case studies are particularly suited to research questions with a 'how' or 'why' slant (Yin, 2014). This research question is a 'how' question that seeks to study in-depth the interaction between individual and team learning. The interaction is a social phenomenon and case studies are an ideal research method to study a social phenomenon (Yin, 2014). The likely research approach will be an interpretative case study which supports the development of theory and allows for the processes, meanings and contexts to be understood from differing perspectives. The understanding that emerges relates to individual meanings and meanings that are shared socially (Crowe *et al*., 2011). An interpretative case study will allow for the subjective and contextual perspectives and experiences of the participants to be captured in a way that will allow them to be studied so as to shed light on the interaction of the individual and team levels of learning in the public healthcare context. The choice of an interpretive case study would be 'bucking the trend' in organisational learning research where empirical research is mostly quantitative (Bapuji and Crossan, 2004). It would also be addressing the shortage of both longitudinal and qualitative research in the field (Easterby-Smith, 1997; Mazutis and Slawinski, 2008). As the context is a public hospital, the study would also contribute to the small pool of organisational learning research conducted in the public sector (Rashman *et al*., 2009).

CONCLUSION

In researching how the multi-levels of individual and team learning interact in a public healthcare organisation there is potential to further the understanding of how learning flows between the individual and team levels, and in turn further understanding of organisational learning. A preliminary conceptual framework is proposed encompassing the multi-levels of individual and team learning and drawing upon the Crossan *et al*.

(1999) 4I framework as a means of exploring the flow of learning. It proposes that processes and conditions facilitate or hinder the movement of learning between the levels. An interpretive case study approach is proposed as it will enable the contextual and subjective experiences of the participants to come to the fore. As greater insight emerges as to how the multi-levels of learning interact, this understanding can be shared with and practiced by others with the intent of increasing the effectiveness of team learning, which is a corner stone of organisational learning (Edmondson *et al.*, 2007; Roloff *et al.*, 2011). This would be very useful to organisations within the health sector and also other organisations as it would allow them to put conscious effort into creating the best context to provide the maximum opportunity for learning to arise within teams.

NEXT STEPS

To explore the research questions it is intended to follow a single case design, wherein the researcher will engage with three to five individuals, in interaction with their teams as the focus of the study. As the research is taking place within the researcher's own organisation access will be relatively easy, however, it will be necessary to identify selection criteria to be used in identifying suitable individuals to participate as well as rules of engagement to facilitate the dual role of practitioner and researcher. It is envisaged that data collection will be through interviews, observation of the participants in interaction with their teams and review of internal documentation. There may also be scope to ask some or all of the participants to maintain a diary or a log which can also form part of the analysis. Further refinement of the methodology will follow along with exploration of various approaches to data analysis to identify the most suitable approach to be adopted for this study.

APPENDIX 1

Authors	Summary
Berends and Lammers, 2010	Looks at multi-level learning dynamics and found that both social structuring and temporal structuring influence the processes of learning.
Casey and Goldman, 2010	Proposes a model for how individuals learn to think strategically that includes individual factors, work experiences and organisational factors as all contributing to developing the ability to think strategically.
Di Milia and Birdi, 2010	Quantitative study seeking to establish a positive link between learning practices at the individual, team and organisational levels and performance. Found that only organisational level practices had an influence on performance.
Holmqvist, 2004	Proposes a conceptual framework that develops the thinking in organisational learning about exploration and exploitation of learning and how they are related to intra and inter organisational learning. Uses a longitudinal case study as an illustration.
Kostopolous *et al*., 2013	Argue that to measure learning at the team level it is necessary to consider it as a phenomenon with two levels – individual and team. Showed that team learning emerges through intuition, interpretation, integration and codification.
Lehesvirta, 2004	An ethnographic study that found three links between the individual and group levels to be: intuition that can be started through conflict or confusion, recognising the need to share information and learning processes being understood by management.
Swart and Harcup, 2012	Examines how coaching can bring about learning as a means to understand the mechanisms involved in individual learning being translated into collective learning. Put forward the 3E-Model of the mechanisms that translates individual learning into collective learning.
Vera and Crossan, 2004	In aiming to integrate organisational learning and strategic leadership they sought to understand how the stocks and flows of learning are impacted by the leadership processes of the senior team.

Table A1.1 – Summary of multi-level research literature

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Paper 2

METHODOLOGY

PREFACE TO PAPER 2

This preface addresses changes in the study that occurred between the writing of Paper 1, the Conceptual Paper (January 2015) and Paper 2, the Methodology and Research Design Paper (September 2015). Between the writing of these papers the researcher changed roles from being the Head of Learning and Development of an academic teaching hospital to a national role as a business manager in the Health Service Executive – National Doctors Training and Planning (NDTP) department. The researcher was aware that accepting this role had implications for the design and implementation of the study. While working in the academic teaching hospital the researcher had intended that the case study would be conducted in that organisation, with various health care professionals e.g. nurses, health and social care professionals participating in the study. In this context, the researcher would have been an insider with very good levels of access that in addition to interviewing participants and reviewing documentation, may have also made the observation of participants in conjunction with their teams possible. In moving to work in NDTP, which is a department within the National Human Resources Division of the Health Service Executive (HSE), the researcher was moving into the corporate structure of the HSE.

Working in NDTP provided the researcher with the opportunity to design the study to involve Non-Consultant Hospital Doctors (NCHDs) working across the health service in various hospitals as participants. In this context, the researcher would be an outsider rather than an insider (Coghlan and Brannick, 2010) as the NCHDs who volunteered to participate would be working in a variety of health care organisations within the Irish health service. The new role would broaden the potential pool of research participants, while at the same time reducing the researcher's level of access to participants from a data collection perspective. Data collection via semi-structured interviews with research participants would continue to be the primary method of data collection. A review of documentation would also be possible, however instead of internal documentation the documentation to be reviewed would relate to the training of NCHDs. Data collection via observing participants interacting with their teams would no longer be possible within the four-year timeframe of the DBA. Given that participants would be working in a

variety of hospital locations, it would not be feasible for one researcher on a part-time basis to undertake this commitment. It would also require significant lead in time to negotiate access for observation of teams across multiple sites. Issues to be addressed would have included; the circumstances in which the individual in interaction with their team could be observed, provisions for obtaining consent from all members of the team and handling situations where consent is not given by members, ensuring patient confidentiality is protected within the research process. Even if the researcher had the capacity to undertake this amount of research the DBA timeframe did not accommodate the lead in time necessary for this to be a component of the data collection. Requesting participants to maintain a diary of their learning had received a limited amount of consideration by the researcher as a possible method of data collection. However, it was decided not to pursue this as part of the research design as the participants would be asked to participate in up to three semi-structured interviews and that was deemed to be sufficient commitment on their part. The researcher did however maintain her own reflective log throughout the DBA. Finally, as the case study was no longer taking place in one large teaching hospital, but would now be in the Irish Health Service, the last part of the title of the study changed from 'a public healthcare organisation' to 'public healthcare organisations' to reflect this.

Paper 2 sets out the methodology and research design for the study, including the philosophical position, the research approaches considered and the chosen research approach, the data collection techniques and the data analysis strategy.

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PAPER 2

Student Name	Louise Doyle
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Paper Name	Paper 2 Methodology and Research Design – DBA – Class of 2017
Title of Paper	How the Multi-levels of Individual Learning and Team Learning Interact in Public Healthcare Organisations
Date Submitted	4th January 2016

ABSTRACT

The aim of this research is to understand how the multi-levels of individual learning and team learning interact in public healthcare organisations. The two resultant research questions are: How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels? The researcher develops a preliminary conceptual framework to explore the multi-level interaction of individual learning and team learning. An interpretivist paradigm is adopted which is in sympathy with the social constructionist theoretical underpinnings of the study. A single case study approach is put forward as a suitable method to investigate a contemporary phenomenon, such as learning in organisations, in its natural context, as it allows for the subjective and contextual experiences of the participants to be incorporated. It is intended that Non-Consultant Hospital Doctors working in the public health system in Ireland will be the research participants. Semi-structured interviews will be the primary technique for data collection, supported by documentary review and the researcher's own reflections as recorded in a log. Inductive thematic analysis is the proposed qualitative data analysis strategy. Ethical and other research considerations are addressed.

KEYWORDS

Interpretive case study, semi-structured interview, thematic analysis, individual learning and team learning, healthcare

INTRODUCTION

This research aims to study how the multi-levels of individual learning and team learning interact in public healthcare organisations. The resultant research questions are: How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels? The study will utilise a preliminary conceptual framework (Figure 2.1) developed by the researcher through relevant literature engagement to explore the multi-level interaction of individual and team learning.

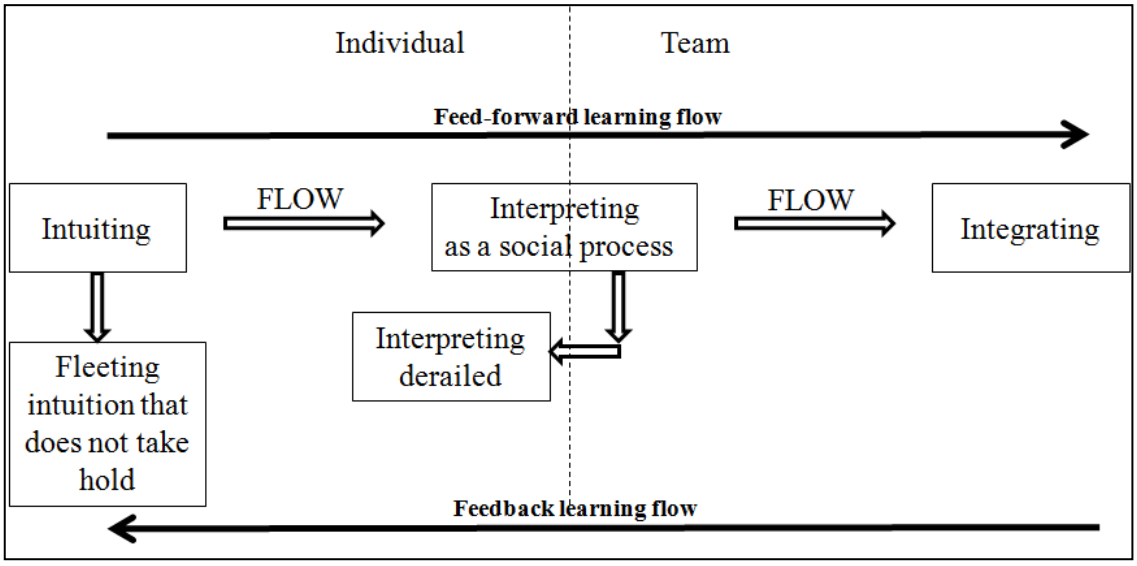

Figure 2.1 Multi-levels of individual and team learning interact: preliminary conceptual framework

Social constructionism provides the theoretical basis for learning in this study. As a theoretical basis for learning, social constructionism allows for the movement or flow of learning among and between individuals and between individuals and a team. Viewed in this way language and dialogue are essential for learning to occur and for shared understanding to emerge between individuals that facilitates the ability to take joint action (Crossan *et al*., 1999). While knowledge does play a part in the nuances of interpreting and in learning, it is outside the scope of the proposed research.

A number of research approaches were considered before it was concluded that an interpretivist case study is the optimum approach in light of the research aim. The interaction of the multi-levels of individual learning and team learning is a social

phenomenon and case studies are an ideal research method to study a social phenomenon (Eisenhardt and Graebner, 2007; Yin, 2014) in its natural context (Crowe *et al*., 2011) and to shed light on its processes and context (Meyer, 2001). The interpretive approach will allow the participants' subjective contextual experience of the interaction of the individual level and the team level of learning to be studied. The interpretive approach is also in keeping with the broad philosophy of social construction (Holden and Lynch, 2004). According to a number of researchers there is a shortage of both longitudinal and qualitative research in organisational learning (Easterby-Smith, 1997; Mazutis and Slawinski, 2008), therefore it is hoped that carrying out a longitudinal interpretive case study will contribute to the field of organisational learning research.

This paper begins by describing the philosophical position of the study. It outlines the research approaches that were considered prior to an interpretive case study being selected as the optimum method. The case study design is elaborated upon, justifying the single case design approach, how participants will be accessed, and what techniques will be used for data collection. Thematic analysis is proposed as the qualitative data analysis strategy to be adopted. Finally, ethical and other research considerations are addressed.

PHILOSOPHICAL POSITION FOR THE STUDY

In deciding the philosophical position to adopt for this study the researcher considered which assumptions as to the nature of science, the objectivist or the subjectivist approach (Burrell and Morgan, 1979; Holden and Lynch, 2004) would be more appropriate. The objectivist approach has its roots in the natural sciences whereas the subjectivist approach arose from the belief that social science should not be researched in the same way as a natural science phenomenon (Holden and Lynch, 2004; Lee and Baskerville, 2003; Morgan and Smircich, 1980). The researcher recognises these two approaches as a continuum (Holden and Lynch, 2004; Morgan and Smircich, 1980) and is drawn towards the more subjectivist or interpretivist approaches as she supports the view that there is more than one form of reality (Carcary, 2009; Lee and Baskerville, 2003) and that the individual has input into the social reality that they perceive (Gephart, 2004). The researcher's background in learning and development also influences her philosophical

position. In working with adults to further their professional development, some of the most beneficial components of development programmes and interventions are when participants share ideas and experiences in discussions. Individuals are shaping and constructing their reality through their interaction with others, and through the meanings they create about their world (Lee and Baskerville, 2003). They learn about the different contexts and sub-cultures each other works in and this exposes participants to the notion that their way of seeing things is not the only way and that in fact there are other choices and options available to them in how they go about working with others. Thus, trainees are part of the social reality that surrounds them and in the course of their everyday lives, influence and are influenced by that social reality (Cunliffe, 2008). In terms of the philosophical approach to be adopted for this study, the researcher believes that given that the interaction of the individual level and the team level of learning is a social phenomenon then an interpretivist approach is most suitable. The interpretive approach is in keeping with the broad philosophy of social construction (Holden and Lynch, 2004; Prasad and Prasad, 2002), the theoretical underpinning of the study.

In adopting an interpretivist perspective to seeking to understand how the multi-levels of individual learning and team learning interact, it values the subjective experience of the individuals and recognises that the interaction of their learning with team learning is part of the social reality that they create and are part of. Berger and Luckmann's (1966) proposition that social order is a human product and that the existence of society is as a result of the interaction of both a subjective and an objective reality (Cunliffe, 2008) is influential here. Notably, in externalizing themselves individuals create the world into which they externalize themselves (Berger and Luckmann, 1966), while understanding is constructed between people and their mutual influence creates the reality that they observe (Campbell, 2000). How the multi-levels of individual learning and team learning interact affects how understanding is constructed. Understanding more about the processes and conditions that facilitate or hinder the movement of learning between the two levels, would give greater insight into the interaction and influence of parties within organisations, where learning occurs as people begin to think in particular ways and form common understandings (Campbell, 2000). Much of this interaction involves conversation, and conversation is the means through which an individual's social reality is constantly maintained, modified and reconstructed (Berger and Luckmann, 1996).

People convey their insights to one another through language, perhaps in a process using metaphors and stories to build up and refine these insights in collaboration with one another. It is this subjective contextual experience of the social phenomenon of the interaction of the individual level and the team level of learning that this research aims to understand.

Within the interpretivist approach there are certain assumptions about ontology, epistemology and human nature that prevail. The ontological assumption is nominalist, meaning that people create and make sense of their own reality and social world. What Gioia and Pitre (1990) describe as both the social and symbolic construction and maintenance of organisational realities by people themselves. Similarly, Cunliffe (2002) in viewing learning from a social constructionist perspective sees individuals as being "practical authors of our own experiences, knowledge and learning as we continually create self, others, and a sense of what is happening around us in our everyday conversations" (Cunliffe, 2002: 47). Looking at learning from a social constructionist perspective, sensemaking is the key aspect of the individual's role, and in doing that they contribute to and help shape the development of understanding through their participation, which results in the understanding being possessed by colleagues (Richter, 1998). From this point of view learning is situated in practice and learning and work are intertwined and understanding is socially-distributed (Vera *et al.*, 2011). This research aims to understand how the participants concerned make sense of how individual learning interacts with team learning in public healthcare organisations.

The epistemological assumption of the interpretivist approach is anti-positivist. To understand how the individual level and the team level of learning interact, the subjective experience of the participants needs to be drawn out to understand their world. Insight can be gained through understanding the different experiences individuals have of interpreting an intuition by themselves and or in-conjunction with others. What meaning do they give to what is taking place and does this constitute learning from their point of view? How have they interpreted their experience(s) of learning and of attempting to share or create learning with others in a team environment? The subjective experience of the individual is a very valuable means of explaining how the individual level and the

team level of learning interact and what are the processes and conditions that help or hinder the movement of learning between the two levels.

Finally, the interpretivist assumptions about human nature are voluntarist. Learning is constructed socially and involves collaborative efforts through dialogue where differing perspectives and ideas become combined to create shared knowledge or learning (Plaskoff, 2011). These interactions and conversations that give rise to learning (Brown and Duguid, 1991; Easterby-Smith *et al.*, 2000; Gheradi and Nicolini, 2000; Nicolini and Meznar, 1995) are the result of individuals being creative and using their free will. The socio-cultural setting and the context are central to the learning that occurs (Easterby-Smith *et al.*, 2000). The effectiveness with which learning occurs and is recognised and shared will vary among individuals and understanding the individual's perception of this will be central to shedding light on how the individual level and the team level of learning interact.

SELECTING AN OPTIMUM RESEARCH APPROACH

A qualitative approach to research is a natural fit for an interpretivist paradigm (Kelliher, 2005). The researcher's consideration of the qualitative approach options of ethnography, action research and case study are outlined below.

Willis and Trondman (2000) describe ethnography as being about recording and presenting everyday life. It is about capturing everyday practices in a way that brings forth new understanding for the reader (Willis and Trondman, 2000). Ethnography enquires into social and structural change (Willis and Trondman, 2000). To carry out a successful ethnography significant time in the 'field' is required by the researcher, and would typically include highly detailed observational evidence (Klein and Myers, 1999). As the research objectives of the study are not seeking to enquire into social and structural change, this approach is deemed unsuitable. Furthermore, the researcher's access and time for the study would not permit the type of observation necessary for the ethnographic approach.

Action research could be applied to a study of team learning however it would require the researcher to involve participants in a change initiative or improvement (Coghlan and Brannick, 2010) that would allow the researcher to research how the individual and team levels of learning were interacting. This would require participants to agree to engage in a project with the researcher, and given the time commitment this would require and the researcher's familiarity with the hospital environment and the pressures upon staff to carry out their roles, an action research approach is deemed unsuitable. The researcher also believes that an action research approach is not the optimum means to address the research aim. While this research approach allows the researcher to observe team interaction in its natural context, the researcher does not have the necessary access to pursue this approach.

The case study approach is an appropriate method where the research aim is to explore, in depth, complex issues in their real-life context (Crowe *et al*., 2011). Case studies are particularly suited to research questions with a 'how' or 'why' slant (Meyer, 2001; Yin, 2014). This research question is a 'how' question that seeks to study in-depth the interaction of the individual level and team level of learning in public healthcare organisations. The interaction is a social phenomenon and case studies are an ideal research method to study a social phenomenon (Eisenhardt and Graebner, 2007; Yin, 2014) and to shed light on its processes and context (Meyer, 2001). As the researcher's intention is to explore the preliminary conceptual framework, with a view to adding to understanding of how the individual level and team level of learning interact then the case study approach is appropriate. Although the case study does not allow generalisations to populations (Yin, 2014), it does enable the researcher to study in depth a phenomenon in its natural context (Crowe *et al*., 2011), while not requiring full emersion, deeming it the optimum approach in light of the research aim.

DESIGNING THE INTERPRETIVE CASE STUDY

A variety of epistemological approaches can be taken in case study research, including critical, positivist and interpretive (Crowe *et al*., 2011; Yin, 2014). The interpretive case study is highly suited to investigating a contemporary phenomenon in its natural context

(Kelliher and Henderson, 2006; Meyer, 2001; Yin, 2014), which learning in organisations is. Flyvbjerg (2006) contends that where human interaction is concerned, understanding that is context specific is essential. The interpretive case supports the development of theory and allows for the processes, meanings and contexts to be understood from differing perspectives. The understanding that emerges relates to individual meanings and meanings that are shared socially (Crowe *et al*., 2011; Klein and Myers, 1999). An interpretive case will allow for the subjective and contextual perspectives, experiences, concepts and meanings (Gephart, 2004) of the participants to be captured, thus the design must allow for the achievement of the contextual depth, while also taking account of the validity, reliability and ability to generalise from the case (Kelliher, 2005). The design must also allow the researcher to explore the preliminary conceptual framework (Figure 2.1) and connect the research questions with the data that will be collected, and the conclusions that will be drawn (Yin, 2014).

When contemplating the form of case to adopt (Yin, 2014) a single or 'common case' design is deemed appropriate where the objective of the research is to study social processes that are part of "the circumstances and conditions of an everyday situation" (Yin, 2014: 52). Thus, the single case design is suitable when exploring the interaction of the multi-levels of individual learning and team learning in organisations. Crossan and Berdrow (2003) argue in favour of the single case study design on the basis that complex phenomena can be studied in-depth by following this approach. The researcher plans to use a single case design with multiple embedded units of analysis, who will be the study participants.

Having an embedded design can avoid the case study becoming too abstract and can serve as a mechanism to focus the inquiry and can enhance the insights which arise from the case study (Meyer, 2001; Yin, 2014). The researcher intends to conduct this research over a nine month period and in this time to interview the participants up to three times which will be a key source of data in the study. Having several units of analysis allows the researcher to concentrate on contrasts within the case (Meyer, 2001). This type of design fits the study of the interaction of the individual level and team level of learning as it directs attention to the subunits in the study (Meyer, 2001), while also acknowledging

learning as a process that can develop over time as opposed to a single instance (Kelliher, 2005).

In pursuit of research legitimacy, the researcher has developed a detailed plan (Kelliher and Henderson, 2006), including a case study or research protocol (Kelliher and Henderson, 2006; Yin, 2014) as detailed in Table 2.1 below.

Design issue	**Description**
Research aim	To study how the multi-levels of individual learning and team learning interact in public healthcare organisations.
Research questions	How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels?
Research method	Interpretivist case study.
Timeframe for data collection	Approximately 9 months between September/October 2015 to June/July 2016.
Case selection process	Single case study involving Non-Consultant Hospital Doctors (NCHDs) working in the Irish public health service.
Case access	Approach NCHDs through the post-graduate training bodies/training coordinators who are in the appropriate specialties and stages of training for the study. In addition they must be in the same work location between July 2015 and June 2016.
Ethical issues	Informed consent. Confidentiality.
Research instrument	The primary research instrument will be the research protocol/interview guide.
Boundary device	Underlying organisational learning theory; Preliminary conceptual framework.
Techniques for data collection	Semi-structured interviews as the primary research technique. Each participant will be interviewed up to three times during the nine months. Review of relevant documentation. Maintenance of researcher's reflective log.
Data management	Data collection plan to be developed. Interview guide has been developed. Document protocol to be developed. Maintenance of a case study database.
Data analysis	Thematic analysis to include an audit trail of the process used and memoing to document ideas and to feed into theory formulation.

Table 2.1 Case study/research protocol

In addition, an interview guide linked to literary themes (Table 2.2) has been developed. To assist in protocol refinement, the researcher sought feedback on the questions from a key informant in the Health Service Executive – National Doctors Training and Planning (NDTP). The researcher piloted the interview guide with a medical professional working in a public hospital. The purpose of the pilot was to trial the interview procedure and to further refine and develop the questions to be used in interviews with participants (Yin, 2014). The data from the pilot will not be used in the study. The benefit of piloting the

interview guide is that it provides an opportunity to see it in practice and to judge how suitable it is, whether any of the questions are too complicated or ambiguous and also to get feedback from the interviewee (Teijlingen van and Hundley, 2001). The researcher will maintain a case study database (Yin, 2014) that contains all the data from the case study. This should facilitate someone else looking at all the evidence from the case study, and is another means of increasing the reliability of the case study.

To increase the validity of the case study the researcher will adopt a number of tactics from the literature including; maintaining an identifiable chain of evidence, using multiple sources of evidence and having the draft case study report reviewed by key informants (Kelliher and Henderson, 2006; Yin, 2014). The chain of evidence allows the reader to trace through the case study from the research question through to the conclusions and vice versa (Yin, 2014). The data collection procedures will be carefully explicated (Gibbert and Ruigrok, 2010), and will include a reflection on how the actual process compared to the planned process. The researcher will also carefully document her interpretations of the research (Meyer, 2001; Carcary, 2009). Including multiple sources of evidence is also beneficial as this allows for the lines of inquiry to converge (Eisenhardt, 1989; Yin, 2014). This is known as triangulation and it enhances the validity of the case study (Gibbert and Ruigrok, 2010; Yin, 2014). Meyer (2001) argues that triangulation can also be across different interviewee perspectives in addition to being across data sources. In this study the data sources will be semi-structured interviews, documentation and the researcher's reflections. Meyer (2001) also states that adopting a longitudinal approach and returning to interviewees regarding interpretation and theory development can all enhance the validity of the study. In this study, the opportunity to return to interviewees over the duration of the study offers learner insight over an extended period of time. Having the case study report reviewed by key informants (Crossan and Berdrow, 2003; Kelliher, 2005) and by peers who are not involved in the case study (Gibbert and Ruigrok, 2010) is another tactic that the researcher will use to heighten validity.

Finally, we address generalisability. Flyvberg (2006) argues that the power of example that can arise from a single case is underrated, while Leavy (1994) asserts that

generalisability is less of a concern when the process or phenomenon is of a generic nature. Single case studies are generalisable from a theoretical perspective (Flyvberg, 2006; Kelliher and Henderson, 2006; Yin, 2014) thus the incorporation of some theory development into the design stage of the case study (Walsham, 1995; Yin, 2014) is pursued through the researcher's preliminary conceptual framework (Figure 2.1). The intention here is to have "a sufficient blueprint" (Yin, 2014: 38) for the study as the incorporation of theory is necessary when it comes to making analytic generalisations from the case study (Yin, 2014). This case study will take place in the public healthcare context and generalisations from it should be possible to public healthcare organisations, other organisations in the healthcare sector, and potentially, other contexts.

ACCESSING PARTICIPANTS

The researcher has recently changed role in the healthcare system and is now working in the Health Service Executive (HSE) - National Doctors Training and Planning (NDTP). This role will allow the researcher to access Non-Consultant Hospital Doctors (NCHDs) as participants in the study. NCHDs work as part of medical teams and multi-disciplinary teams, and considering the research aim are seen as suitable participants for a study seeking to understand how the multi-levels of individual and team learning interact in public healthcare organisations. NDTP supports this study taking place given that it has the potential to develop understanding as to how to enhance the effectiveness of learning interactions in medical and other healthcare teams. It aims to increase understanding as to how effective team working can be nurtured so that team members can develop insights and learn together which will equip them to respond to the high levels of change in their organisations (Doyle, 2014). This understanding could then be used to improve the learning experiences of NCHDs and other health professionals in the Irish health system.

NCHDs are doctors who are working in public hospitals while undertaking their specialist post-graduate training. In their first year out of medical school they are known as Interns. After which they follow one of two routes depending on their specialty. One route is to commence basic specialty training when they are known as Senior House Officers (SHOs) which is followed later by higher specialty training, when most are known as

Specialist Registrars (SpRs), and some as Senior Registrars. The second route is streamlined training which offers a continuous structured programme encompassing core and higher specialty training. The term NCHD also refers to Registrars who have completed their basic specialty training and continue to work gaining additional experience prior to applying to undertake their higher specialty training. As the work of the NDTP is primarily focused on doctors who are in training, study participants will be selected from those NCHDs who are Interns, are completing basic specialty training, higher specialty training or streamlined training.

In making sampling decisions about which NCHDs to ask to participate in the study, there are a number of factors that the researcher has considered. The first relates to having time boundaries for the case (Yin, 2014). The researcher has considered this in the context of the doctoral timelines and intends to conduct this study over a nine month period from September/ October 2015 to June/ July 2016 approximately. The researcher has also considered the level of access that will be required/ available and the number of data collections that will be feasible (Meyer, 2001), and has decided to collect interview data from each participant between one and up to three times during the study. As learning is a phenomenon that occurs over time rather than as a once-off occurrence (Kelliher, 2005) it is appropriate to interview each participant more than once. An added complication is that NCHDs are a transient workforce in the Irish health service. Many NCHDs, in particular those in the earlier stages of their training, change hospital every six months in January and July each year. However, there are NCHDs that would be in the same location for a year or more. Given the study timelines this means that the researcher will seek to select participants from those who will be in the same work location/ team from July 2015 until at least June 2016, in order to allow for the nine months of research to concentrate on the same team environment and for the participant to be in the same workplace and the same team(s) during that time. As the study is looking at the interaction of the individual level and the team level of learning, and learning is a phenomenon that occurs over time, it would be appropriate to include NCHDs at different stages in their training and from different specialties in the study.

The researcher has engaged with the Director of NDTP regarding the study as she has expert knowledge of the training process and training bodies involved in NCHD training. This has led to an agreement to facilitate access to the relevant post-graduate training bodies/co-ordinators to seek NCHD participants for the study. The researcher intends to have between 10 to 15 NCHDs who are working in the public healthcare system as participants. The selection of interviewees will be non-random (Eisenhardt, 1989) and will initially consist of two NCHDs to be drawn from each of the following specialties; surgery, anaesthesia, psychiatry and radiology, one to be in basic specialty training and one to be in higher specialty training or streamlined training if relevant. In addition to these eight there will be two participants undertaking their internship. The final sample size may be more or less than this figure as the study progresses, which is acceptable in the context of an interpretive inquiry where there are not definitive rules for sample size (Patton, 2015). Data collection will continue until saturation (Eisenhardt, 1989; Mason, 2010) is reached, which according to Eisenhardt (1989) can occur at between four and ten cases. The inclusion of ten participants allows for up to 30 interviews to take place, which is in keeping with research which would suggest that between five and 25 interviews is common for studies utilising interviews for data collection (Brinkmann and Kvale, 2015; Guest *et al*., 2006). The techniques for data collection are expanded upon in the next section.

TECHNIQUES FOR DATA COLLECTION

There are several techniques for data collection used in case studies; these are interviews, direct observation, participant-observation, documentation, archival records and physical artefacts (Eisenhardt, 1989; Eisenhardt and Graebner, 2007; Meyer, 2001; Yin, 2014). The use of multiple research techniques is in line with best practice in carrying out case studies and goes towards increasing both the reliability and validity of the case study (Kelliher and Henderson, 2006; Meyer, 2001; Yin, 2014). Using multiple research techniques allows the researcher to triangulate the data thereby aiming to support the findings from the case study using more than one source of evidence (Yin, 2014). In determining the techniques to be used for the data collection the research questions, and the case study design, along with access, resources and time available to the researcher have been considered (Meyer, 2001). Considering the research aim and the resultant

research questions of this interpretive case study, interviews in the form of semi-structured interviews, review of relevant documentation and the researchers own reflective log will be used as the data collection techniques. The main emphasis will be on the interview data, thus the interview guide (Table 2.2) is closely linked to the themes extracted from the preceding literature review.

Semi-structured interviews as the primary research technique

In both qualitative research and case study research the interview is a central tool for gathering data (Myers and Newman, 2007; Nunkoosing, 2005; Qu and Dumay, 2011; Yin, 2014). The interview allows for the capturing of in depth data that can be complex and nuanced (Carcary, 2009) and lets the researcher explore the social situation as the interviewee perceives it (Myers and Newman, 2007; Qu and Dumay, 2011). In addition, it recognises the different realities that may be described by participants, giving multiple perspectives of the phenomenon (Carcary, 2009) and for meaning to develop through the interview process (Bryman and Cassell, 2006). In this study the semi-structured interview will be the main source of data to capture the participants' subjective, contextual experiences of how the interaction of individual and team learning occurs, and what are the processes and conditions that facilitate or hinder the movement of learning between the two levels. This approach is a suitable means of addressing the research questions as they should allow the participants to determine how they express their responses and to do that in a way that fits their thinking style and language use, in order to gain insight into how they perceive their social world (Qu and Dumay, 2011). Utilizing the interview guide (Table 2.2) allows for each interview to follow the same thematic approach (Qu and Dumay, 2011). Care has been taken to ask questions using every day language rather than the more theoretical language of the research questions (Brinkmann and Kvale, 2015). The interview guide will act as a script for the semi-structured interviews (Brinkmann and Kvale, 2015; Myers and Newman 2007), and will allow the researcher to address the research issues, but also leaving room for flexibility if anything surprising arises to be followed up (Brinkmann and Kvale, 2015; Myers and Newman, 2007).

Qualitative interviews can present challenges for the researcher (Dickson-Swift *et al*., 2007; Myers and Newman, 2007). Potential difficulties for the researcher to be aware of include; the artificial nature of the interview, establishing trust between the interviewer and interviewee, developing rapport, inadequate time for the interview, access to interviewees at the appropriate level, bias towards interviewees of perceived higher status, creation of a 'hawthorne effect', being aware that the interviewer and interviewee are constructing knowledge thorough the interaction of asking questions and responding in the interview, language and words used can be ambiguous, the researcher unintentionally insulting the interviewee, the researcher feeling vulnerable and the researcher finding the data gathering tiring. The researcher has considered these potential difficulties and how they may be addressed in this study. Having awareness that these issues may occur is the first step in addressing them. Utilising a research log to record thoughts and reflections about the interviews is also a useful tool to uncover some of these challenges occurring.

The researcher's experience of conducting interviews with a range of individuals at different levels in organisations during her career in human resource management is also good preparation for conducting the semi-structured interviews. While the nature of these interviews is different, the researcher will bring her experience of putting an interviewee at ease (Myers and Newman, 2007) and establishing rapport from the beginning of the interview, noticing the body language of the interviewee, asking open questions, followed by more probing questions as needed (Myers and Newman, 2007) to drill more deeply into a particular issue raised (Qu and Dumay, 2011), rephrasing or clarifying questions if they are not understood, listening to the interviewee and demonstrating that through appropriate body language (Myers and Newman, 2007), linking back to things said earlier in the interview, picking up on unexpected points to seek more information, letting the interviewee do most of the talking, encouraging more talkative interviewees to stay focused, directing the conversation (Myers and Newman, 2007), being conscious to not appear judgemental (Patton, 2015; Walsham, 2006), not being afraid of silence during the interview and managing time during the interview.

Specifically in respect of establishing trust, the researcher will adopt a procedure whereby the participants will be sent a copy of the informed consent form in advance which includes an explanation of the study and an overview about the nature and extent of the interview. It shows that NDTP supports the study taking place. It gives assurances that every effort will be made to ensure confidentiality for them and also indicates the duration of the interview, which assists with providing for adequate time for the interview. Participants will have time to consider if they wish to participate in the study. When the researcher meets the participants for the interview she will explain again the purpose of the interview (Myers and Newman, 2007), ask the interviewee's permission to record the interview and provide an opportunity for the interviewee to ask any questions they may have either regarding the informed consent form or the study itself (Brinkmann and Kvale, 2015).

The researcher will conduct the semi-structured interviews at a place convenient for each interviewee. The researcher will record the interviews with the interviewees' consent. This approach will facilitate a high degree of accuracy and in turn data richness from the interviews (Meyer, 2001) while also allowing the interviewer to engage fully with the interviewee (Walsham, 1995; Walsham, 2006). The researcher will transcribe the interviews and sees this step as the beginning of the data analysis process. Once transcribed, interviewees will be given the opportunity to review the transcript for clarification purposes, thereby adding another layer to data validation. In addition to interviews an interpretive study should include other forms of data (Walsham, 2006).

Supporting data collection techniques

Yin (2014) states the ideal scenario for the researcher is for the documentary evidence to corroborate and support other evidence that has been gathered from the case study, thus the researcher will schedule time to search for documentation that would be relevant to the study. This could include documentation from the HSE, the Department of Health, the Irish Medical Council, the post-graduate training bodies for doctors e.g.: Royal College of Surgeons in Ireland, among other sources. Documents available may relate to information on NCHD training, NCHD experiences while training in the Irish health

service, documentation regarding the training and retention of doctors and other healthcare professionals within the Irish healthcare system. Notably, Yin (2014) cautions that documentary evidence must be used carefully as each would have been prepared with a particular intention in mind and for a specific audience and so may contain bias.

The last technique for data collection that will be used is the maintenance of a reflective log by the researcher so that her experience of conducting the research can be described and interpreted. This approach is encouraged by Koch (1994) as a means of enabling the researcher to reflect upon and capture their own thoughts and observations regarding the interactions and events that occur during the research, thereby increasing the researcher's own self awareness. Carcary (2009) concurs with the view that reflection by the researcher is essential to conducting this type of research. Following each interview the researcher will document her impressions of the interview, and the interviewee's body language and engagement during the interview as this can form useful context for the analysis stage (Brinkmann and Kvale, 2015). Walsham's (1995) argument regarding the role of the researcher's subjectivity in the data collection and analysis would also indicate the usefulness of the reflective log in the research process.

DATA MANAGEMENT AND ANALYSIS

The aim of the data analysis phase is to make sense of the entire situation and for the context to be fully described, therefore it may be necessary to carry out data collection and data analysis in an iterative manner (Kelliher, 2005). The data analysis strategy proposed for this study is thematic analysis (Braun and Clarke, 2006; Fereday and Muir-Cochrane, 2006; Ryan and Bernard, 2003), with iterative collation of data over the duration of the nine month study. Utilizing an inductive thematic analysis fits very well with the interpretive philosophical approach and the social constructionist theoretical underpinnings of the study (Braun and Clarke, 2006). Thematic analysis also fits with the methodological approach of an interpretivist case study. It supports the development of theory and allows for the processes, meanings and contexts to be understood from differing perspectives. The understanding that emerges relates to individual meanings and meanings that are shared socially (Crowe *et al*., 2011) thus thematic analysis will

allow for the subjective and contextual perspectives and experiences of the participants to be captured in a way that will allow them to be studied so as to shed light on the interaction of the individual and team levels of learning in the public healthcare context.

The approach to thematic analysis to be adopted will be inductive, and will identify themes and patterns within the dataset (Braun and Clarke, 2006; Fereday and Muir-Cochrane, 2006). The analysis will be iterative, moving between the data set, the coded extracts and the written analysis (Braun and Clarke, 2006; Eisenhardt, 1989). The goal will be to group data that is conceptually similar together (Corbin and Strauss, 1990). Some pieces of data may be coded more than once (Hewitt-Taylor, 2001; Miles and Huberman, 1994). Each time a theme or code is created a definition or descriptor will also be recorded for it. This will assist with ensuring that the code is used consistently throughout, and to facilitate another researcher following the same path (Hewitt-Taylor, 2001; Miles and Huberman, 1994). It is anticipated that NVivo will be used by the researcher to conduct the thematic analysis on the interview transcripts and other data sources. It will be important for the researcher not to get separated from the data when using software (Vander Putten and Nolan, 2010) and to recognise that they are still driving the analysis just on screen rather than on paper.

Braun and Clarke (2006: 87) have presented phases of thematic analysis for researchers to utilise when conducting thematic analysis. They are: familiarising yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report. As themes or categories emerge in this study, the researcher will develop a conceptual map of these phases as part of formulating conclusions. Basit (2003) asserts that developing categories leads to the beginnings of a conceptual map that fits the data. This visual approach to displaying data is also espoused by Miles and Huberman (1994), and Weng (2012). Developing a conceptual map will allow the comparison of the conclusions emerging from the thematic analysis with the preliminary conceptual framework developed by the researcher (Figure 2.1), potentially giving rise to a revised conceptual framework for how individual learning interacts with team learning in public healthcare organisations.

To ensure that there is transparency and rigour in how the thematic analysis is conducted the researcher will maintain an audit trail as recommended by Lincoln and Guba (1985). The researcher will also use memos to capture ideas and to assist with theory formulation (Corbin and Strauss, 1990). With a focus on increasing the level of reliability in the study the researcher will endeavour to maintain the link between the conclusions drawn from the analysis and the original data (Elo and Kyngas, 2008). Quotations from the data (Elo and Kyngas, 2008; Fereday and Muir-Cochrane, 2006) will be the main means to achieve this. As referred to earlier, the researcher will arrange for a number of key informants, and also peers who are not involved in the case study, to review the conclusions from the thematic analysis and a draft of the case study report (Crossan and Berdrow, 2003; Cutcliffe and McKenna, 2002; Gibbert and Ruigrok 2010; Kelliher, 2005).

RESEARCH CONSIDERATIONS

A key research consideration is obtaining ethical approval for the study, an application for which is being made to the WIT Research and Ethics Committee. In view of what the study involves, there appears to be no more than normal ethical considerations relating to it, as all participants are voluntary consenting adults. The main ethical considerations are that participants are voluntary, that they each have given their informed consent to participate and that every effort is made to ensure confidentiality of any identifying information that is obtained in connection with this study. Participants will give their informed consent in writing prior to commencing the interview process. The informed consent will make clear that participation is voluntary and that participants can decline to continue at any stage up to data merge if they so wish (Brinkmann and Kvale, 2015). As with all research it is essential that no participant would be harmed in any way as a result of participating in the study, however given the nature of the study this is highly unlikely to occur. Participants will have the opportunity to review the informed consent form in advance of meeting the researcher for the interview. Before the commencement of the interview, the purpose of the research will be explained to participants (Brinkmann and Kvale, 2015). The researcher will also give an opportunity for the participant to ask any questions they have before signing the informed consent and commencing the interview. They will also be able to ask any questions they have about participating in the research at any stage in the research cycle and there is no penalty if they decide not to participate.

Every effort will be made to ensure confidentiality of any identifying information that is obtained during the study. Crowe *et al*. (2011) recommend using codes or descriptors to protect the anonymity of participants and this approach will be applied in this study.

RESEARCH LIMITATIONS

The researcher acknowledges the potential for research bias to occur. Meyer (2001) advises that in addressing research bias researchers need to acknowledge that they do hold certain presuppositions and consciously put these aside during the analysis. The researcher has worked in an academic teaching hospital for over six years as Head of Learning and Development. As a result the researcher has views about how learning occurs in healthcare teams. However, the researcher's contact with NCHDs would have been very limited in comparison with other healthcare professionals, as it was primarily other healthcare professionals and administration staff who availed of the services offered through the Learning and Development Department. In addition, seeking alternative conclusions can also help to reduce bias (Meyer, 2001; Miles and Huberman, 1994) and in this study the researcher will engage with the Director of NDTP, key informants (Crossan and Berdrow, 2003; Kelliher, 2005) and with peers who are not involved in the case study (Gibbert and Ruigrok, 2010) in pursuit of the optimum perspective in relation to the data.

Further research considerations that could prove challenging for the researcher include being in a position to commence the collection of data early enough to allow for a nine month data collection period so that there is a longitudinal dimension to the research. Central to this is securing ethical approval, gaining access to participants who are willing to participate in the study and each having the capacity to facilitate up to three interviews. The researcher is fortunate to have support for this study from NDTP and this support will hopefully smooth the path to accessing participants. In addition, since the participants are doctors and often carry out research themselves this may make them more inclined to assist another researcher and agree to participate in the study.

CONCLUSION

To research how the multi-levels of individual learning and team learning interact in public healthcare organisations social constructionism is outlined as the theoretical basis underpinning the study. Aligned to this is an interpretivist philosophical position that recognises multiple forms of reality (Carcary, 2009; Lee and Baskerville, 2003) which are created by individuals in the course of their everyday lives (Cunliffe, 2008). Having considered several research approaches that would fit with the interpretivist perspective, the interpretive case study was seen as providing the optimum fit for the study. This approach would allow for the interactions of the multi-levels of individual learning and team learning to be studied in depth in its natural context (Crowe *et al*., 2011) without requiring full emersion.

The interpretivist case study will follow a single case design, with multiple units of analysis in the form of 10 to 15 participants who are working as Non-Consultant Hospital Doctors in the Irish public health system. How reliability, validity and generalisability will be achieved has been addressed, as have ethical considerations. Semi-structured interviews are advanced as the primary data collection technique, supported by documentary review and the researcher's own reflective log. Inductive thematic analysis is proposed as the qualitative data analysis strategy as this strategy fits with the interpretivist philosophy, the social constructionist theoretical perspective and the interpretive case study research design.

Interview Guide Questions	Themes from the literature
General questions about learning	
Q1. When I say learning what does that term mean to you? Q2. How do you learn when you are at work?	• Opening questions - get the participant talking and get an understanding of what learning means to them, and how they learn at work. • Anything about mental models, or learning as a social process involving others?
Questions about learning in a team	
Q 3. How does learning take place in your team? Q4. Tell me about a time that you learnt something while with your team? Q5. If a problem or opportunity comes up how does your team approach it? Q6. Can you tell me about a time that you and your team figure out something new together?	• How does the participant perceive that learning happens in their team, is it a social process, who is perceived to be involved in learning, how does learning arise is the participant's team? • Do all team members participate in the learning? • Is composition of the team mentioned? • What processes and conditions are mentioned that facilitated or hindered the learning? • Are metaphors, stories, conversation, discussion mentioned? • Is there a sense of the participant intuiting eg: recognising patterns and possibilities that are preconscious and then trying to verbalise and these? • Or recognising a connection being triggered by what someone else says and then verbalising something that builds on what has been said already – interpreting. • Do they help each other to understand? Do they build on each other's ideas? • Is there reference to how individuals can mutually create a solution to a problem or learn about something in this way? • What about withholding information, or not participating in problem solving – if it occurs what is behind it from the participant's perspective? • Is this new understanding for all, or is it something some of the team are sharing with the rest? Interaction of individual and team learning, feedback flow of learning. • Is there a sense of shared understanding being arrived at – integrating – involving some actions being taken?
Q7. What happens if more than one idea is put forward, how does the team decide which one to go with?	• What are the processes and conditions around the team coming to support one idea over another? Are social processes, relationships, social structures at play here? Anything else? • Structural and professional boundaries? • Team composition?
Q8. Does the team help you when you're trying to find something out?	• How does the participant access the learning that exists in the team? • Do they approach whole team, or certain team members? • Contacts within social groups and closeness of groups and individuals? • Would team members notice they had an issue, needed help and offer it. Processes and conditions involved in these scenarios. • Would the participant not want the team to know they were trying to find something out? Defensive routines – not good to show lack of understanding about something? • Processes and conditions that hindered learning occurring?

Interview Guide Questions	Themes from the literature
More detailed questions about learning process in a team setting	
Q9. How do you and your team go about working on an idea? Q10. Can you describe a time that you shared an idea with your team members? Q11. Describe how you teased out that idea with your team?	• What processes and conditions are at work? • Social processes • Is there evidence of intuiting and interpreting ideas and building on each other's ideas, forming a common language? • Are metaphors, imagery, stories, common language used? • Does it happen in a formal team setting or more informally? • When did the idea occur? Was it in the moment or earlier? • Are all team members involved? • Is it a collective processes or something else? • Structures and processes – including social groups and closeness of groups and individuals
Q12. Did a new understanding of the issue arise as a result?	• Intuition being verbalised and then others joining in? • Language used, conversation, social processes at work? • Attempting to build on what is emerging through the conversation to reach a common language?
Q13. What about your gut instinct, do you use it at work? Q14. Have you used metaphors or imagery to explain an insight to your team members at work?	• Gut instinct – link with intuiting, recognising something preconscious • Verbalising insights through use of metaphors or imagery to explain to themselves/others?
Q15. Have there been times when you chose not to share an idea with your team members? Q16. Have there been times when you've held back information? Q17. What stops you sharing an insight with other team members?	• When did the idea occur? Was it in the moment or earlier? • Anything about inhibitions to share it? • Anything about having an idea but deciding not to share it – was this for defensive reasons? • Anything about intuition having a sense of something and then trying to put that into words, were metaphors involved or did the language used evolve in conjunction with other team members? • Anything about the conditions that made them comfortable/not comfortable to share idea? • Defensive routines – withholding? • Role of social processes? • Contacts within social groups and closeness of groups and individuals? • Structural and professional boundaries? • Role of organisational structure?

Interview Guide Questions	Themes from the literature
Q18. Have there been times when you've had the inkling of an idea but it had gone before you'd grasped it?	• Anything about fleeting intuition – losing the idea before having enough of a sense of it to express it?
Q19. Tell me about a time that you tried to share an idea with team members but didn't get to explain it fully? Q20. Have there been times when you felt your idea wasn't being properly considered?	• Anything about feeling like don't have ideas, or ideas are not good enough to share, having an idea but the moment has passed so not expressing it? • Picking up on body language or what is said by others as being encouraging/discouraging of expressing ideas in the team? • Anything about not having the opportunity to share ideas and so not bothering anymore and being disengaged? • What hindered the process? • What was behind not sharing it fully, was it something within themselves that told them to stop, maybe feeling in mid expression that they didn't get it themselves, or that it didn't have merit, or something else they picked up in body language of others, or being interrupted and the conversation being taken over by others, or something else happening? • Interpreting being derailed – breakdown in the flow of learning between individual and team? • Is it possible to get sharing the idea back on track if feel unfinished, not successful? • What were others doing, role of social processes here? • Structural, professional boundaries? • Is team composition mentioned?
Q21. Have there been times when you've talked about your idea to someone else before talking to the whole team about it? Q22. Have there been times when you've tailored how you spoke about an idea for those present to increase changes of buy-in? Q23. Have there been times when you've tried to sound more confident in your idea than you really were?	• Contacts within social groups and closeness of groups and individuals? • About social processes? • Organisational structure – influences who talks to who? • Team composition? • Defensive routines – manipulating? • Structural and professional boundaries? • Defensive routines – spinning?
Q24. Tell me about a time when one of your team member had an idea about something and it led to the team learning something new	• Flow of learning from the individual to the team – feed forward, intuition to interpreting? • Use of language, sense making occurring in the team? • Social processes? • Team composition?

Interview Guide Questions	Themes from the literature
Q25. Have there been times when a team member has run an idea past you in advance of talking to the whole team?	• Defensive routines – spinning, gaining support • Structural and professional boundaries? • Contacts within social groups and closeness of groups and individuals?
Q26. How do you know when the team has the same understanding about something? Q27. Describe when you've experienced a shared sense of understanding arising in the team?	• Interpreting to integrating learning in the team? • Use of language, conversation and dialogue, sense making? • Use of metaphors, imagery? • Social processes at play in the team? • Anything about taking action – integrating?
Q28. What are the structures that help you learn when you are in at team setting?	• Social processes? • Organisational structure? • Structural and professional boundaries? • Contacts within social groups and closeness of groups and individuals? • Team composition?
Q29. How do organisational processes/ procedures influence your approach to learning at work? Q30. How do organisational processes/ procedures influence your team's approach to learning at work?	• Feedback flow of learning – organisational level to team level to individual level • Social structures do they fit into org procedures • Does the feedback flow inhibit new learning – being bound by processes/procedures so that creativity or lateral thinking is stifled? • Are structural and professional boundaries mentioned here at all?

Table 2.2 Interview guide questions linked to themes from the literature

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Paper 3

DESIGN IMPLEMENTATON AND INITIAL FINDINGS

PREFACE TO PAPER 3

This preface addresses developments between Paper 2, the Research Design and Methodology Paper which was written in September 2015 and Paper 3, the Design Implementation and Initial Findings Papers which was written in March 2016.

The researcher identified four specialties from which to seek NCHD participants for the study. Namely surgery, anaesthesia, psychiatry and radiology, and in addition two interns. While arranging with the Royal College of Surgeons in Ireland (RSCI) to circulate the study information to their surgical trainees, the training manager asked the researcher if the emergency medicine trainees who are also RCSI trainees should receive the information about the study. The researcher considered this and decided that as she did not know what level of interest there would be in the study by the targeted participants, it would be useful to include them too. One emergency medicine NCHD did volunteer to participate in the study.

While not in the original research design, the researcher decided to limit the request for participants to Dublin based NCHDs in the first instance. This followed a discussion with a key informant in National Doctors Training and Planning (NDTP) who stated that many NCHDs are based in Dublin hospitals and as the researcher is only seeking a small number to participate in the study, the assumption was it would be feasible to obtain the required participants from those based in Dublin hospitals. The advantage of this approach was that with all Dublin based participants the logistics involved in carrying out the research would be simpler and more time effective for the researcher, who is also based in Dublin. However, as will be explained below a number of the research participants were actually based in hospitals outside of Dublin. This arose in the first instance when the researcher was contacted by an Anaesthesia trainee outside of Dublin to participate in the study. The College of Anaesthetists had circulated the study details to all of their trainees and not just the Dublin based ones. The same occurred with the Faculty of Radiology. As it became clear to the researcher that it might be difficult to reach the required number of

participants, she requested the Royal College of Surgeons in Ireland (RCSI) to circulate the study details to their trainees outside of Dublin.

PAPER 3

Student Name	Louise Doyle
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Paper Name	Paper 3 Design Implementation and Initial Findings – DBA – Class of 2017
Title of Paper	How the Multi-levels of Individual Learning and Team Learning Interact in Public Healthcare Organisations
Date Submitted	09th May 2016

ABSTRACT

The aim of this research is to study how the multi-levels of individual learning and team learning interact in public healthcare organisations. An interpretivist paradigm is adopted which is in sympathy with the social constructionist theoretical underpinnings of the study. A single case study approach is put forward as a suitable method to investigate a contemporary phenomenon, such as learning in organisations, in its natural context, as it allows for the subjective and contextual experiences of the participants to be incorporated. In this paper, the researcher documents the implementation of her research design over a five-month period. The implementation involved a number of stages; obtaining ethical approval for the study; development of a data collection project plan; recruiting and conducting the first round of semi-structured interviews with eleven participants; developing the document protocol for, and the conducting of a search of, relevant organisational documents; maintenance of a case study database and the researcher's reflective log. Having transcribed the first round of semi-structured interviews, in liaison with review of reflective log entries, the researcher familiarised herself with the data and identified a number of emergent themes, each of which is described. The next steps in the research study are outlined.

KEYWORDS

Individual learning and team learning, healthcare, semi-structured interviews, interpretive case study.

INTRODUCTION

This research aims to study how the multi-levels of individual learning and team learning interact in public healthcare organisations. An interpretivist paradigm is adopted which is in sympathy with the social constructionist theoretical underpinnings of the study. A single case study approach is put forward as a suitable method to investigate a contemporary phenomenon, such as learning in organisations, in its natural context, as it allows for the subjective and contextual experiences of the participants to be incorporated. The resultant research questions are: How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels? Given the research aim and the resultant research questions the research design for this interpretive case study involves semi-structured interviews, supported by a review of relevant professional documentation and the researcher's own reflective log.

The researcher works in the Health Service Executive (HSE) - National Doctors Training and Planning (NDTP) unit in Ireland as a business manager. NDTP are supporting this study given that it has the potential to develop understanding as to how to enhance the effectiveness of learning interactions in medical and other healthcare teams. This study aims to increase understanding as to how effective team working can be nurtured so that team members can develop insights and learn together which will equip them to respond to the high levels of change in their organisation. This understanding could then be used to improve the learning experiences of NCHDs and other health professionals in the Irish healthcare system.

In this paper the researcher presents the implementation of the research design over a five-month period. This process involved a number of stages; obtaining ethical approval for the study; development of a data collection project plan; recruiting the research participants; conducting the first round of semi-structured interviews; developing the document protocol for the organisational document review; conducting a search for relevant documents to be reviewed; maintenance of a case study database and entries in the researcher's reflective log. This paper also includes the emergent themes resulting

from a high level review of the initial findings arising from the first round of semi-structured interviews. It concludes with the next steps required to complete the data collection and commence the data analysis.

DESIGN IMPLEMENTATION

Given that the research is taking place in a healthcare environment, the potential for disclosure of information regarding something harmful to patients, or of a criminal nature exists (Orb *et al*., 2000) and could occur during the semi-structured interviews. To address this risk obtaining ethical approval for the study was identified as a key research consideration in the research design process. To this end the researcher sought and obtained ethical approval for the study, incorporating completion of the Waterford Institute of Technology ethics approval paperwork and an interview with the Ethics Committee. In parallel with seeking ethical approval, the researcher developed a data collection project plan, which sets out a timeframe, a critical path for study completion and the various aspects of the collection and analysis of the data. The researcher is also maintaining a record of how the data collection unfolds in practice (Figure 3.1) so as to enable her to reflect on how the actual process compares to the planned process. It was originally anticipated that the time to recruit participants would be two weeks and the lapsed time to carry out the first round of interviews would be eight weeks. However, due to unforeseen complexities in the process of identifying and accessing potential participants it took eleven weeks to recruit participants. The researcher commenced the first round of interviews five weeks into the recruitment of participants and the interviews took nine weeks to complete (Figure 3.1).

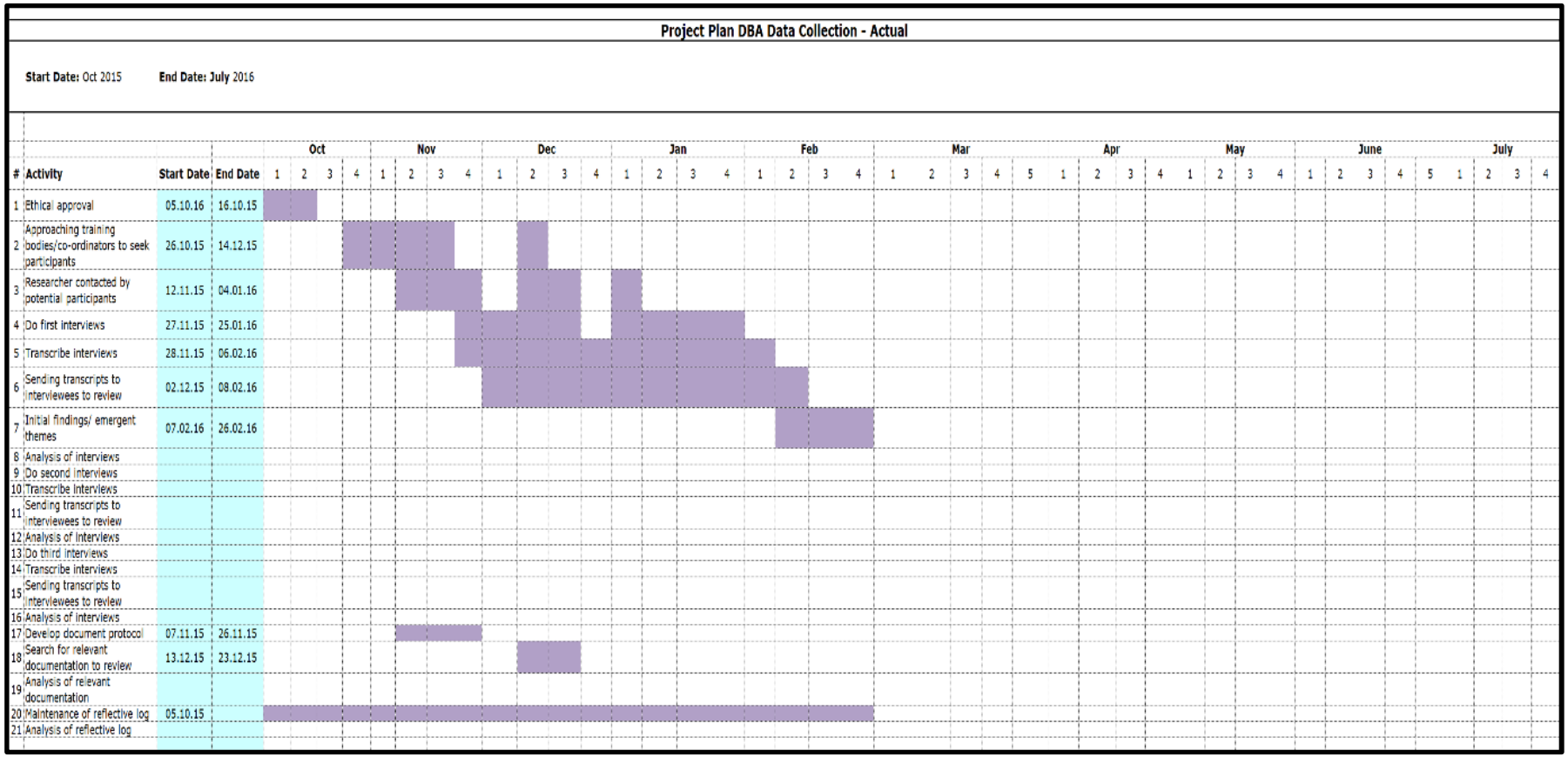

Figure 3.1 Data collection actual Oct 2015 to July 2016

Accessing and Recruiting Participants

The researcher had planned to recruit between ten to fifteen Non-Consultant Hospital Doctors (NCHDs) as participants. The selection of interviewees was non-random (Eisenhardt, 1989) and the selection criteria sought to recruit two NCHDs from each of the following specialties; surgery, anaesthesia, psychiatry and radiology, one to be in basic specialty training and one to be in higher specialty training or streamlined training if relevant alongside two participants undertaking their internship. Participants should ideally be in the same work location/ team from July 2015 to at least July 2016, although this caveat was not always feasible. In addition, while not in the original research design, the researcher decided to limit the request for participants to Dublin based NCHDs in the first instance, although this decision was later amended.

The researcher had obtained the support of the Director of National Doctors Training and Planning (NDTP) for the study, who agreed to facilitate access to the relevant post-graduate training bodies/ co-ordinators to enable the researcher to seek the necessary study volunteers/ participants. The Director then emailed the Presidents of the four training bodies and the Intern Network Co-ordinators of the three Dublin-based Intern Networks, to inform them of the study and to seek their permission for the researcher to contact a member of their team for assistance with seeking participants for the study. The four training bodies are; The Royal College of Surgeons in Ireland (RCSI), the College of Anaesthetists, the Faculty of Radiology and the College of Psychiatrists. The three Intern Networks are; University College Dublin (UCD), Trinity College (TCD) and the RCSI. Each of the Presidents and Intern Network Co-ordinators responded positively to the request for assistance in seeking participants for the study. In the case of one training body they brought the request to the Council of the College, while in two other training bodies the President referred the request to their respective training committees. The members of these training committees are NCHDs who meet at regular intervals to discuss a range of specialty related training issues. In all three cases the responses were positive.

The researcher provided a participant consent form (Appendix 1) in PDF format to the training bodies and intern networks so that they could use this documentation to inform their NCHDs of the study. Anyone who was interested in participating in the study was asked to email the researcher directly. Despite the positive response from the training bodies and intern networks, recruiting volunteers was a much slower process than the researcher had envisaged and two weeks after the first call, only four participants had been recruited. The researcher prepared a reminder email, using the text from the letter of introduction, which could be circulated by the training bodies and intern networks. Anyone who contacted the researcher expressing interest in participating in the study was subsequently emailed the consent form so they could read greater detail as to what was being asked of them. The process resulted in four additional recruits. Three weeks later the researcher requested the RCSI to circulate the study details to NCHDs outside of Dublin again using the reminder email format, resulting in five more potential participants over the next four weeks. Between the 12th November 2015 and the 6th January 2016 the researcher had been contacted by 13 NCHDs interesting in participating in the study (Table 3.1).

Week	Date	Circulation of Study Details by Training Bodies/ Intern Networks	Responses from NCHDs
1	26.10.15	• Training Bodies and Intern Networks Informed of the Study by Director NDTP	N/A
2	02.11.15	Agreement to assist with study; • Council of the College of Anaesthetists circulated to Anaesthetics trainees; • Royal College of Surgeons (RCSI) in Ireland circulated to both Surgery and Emergency Medicine trainees; • Trinity College Dublin (TCD) Intern Network Co-ordinator circulated to interns; • University College Dublin (UCD) Intern Network Co-ordinator agreed to assist with study, however Intern Network Administrator did not agree to circulate the study details unless the researcher's study complied with a particular policy the Administrator believed was relevant; • RCSI Intern Network Co-ordinator circulated to interns.	0
3	09.11.15	• Faculty of Radiology Trainee Sub-committee circulated to Radiology trainees; • RCSI Intern Network sent a reminder to their interns.	1 Radiology
4	16.11.15	• College of Psychiatrists Trainee Committee agreed to assist with study and two members of the Committee volunteered to participate.	1 Surgery 2 Psychiatry
5	23.11.15	• Request to circulate reminder email: o College of Anaesthetists; o RCSI; o Faculty of Radiology; o TCD Intern Network; • RCSI Intern Network sent another reminder to their interns.	3 Anaesthesia 1 Intern
6	30.11.15	• Researcher copied in a reminder email circulated by RCSI	0
7	07.12.15	• No contact between researcher and training bodies/ networks.	0
8	14.12.15	• RCSI asked to circulate study details to NCHDs outside of Dublin using reminder email format; • Offer by Radiology participant to see if they had a colleague who would also participate in the study was accepted by researcher	2 Surgery 1 Emergency Medicine
9	21.12.15	• No contact between researcher and training bodies/ networks.	1 Emergency Medicine
10	28.12.15	• No contact between researcher and training bodies/ networks.	0
11	04.01.16	• No contact between researcher and training bodies/ networks.	1 Surgery

Table 3.1 Circulation of study details by Training Bodies/ Intern Networks and responses from NCHDs

Challenges relating to the participant recruitment were varied, depending on the environment engaged with by the researcher (Table 3.1). The TCD Intern Network Administrator advised that it is very difficult to get interns to volunteer to participate in studies, they seldom respond to such requests and that the lack of response had nothing to do with the study. Approximately 70 interns in that network received the

communications about the study and no volunteers came forward. In another case, the Intern Network Administrator's interpretation of a policy regarding surveying interns led the researcher to stall engagement with that network in the hope that intern participants would come from the other two networks. Ultimately the researcher did not re-engage with that network. The researcher discussed with her supervisor the possibility of needing to use the 'snowball' technique (Atkinson and Flint, 2001; Noy, 2008; Patton, 2015) as an additional means of seeking participants. A Radiology participant had offered to circulate an email about the study to NCHDs in their hospital, in keeping with this technique. At this point the researcher had thirteen potential participants and so thanked the Radiology participant but advised that the recruitment process was complete.

Primary Data Collection: Interview Schedule

Of these thirteen potential participants, eleven participated in the study. The remaining two participants, despite a number of communications with the researcher did not ultimately agree a date to meet for the initial interview. Each participant would be interviewed between one and up to three times over the forthcoming months. Table 3.2 below provides a breakdown of the study participants.

Specialty	Training level	Date of 1st Interview	Length of interview	Reviewed transcript	Gender
Anaesthesia[3]	Higher Specialist Training equivalent	04.12.15	66.31 mins	Did not choose to review	Male
Anaesthesia	Basic Specialist Training	21.12.15	46.15 mins	Chose to review – no edits	Male
Anaesthesia[4]	Basic Specialist Training	15.01.16	52.18 mins	Chose to review – no edits	Female
Radiology	Higher Specialist Training	09.12.15	54.14 mins	Chose to review – no edits	Male
Psychiatry	Basic Specialist Training	27.11.15	54.44 mins	Chose to review – no edits	Female
Psychiatry	Higher Specialist Training	30.11.15	49.31 mins	Did not choose to review	Male
Emergency Medicine	Higher Specialist Training	17.12.15	62.39 mins	Chose to review – no edits	Male
Surgery[4]	Streamline Training 2 Higher Specialist Training	08.01.16	42.37 mins	Did not choose to review	Female
Surgery	Basic Specialist Training	21.01.16	36.55 mins	Chose to review – no edits	Male
Surgery	Higher Specialist Training	25.01.16	44.38 mins	Did not choose to review	Female
Intern	N/A	10.12.15	46.07 mins	Chose to review – edits returned	Female

Table 3.2 Summary of study participants

Participants have been given codes from P1 to P11 that are different to the order in which the participants appear in Table 3.2, in order to preserve confidentiality. The interviews took place either at the researcher's offices, at the participants' place of work, at a training body's premises and in one case in a hotel. Before the interviews commenced all

[3] This participant was on the International Medical Graduate Trainee Initiative (IMGTI) and was in his second year of a two year programme in Ireland studying Anaesthetics. He said he was at the equivalent of HST level. The IMGTI Anaesthetics training programme is run by the College of Anaesthetists and is similar to but not the same as the Irish Anaesthetics Specialist Training Programme. The IMGTI has been operating in Ireland since 2013, and in 2015/16 there were approximately 200 doctors in various specialties working as NCHDs in Ireland as part of the initiative. It did not become clear to the researcher until the start of the interview that this participant was an IMGTI trainee. However, following discussion with the researcher's supervisor and given the prevalence of IMGTI trainees in Ireland and the likelihood that their numbers will continue to increase it was decided to include this participant in the study.

[4] These participants were not in the same location from July 2015 to July 2016, they each moved to a new hospital in January 2016. However; given the challenges in recruiting participants the researcher decided in conjunction with her supervisor to include them in the study.

participants were offered a further opportunity to review the consent form and ask any questions prior to signing the form (Brinkmann and Kvale, 2015; Patton, 2015). Each was asked for their permission for the interviews could be recorded (Patton, 2015) and advised that all questions were voluntary. Following each interview, the researcher captured her impressions and reflections on the interview for her reflective log (Brinkmann and Kvale, 2015; Carcary, 2009; Koch, 1994). Finally, all participants were offered the opportunity to review the transcript and make any amendments or clarifications that they wish. This step adds to the data validation within the study.

CASE STUDY DATABASE AND DOCUMENTARY REVIEW

In addition to semi-structured interviews this study also includes a case study database (Table 3.3) and documentary review of relevant documentation as a means of increasing the reliability of the case study (Yin, 2014).

No	Item	Location
1	Methodology and research design paper	..\Methodology paper\Methodology_LDoyleFINAL_Jan16.docx
2	Project plan and actual plan	..\Project Plan\Project Plan DBA Data Collection.xlsx
3	Submission to Ethics Committee	C:\Users\user\Documents\DBA\Ethical Approval
4	Interview Guide	..\Interview guide\LDoyle interview template Oct 2015 FINAL.docx
5	Consent form	..\..\Ethical Approval\Revised submission following committee feedback\ldoyle ethics form Oct 2015FINAL.docx
6	Letter of introduction combined with consent form	..\Letter of Introduction\version used\LDoyle Letter of Intro and consent Oct 15 FINAL.docx
7	Introductory email	Intro email no consent form.docx
8	Log of contacts with Training Bodies to seek participants	DBA Research Project - Contacts.docx
9	Contact details for participants	Participant Contact Details.docx
10	Participant Names and Participant Codes	Potential Research Participants file password protected in work office
11	Participant Profile information	..\Transcripts\participant overview information.xlsx
12	Hard copy consent forms	With researchers files at home
13	Hard copy individual participant overview information	With researchers files at home
14	Record of whether participants wanted to see transcripts or not	Circulation of transcripts.docx
15	Cover email to send transcript to participant	cover email for transcript.docx
16	Reminder email when no response receive to transcript	email no response re transcript.docx
17	All transcripts	C:\Users\user\Documents\DBA\Methodology\Transcripts
18	All recordings	C:\Users\user\Documents\DBA\Methodology\Recordings
19	Interview reflections	..\Transcripts\Interview Reflections.docx
20	Record of project meetings with supervisor	..\..\DBA Project Meeting Log\LDoyle_DBA Project Meeting Logs.docx
21	Document protocol	..\Document Protocol\Document protocol final.docx
22	List of documents to review	..\Documentary Review\Documents for the study.docx
23	Hard copy reflective log entries	In researcher's reflective log journal

Table 3.3 Case study database

In preparing to conduct the documentary review the researcher was mindful that reliability in the design of a case study means another researcher could carry out the study in the same context with the same participants and methods and they would obtain similar results (Shenton, 2004). Developing a document protocol is one of the means of ensuring reliability within the case study design (Yin, 2014). In this study, the document protocol assists with increasing reliability as it provides a standard means of reviewing

documentation to determine the degree of relevance and significance it has to the study (Miles and Huberman, 1994). The researcher designed the document protocol using the key themes that were contained within the interview guide, (see Appendix 2). These themes were derived from the preliminary conceptual framework which was developed through engagement with the relevant literature. The document protocol is used to summarise how the document is relevant to the study themes (Crossan and Berdrow, 2003; Miles and Huberman, 1994). Documents that are determined to be highly relevant, relevant or somewhat relevant are analysed in greater depth to determine whether they can corroborate or explain data collected from the interviews (Tamim and Grant, 2013) or shed additional light on the research questions. Carrying out the documentary review will be part of the next steps in the study, but to date the researcher has identified a number of documents to be reviewed using her knowledge of publications about NCHDs and training in the Irish health system (see Appendix 2).

INITIAL FINDINGS

After transcribing the interviews, the researcher familiarised herself with the data (Braun and Clarke, 2006) in order to develop an initial view of the emergent themes that stood out to the researcher from the transcripts. This was done prior to the generating of initial codes. The researcher familiarised herself with the transcripts by reading and comparing the participants answers to questions from the interview guide. This allowed the researcher to notice a series of emergent themes that became the sub-themes in the initial interrogation of the data. It was then possible to see how some of these themes might connect and relate to one another which facilitated them being organised into the four main themes of; experience hierarchy, intuitive capacity, interpreting learning and learning supports (Table 3.4).

Theme	Sub-theme
Experience hierarchy	Seniority's impact on learning
Intuitive capacity	Instinct as a catalyst for learning
	Fleeting intuition – a lost opportunity for learning
	Time in role/ duration in role
	Idea generation
Interpreting learning	Figuring out new ideas
	Metaphors and imagery in interpreting
	Informal learning
	Conduit of communications/ sharing of information
Learning supports	Social processes and their role within learning
	Different teams/ team composition
	Medical training as a catalyst for learning intuition, interpretation and feedback

Table 3.4 Emergent themes

NCHDs are completing their specialist post-graduate training to enable them to practice as consultants. After their intern year and depending on their chosen specialty they can spend between four to ten years as an NCHD. Once successfully qualified as a specialist they become eligible to apply for consultant posts. Appendix 3 provides more detail on the structure of postgraduate medical training in Ireland.

Experience hierarchy's impact on learning

It would appear that the role of seniority is critical in the learning of NCHDs. Consultants often have ten to fifteen years of experience, thus seniority is perceived to indicate knowledge and experience and the more senior a doctor is, the more weight is attached to what they say; "*... there'd be a lot of weight to what a consultant says really emm and they've got all those years of clinical experience*" (P6). The expectation is that if an NCHD does not know what to do or what something means then they will escalate it to a more senior colleague and the issue will continue to be escalated until it reaches someone who knows what to do;

> "… if the patient is unwell and you don't know what to do you have to escalate immediately, and that's kind of drummed into you over and over again, that the next tier up needs to know about it if there's a problem that's serious". (P8)

> "the senior person calls the shot, the boss says X we do X … they are the person who will get the blame, the buck stops with them". (P11)

The seniority of the NCHDs also appears to be acknowledged by the consultant and in a team setting the consultant would not embarrass the senior registrars;

> "… usually it's kind of seen as good emm manners if the consultant would ask questions of the most junior person so as for it not to be kind of humiliating for the most senior person, so they might ask a question of the medical student and the medical student mightn't know and then they might step it up and ask the intern, and if the intern didn't know they gradually step it up, but generally wouldn't direct a question to somebody senior like me initially in front of a team". (P8)

Consultants also generally would not teach senior registrars in front of junior colleagues. The senior registrars would be taught with other senior registrars or perhaps colleagues at the level below them but not with those more junior than that. The impact of seniority in learning is that it can be an enabler of the feedback flow of learning. In the case of a junior NCHD what is already understood at the level of the team flows back to that individual who is at an earlier stage in their formation as a doctor;

> "We work quite individual in a team setting, … from a team perspective … we take direction from a consultant who passes on information, who says this is either the way it's going to be done and either you learn that that's the way it's done because it's always been done that way, or in some instances you'll understand why it's being done that way, it's based on evidence or it's based on experience, or a lot of times we do stuff because somebody has done it before". (P11)

Thus, NCHDs learn in a hierarchical manner from those who are more senior to them, and learning is more about being told what do to rather than figuring things out for themselves;

> "Some teams I've worked on in the past, you didn't even get to question you just did, without understanding why - why was that?, what was the experience that that was based on?, or are we just doing it because that is the way it's been always been done?". (P11)

Intuitive capacity

All of the participants identified occasions where their gut instinct has been a catalyst for learning and that this is an instinct that they would trust. This instinct could lead them to seek help when not confident in the situation they were in. Also to 'sense' that there is something wrong with the patient even if tests are showing that they are fine;

> "… doctors would say to each other does the patient look sick and that means something to us specific, it means you know do you have a feeling that this person really isn't right?, and even if objective parameters might be fine, like the vital signs might be fine you would frequently have a gut feeling that something's wrong with this person, I need to get an investigation, or I need to hand it over to the on-call team or something you know so you frequently use your gut instinct at work". (P8)

Their instinct would encourage them to perhaps stay with the patient, or ensure to escalate the issue to a more senior colleague. More often than not this had proven to be the right course of action for the patient. However, one participant spoke about not sharing a gut instinct about something such as a diagnosis with more junior colleagues for fear that the junior colleague may let something slip inadvertently to the patient or their family due to lack of experience. He/she would wait for test results to provide confirmation before communicating to the patient or the team. Another participant's view is that using gut instinct which is done all the time by experienced doctors is not nurtured enough in trainees. Other examples provided where instinct was a catalyst for learning were; to recognise something resonating with a patient, to order a more thorough scan based on family history, to empathise with the patient's situation and have a sense of what the patient wanted in that situation.

To utilise intuition the individual must recognise and grasp it, in instances where this does not occur intuition is fleeting. Fleeting intuition within the preliminary conceptual framework is the experience of something being intuited by an individual but that intuition melts away before the individual had fully become conscious of it and grasping it in their minds. To find out the participants' experience of fleeting intuition the researcher asked them; 'have there been times when you've had the inkling of an idea but it had gone before you'd grasped it?'. Six of the participants said that they had not experienced this. Those participants believe that they listen to their ideas or that their mind does not work that way;

> "no I kind of listen to my ideas if you know what I mean … if I get an inkling I kind of give it a bit of thought usually". (P1)

> "I'm not sure really, I can't think of anything, no I'm, that wouldn't normally be how my mind works I don't think". (P9)

Interestingly one of the participants who said they did not experience this, later in the interview made reference to having an idea but it had gone. The other five participants said that they regularly experienced having the inkling of an idea but not being able to grasp it.

NCHDs spend a relatively short time in each role, with many rotating to a new job every six months. Spending only a short time in a role creates a sense in the mind of an NCHD that they have not been there long enough to have ideas or if they do, to discern whether the idea is a good one;

> "… I think doctors share their ideas much less because we're often on six month rotations so you're spending three months getting your head in the door working out what's going on, then you know what's going on, often I felt like I'm at the end of my rotation and just now I know what's going on …". (P2)

For other participants asking them about ideas did not seem to resonate with them. Various responses were given including; "…*we deal with facts* … [and] *evidence* …" (P3), our job "*it's not creative really it's reactive really* …" (P6);

> "… we kind of don't deal with like emm kind of ideas per se it's more like practical projects like something needs to get done and who's going to do all the parts of the task …". (P8)

For one participant the word 'ideas' evoked the concept of change and the introduction of large scale changes and it was their view that NCHDs did not have opportunities to do this. When asked by the researcher if colleagues ever say 'we'll try this or we'll try that' or make 'little improvements' they said;

> "yeah we do, I mean we had a meeting today at lunch that emm about using a different type of eh device, ... and so the rep demonstrated for us today and for our next [name of procedure removed] we're going to use this type of device, so we kind of talked about well we could only really see the pros of it, but we were just trying to talk about some of the pros and we're using an old fashioned way, so eh ideas like that where somebody says hey I've seen that new device … we should use now it's better for the patients, so we can implement a little bit of change with our patients and our patients care". (P11)

Where NCHDs do have ideas their short duration in the role inhibits some of them from sharing these ideas, which prevents the flow of learning from the individual level to the team level of learning;

> "… in a six-month job there's not a chance of getting anything like that [ideas to change the system] and so you don't share your ideas, you kind of sit back and then in the year-long jobs it gets a bit better. … I do think that fosters a passivity in doctors which is weird 'cause it's then when you go to be a consultant they're looking for that kind of active engagement". (P2)

NCHDs, particularly at the early stages of their training, monitor how they come across to their senior colleagues and consider whether or not to share an idea;

> "maybe if you are a very junior person dealing with a lot of senior eh colleagues … you might be a bit more emm apprehensive about sharing your thoughts". (P7)

> "… nobody wanted to do anything that would upset the powers that be …". (P10)

Individuals also believe that by sharing an idea it could actually result in more work for them, as they may be asked to further explore it or implement it in some way;

> "… the person who's managing me is my consultant and if they're too busy to care then you know in some jobs … the thing is the less work you can make for your consultant the better fed you are… so yeah in some of those jobs then … you eh hold things back because you you'd say to someone and they'd say we can't change that, or you'll say it to them and they'll say why don't you do an audit on that and you like you're like well I don't have time to do that …". (P2)

This can be coupled with the sense that NCHDs are going to be leaving their job soon so why draw extra work on themselves; *"… but then we finish in five weeks … I don't know whether anybody's going to even want to put that effort in …"* (P5). There is also the belief that because they will be moving to another role those they are working with currently may not want to take their ideas on board as they will not be there in a few months' time;

> "… you're in a job where no one cares about your ideas either because you're gone in six months so if the clinical nurse specialist has an idea and you have an idea and there's only time to do one the consultant has to work with them for the next ten years so her idea wins …". (P2)

The requirement to rotate every six months or a year can make it difficult to break into an established team that is in place in a hospital. The team may be working together ten or fifteen years. One participant said that it does require being assertive and to "*stand*

your ground" (P7) on occasions. Another participant characterised it as being in and out and having no opportunity to discuss ideas with permanent staff, nurses for example. There is little or no contact with management in the hospital apart from HR. A further draw back of the six month rotations is that due to its short duration it may cause people to be reluctant to invest in the trainee;

> "… you don't get a chance to develop a relationship in a job, emm you can imagine anyone if you came into your job for six months would anyone care about you? - not really because you know you're moving on and this happens six every six months, it's really - and you do that for six years - and it's really tough like starting off fresh everywhere, so it's difficult in that instance to learn, so I think you have to be in a position longer to learn and for people to to take the time to teach you, it seems fundamental". (P11)

Interpreting learning

Figuring out something new with others shows learning moving from intuition, to being further developed through interpreting with others and if it proves successful becoming integrated at the level of the team (Crossan *et al*., 1999). Four participants could not think of a time when they and their team had figured out something new together. This supports the earlier theme of experience hierarchy's impact on learning, where it suggests that learning is more about being told what to do rather than being proactive. Other participants did provide examples of figuring out new ideas. Examples from clinical situations included; figuring out what might be causing a patient's symptoms from test results, learning that certain symptoms were a cause of a particular diagnosis, when presented with an unfamiliar condition looking it up and discussing it with the consultant to plan the management of the patient and learning to interpret images/ scans. Other examples included; learning from results of an audit that showed the team was not doing the same as other teams, discussing how to work better as a team and re-introduction of the use of patient flow sheets and introducing the idea of a typed up handover. One participant spoke about learning in on-call situations although this appeared to be more learning they as an individual gained from these situations, rather than figuring something out as a team.

Metaphors and imagery can feature in the interpreting of learning. For NCHDs the use of metaphors and imagery is primarily with patients, more junior colleagues, or medical

students but does not seem to have a big use in normal day to day work. One participant commented that metaphors and imagery are not used with colleagues;

> "… not to team members unfortunately… we've been trained which I don't quite understand to be honest to talk very medical with a lot of jargon to each other and use a lot of terminology and Latin and etc … 'cause we perceive that we're dumbing down the profession, … but we do it [use metaphors] all the time to our patients, but yet we have a different language to ourselves …". (P11)

The role of informal learning appears to be key in how an NCHD develops understanding and how learning moves from being part of the understanding that senior colleagues possess to be part of what more junior colleagues also learn. Discussions with consultants one to one are an important learning opportunity. In surgery for example, a lot of teaching is informal and happens in the theatre tea room between surgical cases. In anaesthesia it is similar;

> "… I certainly find I have a lot more informal chats that lead to fairly beneficial emm learning points … you'd usually hear about how things went on and obviously if there's two or three theatres running you might know about what's going in another theatre and actually hear about a problem and what they did about it or what the options were". (P9)

While there is a formal process whereby someone is on-call for queries, getting help or advice informally from other colleagues is often the route chosen. A potential downside of the informal nature of this learning is that it appears to be spontaneous and immediate to what is taking place. That makes it harder to bring up something from a few days previously as it is less current and so the opportunity to learn from it is lost;

> "… you're less likely to bring something back up on a Friday having talked about it on a Monday emm then if someone was just there on Tuesday morning and you could say actually about that lady yesterday or that patient yesterday". (P9)

Idea generation and development can also occur over a series of informal interactions leading to a situation where something is agreed and then implemented. Informal discussions that take place outside of more formal team meetings also play a significant role in reaching a shared understanding on an issue;

> "… there was some discussion amongst team members outside of the formal team meeting … and then there would have been notes in the chart I like would have read the assessments and stuff and you kind of so I think other people would have as well and each person sort of realising on their own and then talking about it as a team". (P1)

Participating in a study group is another example of informal learning in the life of an NCHD;

> "… we set up a lunchtime teaching group … and we try and discuss a new topic each and listen to each other's interpretation of it or eh what it means to us and what we've learnt from the presentation". (P4)

Communicating with the medical team throughout the day can present a challenge as members are in different physical locations eg: clinics, wards, theatre. Having an effective means of sharing information and communicating with team members is important to enable the interpreting of learning. Some participants spoke about WhatsApp[5] being used as a conduit of communication and a means of sharing information;

> "We have a WhatsApp group and then one of the guys just posted up a suggestion that we would start to always print off the updated list for the afternoon/evening round. Everybody kind of made further suggestions and then we agreed …". (P5)

Often in surgical teams the interns are on the wards with the patients and when they have questions the rest of the team is either in surgery or running out-patient clinics. WhatsApp allows the interns to ask a question, or explain a problem and they will get a quick response back telling them what to do;

> "… it's difficult for us to communicate all through the day, so the interns will - will send a message out that they're having, that soandso is having a problem with soandso, eh eh, what do I do?, how do I manage this? So if we're in theatre or down in clinics we can give them quick answers about what to do". (P11)

It is an efficient way of sharing information among the team as with WhatsApp all team members can see the questions and responses and keep up to date with what is happening with the patients. This again enables the exploitation of the learning and understanding that the seniors possess and facilitates the feedback flow of learning. It may also facilitate the integration of learning at the team level as all team members have access to the information and generally some action will be taken in response to the answer provided.

[5] WhatsApp is a mobile messaging app that allows users to exchange messages without paying for SMS. It is available for a variety of mobile phones eg: iPhone, Android, Windows (WhatsApp, 2016)

WhatsApp is also being used by some NCHDs to arrange their own teaching sessions and remind each other about them;

> "… one of the things I did was set up a WhatsApp group so we could arrange our teaching or remind each other …". (P4)

The use of Facebook, YouTube, online lectures, various databases and the Internet also features in how some participants approach their own self-directed learning, which on some occasions they would send a link to others also sharing the information;

> "… the way I learn has changed a lot … and the most recent change is probably embracing new technology like online lectures and … using social media, using WhatsApp groups to communicate learning points emm but also another new thing … is learning from Facebook by I notice by clicking a lot of for example [name of specialty removed] sites … and by clicking 'like' on them they tend to come up a lot more on my feed … and I kind of use that as a quick way of [finding new information] without having to search into individual journals …". (P4)

Learning supports

The interview data also shows that social processes and their role within learning is a learning support for NCHDs. Interpersonal relationships and personalities influence how things are done; "*it just depends on the kind of interpersonal relationships more than anything*" (P9). The researcher's preliminary conceptual framework had envisaged interpreting as being a social process at the intersection of the individual level and the team levels of learning. Interpreting is also envisaged as being possible to derail. The social processes that would appear to facilitate learning include;

> "[having a] consultant [who] is very open to different opinions. … [and] the input for the rest of the MDT team eh was kind of gave [me] more confidence …". (P1)

> "… you felt comfortable because that consultant was a good teacher and made you didn't make you feel stupid when you learnt eh something or mentioned some mentioned you didn't know about something so you didn't feel stupid you felt eh safe in that learning environment and that you wouldn't be ridiculed …". (P4)

There were indications that some senior registrars actively try and facilitate the team to work together through encouraging practices such as having breakfast together, having lunch together, so that basically everyone is on a level and that helps everyone work so much better. If senior members of the team have a good relationship with the team, people will ask questions and will not be intimidated, there will be open communication and;

> "… people will ask not just to follow an order but to try and understand why they are doing it that way". (P11)

Part of the social processes do involve being respectful of hierarchy and those senior to you; "*the consultants were like on a pedestal …*" (P10); "*I am a trainee and the consultant is well above in knowledge and practice …*" (P3). Learning is about "*upward asking*" (P11) and relationships need to be open enough so that can be done. Trust in the person that you are learning from is important so that the NCHD can feel that they can ask questions and will not be judged.

Examples of where social processes would inhibit the interaction of individual and team learning were also referred to. These included; the overall team structure being; "*weird*" (P2) lacking official authority and not having common lines of management. People hiding from problems that arise, either because they do not; "*want to rock the boat*" (P10), or in some instances the individual who is bringing up the problem could be seen as being the problem. Social processes can also influence the sharing of ideas, where colleagues are perceived to be cocky, or not respectful then ideas may not be shared with them. Other perceptions that could lead to ideas not being shared include; "*if I think they know already*" (P5), if a colleague is in a rush, if a very junior NCHD is with a lot of senior colleagues, or an NCHD is with people they do not know very well they may hold back;

> "… when you're with the people you know you'd be, you know, you'd be a lot more forthright and then when when it's people you don't know or you know you know superiors that you don't know you'd have to emm you'd have to be more measured maybe …". (P6)

The different types of teams that the participants are part of also appears to be a sub-theme here and probably one that requires further understanding by the researcher as participants seemed to have different levels of embeddedness in their teams. Some are in teams of the same profession as themselves and others operate in multi-disciplinary teams (MDTs). One of the participants changes team every day, and could be working with a different registrar and the same consultant or vice versa or both could be different. With the shift patterns that people work it could be several days before colleagues would see

each other. Another participant spoke about having seven bosses, each of whom operates on different days in the week. The intern spoke primarily about the intern team not the wider surgical team that they as a group of interns are part of and it appeared that they did not really feel part of the wider team to any great degree. Some of the participants gave examples from other jobs, in different hospitals to where they're working at the time of the interview. It may well be the case that while NCHDs work in a team setting, that in some specialties at least they fulfil a role on the team and carry out certain tasks that are commensurate with their level of training but do that as an individual and they may not feel part of a cohesive team;

> "We work quite individual in a team setting, … from a team perspective … we take direction from a consultant who passes on information, who says this is either the way it's going to be done and either you learn that that's the way it's done because it's always been done that way, or in some instances you'll understand why it's being done that way, it's based on evidence or it's based on experience, or a lot of times we do stuff because somebody has done it before". (P11)

Medical training has the capacity to be a catalyst for learning intuition, interpretation and feedback and should be a support for learning. Several of the participants spoke about the delivery of medical training. Participants had experienced various structured teaching sessions, some of which were thought to be very good, and others somewhat less so. The learning experience as part of the day to day job is quite unstructured and self-directed;

> "It's either listening for information, picking up information, listening to conversations, noticing what's happened, because none of it is structured learning, and there's no eh nobody's eh nobody's tested to see are they actually understanding or picking it up, so it's just a skill that you have to learn". (P11)

Studying for exams is basically self-taught and may involve a study group;

> "… you are expected to to do your own personal learning, a lot of the exams are mostly self-taught or taught in groups you know other peers we might study together …". (P9)

One participant felt that; "…*there's not enough teaching at post-graduate level for trainees* …" (P10) the training body provides some workshops;

> "… we come in six days a year, maybe seven days a year, that's it, you know there's no specialty training, it's just, it's just there's no structure to it, it's basically go into that job, I feel you're filling a work post …". (P10)

This same participant felt that there is no dedicated structure from the training body to the hospitals, so the learning experiences depend on the individual consultants. NCHDs are at the behest of senior people to teach them and that it would be;

> "… better if some teaching was more pushed at you rather than begging for someone to teach …". (P10)

> "… it's a very difficult eh very difficult job to learn … because it all depends on, you're so dependent on seniors to teach and it's a lot about their experience, and everybody's very stretched …". (P11)

The role of six month rotations is also relevant in this theme, as it is perceived to be the case that due to the short duration of these rotations it is hard to get somebody to care about and invest in individual NCHDs. Two participants spoke about learning grids devised by their training body setting out the learning to be acquired by the NCHD over the course of their training. One had reservations about this approach arguing that;

> "… it creates kind of flat pack doctors who are kind of off the shelf, the lowest common denominator emm and know how to fill out forms and jump through hoops, … sometimes the those kind of learning grids are an exercise which bring all doctors to a level and probably for the majority you're actually bringing them down, but for you're getting rid of you're not you're bringing the really bad ones up to a base line level so I think they're more concerned about that then …". (P2)

This study aims to research how the multi-levels of individual learning and team learning interact in public healthcare organisations. Initial findings indicate that the role and preservation of seniority is critical in the learning of NCHDs; those with greater clinical experience are sought out by junior members when seeking answers and consultants are unlikely to teach senior registrars in front of their more junior colleagues in order to preserve their seniority. This approach may restrict the self-sufficiency of junior team members when faced with dilemmas in the work setting if they are conditioned to ask a senior colleague for the answer. Intuitive capacity or 'gut instinct' is seen as a catalyst for learning and as an indicator that the individual may need help with the situation they are in. However, the individual must both recognise and grasp intuition to glean its value in their work setting. The frequency of job rotation in this professional setting may negatively impact individuals' willingness to engage intuition through the expression or sharing of ideas or by proposing an incremental improvement to their team. Despite the inclination towards being told what to do rather than being proactive as highlighted in the seniority theme, the initial findings exhibit instances where team members figured out something new together. In these instances, words, metaphors and imagery featured in

the interpreting of learning while informal learning enhanced how NCHDs developed understanding, particularly when an effective means of sharing information was in operation. Rather than replacing formal learning methods including ongoing medical training, these informal learning supports enhance the embeddedness of the learner in the team environment. Finally interpersonal relationships were found to influence learning at team level and these social processes involve being respectful of experience and seniority.

CONCLUSION

This paper documents a number of stages in implementing the research design including; obtaining ethical approval, development of a data collection plan, recruiting 11 NCHDs and conducting the first round of semi-structured interviews with those participants. In addition, the researcher has developed the document protocol for review of relevant documentation and identified a number of documents to be reviewed. The researcher is also maintaining a case study database and her reflective log. The initial findings from familiarisation with the semi-structured interviews resulted in the identification of key sub-themes which include the following emergent themes; experience hierarchy, intuitive capacity, interpreting learning and learning supports.

NEXT STEPS

Having completed, transcribed and reviewed the first round of interviews in liaison with the reflective log, the researcher will import the transcripts into NVivo to begin coding and developing the thematic analysis. The second round of interviews are scheduled to commence in mid-March to run to approximately the end of April, with third round interviews to be completed by the end of June 2016. The second and third round interviews will be transcribed and imported for analysis into NVivo. In addition to data from the interviews the researcher will carry out the documentary review and the review of her reflective log prior to the completing the fourth paper.

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APPPENDIX 1 – CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY

Researcher's Name(s): Louise Doyle

Project Title: How the Multi-levels of Individual Learning and Team Learning Interact in Public Healthcare Organisations.

INTRODUCTION

This consent may contain words that you do not fully understand. Please ask the researcher to explain any words or information that you do not clearly understand.

You are being asked to participate in a research study as a Non-Consultant Hospital Doctor (NCHD). When you are invited to participate in research, you have the right to be informed about the study procedures so that you can decide whether you are willing to participate.

Your participation is entirely voluntary. You may stop participation at any time up to data merge without penalty or loss of benefits to which you are otherwise entitled.

WHY IS THIS STUDY BEING DONE?

The purpose of this research is to study how the multi-levels of individual and team learning interact in a public healthcare organisation. This study is in partial fulfilment of a Doctorate in Business Administration, which the researcher is undertaking in Waterford Institute of Technology.

The Researcher works in the HSE - National Doctors Training & Planning (NDTP). NDTP are supporting this study given that it has the potential to develop understanding as to how to enhance the effectiveness of learning interactions in medical and other healthcare teams. It aims to increase understanding as to how effective team working can be nurtured so that team members can develop insights and learn together which will equip them to respond to the high levels of change in their organisations. This understanding could then be used to improve the learning experiences of NCHDs and other health professionals in the Irish healthcare system.

HOW MANY PEOPLE WILL BE IN THE STUDY?

Up to 15 NCHDs will take part in this study; each will be employed in the Irish public healthcare system.

WHAT AM I BEING ASKED TO DO?

You are being asked to participate in up to 3 interviews over a nine-month period. You will be asked about what learning means to you and how you learn when you're at work.

You will then be asked about learning in a team in general – when you've learnt something in a team and how you and your team go about problem solving and figuring out new things. You will also be asked to describe in a more detailed way different aspects of the process of learning in a team setting, which includes idea generation, developing an idea with your team, developing shared understanding as a team, the structures that help you learn in a team and how the organisational processes/procedures influence your approach and your team's approach to learning.

HOW LONG WILL I BE IN THE STUDY?

This study will take 9 months to complete. Each interview will take between 30 and 60 minutes to complete. With your permission the interviews will be recorded. The interviews will take place at a location of your choosing (eg: your home, your workplace, a coffee shop, etc.). I realise that you are busy and understand that the interview may be interrupted – the questions have been designed to allow for this likelihood. As such, the time from start to finish of the interview, allowing for disruptions, may vary from interview to interview.

WHAT ARE THE BENEFITS TO ME OF BEING IN THE STUDY?

The benefit of the study is to increase your awareness of aspects of how you learn, both as an individual and also as part of your team. This increased awareness has the potential to enable you to learn more effectively in the workplace.

WHAT ARE THE RISKS OF BEING IN THE STUDY?

The questions relate to your experiences of learning as part of your team and as such do not present a particular risk. However, should any criminal or harmful issues be disclosed to the researcher, it may be necessary for the researcher to report these, following consultation with her research supervisors, Dr. Felicity Kelliher and Prof. Denis Harrington.

CONFIDENTIALITY

For your participation in this study to be anonymous it would mean that your identity would not be known to the researcher. Participants taking part in the study will not be anonymous as they will be known to the researcher and potentially the research supervisors (if required).

Your participation in the study will be treated confidentially. Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study. While confidentiality applies, please be aware that, should any criminal or harmful issues be disclosed to the researcher, it may be necessary for the researcher to report these, following consultation with her research supervisors, Dr. Felicity Kelliher and Prof. Denis Harrington.

For confidentiality purposes you will be assigned an Identification Code and your name or other identifying factors will not appear in the final research documentation or related publications.

Information produced by this study will be stored in the researcher's file and identified by a code number only. The code key connecting your name to specific information about you will be kept in a separate, secure location. Information contained in your records may not be given to anyone unaffiliated with the study in a form that could identify you without your written consent, except as required by law. In addition, if used, you will be given the opportunity to listen to or read the audio transcript before you give your permission for their use if you so request.

WHO DO I CONTACT IF I HAVE QUESTIONS, CONCERNS, OR COMPLAINTS?

You may ask questions, voice concerns or complaints to the researcher (principal investigator), Louise Doyle by email XXX or by telephone XXX.

WHOM DO I CALL IF I HAVE QUESTIONS OR PROBLEMS?

If you have any questions regarding your rights as a participant in this research and/or concerns about the study, or if you feel under any pressure to enrol or to continue to participate in this study, you may contact my research tutor, Dr. Felicity Kelliher by email XXX or by telephone XXX.

A copy of this Informed Consent form will be given to you before you participate in the research.

SIGNATURE

I have read this consent form and my questions have been answered. My signature below means that I do want to be in the study. I know that I can remove myself from the study at any time up to data merge without any problems.

_____ _____

Signature Date

Print Name: _____

REQUEST FOR OVERVIEW INFORMATION

Thank you for agreeing to participate in this research study. Your time is greatly appreciated.

I would appreciate if you would answer the questions below prior to commencing the interview process:

1. What year of your NCHD training programme are you in?	
2. Are you in basic specialty training (BST), higher specialty training (HST) or streamlined training (ST)? BST ☐ HST ☐ ST ☐	
3. What is your job title? Intern ☐ Senior House Officer ☐ Specialist Registrar ☐ Senior Registrar ☐ Streamlined Training ☐ Year _____ Other (please specify) _____	
4. What is your specialty?	
5. What hospital are you currently working in?	
6. What date did you start working in this hospital?	
7. What date are you due to rotate from this hospital?	
8. What team(s) are you part of in this hospital?	
9. Are you: Male ☐ Female ☐	
10. What is your age bracket? 20 – 25 ☐ 26 – 30 ☐ 31 - 35 ☐ 36 – 40 ☐ 41 – 45 ☐ 46 – 50 ☐	

Participant No: _____

APPENDIX 2 – DOCUMENT PROTOCOL AND REVIEW TABLE

Document name	
Document owner	
Type of document	
Publication date	
Brief Summary	
Relevance to study: **highly relevant** **somewhat relevant** **not relevant**	
Is learning, training, education in public healthcare organisations mentioned?	
Is learning, training, education of NCHDs mentioned?	
How learning happens in a team context?	
Learning involving mental models, learning as a social process involving others?	
Processes and conditions that facilitate or hinder learning?	
Role of social processes, relationships, social structures?	
Structural and professional boundaries?	

Team composition?
Organisational structure?
Individual team members accessing the learning that exists in team?
Contacts within social groups and closeness of groups and individuals?
Sharing ideas and intuitions and developing them further to form a common understanding?
Taking action as a result of understanding – integrating?
Feeling discouraged from sharing ideas, ideas not worthy, interpreting being derailed, getting sharing an idea back on track?
Defensive routines – not showing lack of understanding to other team members, withholding information, gaining support for ideas before presenting them more widely, sounding more confident in idea or spinning ideas?
Role of language, metaphors, imagery, conversation and dialogue, sense making?
Feedback flow of learning – organisational level to team level to individual level?
Feedback flow - inhibit new learning?

Author/ Publisher	Title	Year	Link
Medical Council	Doctors' Education, Training and Lifelong Learning in 21st Century Ireland	2015	https://www.medicalcouncil.ie/News-and-Publications/Reports/Doctors-Education-Training-and-Lifelong-Learning-in-21st-Century-Ireland.pdf
Medical Council	Your Training Counts 2014	2014	https://www.medicalcouncil.ie/News-and-Publications/Reports/Your-Training-Counts-Survey.pdf
Medical Council	Your Training Counts 2014 Spotlight on health and wellbeing	2014	https://www.medicalcouncil.ie/News-and-Publications/Reports/Your-Training-Counts-health-and-Wellbeing.pdf
Medical Council	Your Training Counts 2014 Spotlight on trainee career and retention intensions	2014	https://www.medicalcouncil.ie/News-and-Publications/Reports/Your-Training-Counts-Trainee-Retention-and-Career-Intentions.pdf
Medical Council	Medical Workforce Intelligence Report A Report on the 2014 Annual Registration Retention Survey	2014	https://www.medicalcouncil.ie/News-and-Publications/Reports/Medical-Workforce-Report-2015.pdf
Medical Council	Your Training Counts 2015 Trainee experiences of clinical learning environments in Ireland 2015	2015	https://www.medicalcouncil.ie/News-and-Publications/Reports/Your-Training-Counts-2015-pdf-.pdf
NDTP	Annual Report 2014	2014	http://www.hse.ie/eng/staff/Leadership_Education_Development/MET/ed/rep/Annual_Report_2014.pdf
Department of Health and Children	Preparing Ireland's Doctors to meet the Health Needs of the 21st Century, Report of the Postgraduate Medical Education and Training Group (Buttimer 2006)	2006	http://health.gov.ie/wp-content/uploads/2014/03/buttimer.pdf
Department of Health and Children and the Department of Education and Science	Medical Education in Ireland – A New Direction, Report of the Working Group on Undergraduate Medical Education and Training (Fottrell Report 2006)	2006	https://www.education.ie/en/Publications/Policy-Reports/Medical-Education-in-Ireland-A-New-Direction-Report-of-the-Working-Group-on-Undergraduate-Medical-Education-and-Training.pdf
Department of Health	Strategic Review of Medical Training and Career Structure Terms of Reference 7th October 2013	2013	http://health.gov.ie/wp-content/uploads/2014/04/SRMTCS_Terms_of_Reference.pdf
Department of Health	Strategic Review of Medical Training and Career Structure Interim Report 12th December 2013	2013	http://health.gov.ie/wp-content/uploads/2014/03/SRMTCS_Interim_Report_FINAL.pdf
Department of Health	Strategic Review of Medical Training and Career Structure Report on Medical Career Structures and Pathways Following Completion of Specialist Training 11th April 2014	2014	http://health.gov.ie/wp-content/uploads/2014/04/SRMTCS_CareerStructures_Report_FINAL.pdf
Department of Health	Strategic Review of Medical Training and Career Structure Final Report 30th June 2014	2014	http://health.gov.ie/wp-content/uploads/2014/07/SRMTCS_Final_Report_300614_FINAL1.pdf
RCPI	Training 21st Century Clinical Leaders	2014	http://www.rcpi.ie/content/docs/000001/2005_5_media.pdf?1406884499
RCSI	Annual Report 2014 – 2015	2015	http://www.rcsi.ie/files/2015/20151008105651_RCSI-Annual-Report-2014-2015-F.pdf

Table A3.1 Documents for review

APPENDIX 3 - SRUCTURED POSTGRADUATE MEDICAL TRAINING

Upon completion of their intern year, NCHDs can follow one of two routes to train depending upon their chosen specialty. The duration of training varies from specialty to specialty however the table below depicts in general what is involved.

<table>
<tr><th colspan="2">Basic Specialty Training (BST) & Higher Specialty Training (HST)</th><th colspan="2">Streamlined Training (ST)</th></tr>
<tr><th>Years</th><th>Job Title</th><th>Years</th><th>Job Title</th></tr>
<tr><td>BST 2 Years</td><td>Senior House Officer (SHO)</td><td>Core Training 2 – 3 Years</td><td>ST1, ST2 (may still be referred to as SHOs)</td></tr>
<tr><td colspan="2">1 to 2 years as a Registrar*</td><td rowspan="2">Higher Specialist Training 4 – 6 Years</td><td rowspan="2">ST3 – ST8 (may still be referred to as SpRs)</td></tr>
<tr><td>HST 4 – 6 Years</td><td>Specialist Registrar (SpR)</td></tr>
</table>

* Often following completion of BST NCHDs will work for a year or two as a Registrar to build up their experience and to make themselves more competitive to apply for entry to HST. The introduction of streamlined training is designed to provide a route straight through to qualification as a specialist without a break, the core training is followed immediately by the higher specialist training.

Source: (HSE National Doctors Training and Planning, 2015)

Paper 4

FINDINGS AND ANALYSIS

PREFACE TO PAPER 4

This preface addresses the design implementation of the study that took place since the submission of DBA cumulative Paper 3 (March 2016). The aspects included are; coding the first round interviews and reviewing the coding of these interviews, developing the second round interview guide, conducting the second round interviews and coding the second round interviews, carrying out the third round clarification interviews, conducting the documentary review, maintenance of the case study database and the data collection plan, and the maintenance of the researcher's own reflective log.

Coding the First Round Interviews

The transcripts from the first round of interviews were imported into NVivo. As part of the process of coding each transcript the researcher developed a code book, within which the code and its definition were recorded. In addition to creating the code book in NVivo the researcher kept a hand written copy of it for easy reference, so as to ensure the codes were used consistently as she worked through the various transcripts. The researcher also used memoing to record thoughts and observations while coding the transcripts. These memos were saved in NVivo and provide insights to assist with theory formulation (Corbin and Strauss, 1990). From the beginning the coding was an iterative process (Dey, 1993) where, in the process of coding one transcript the researcher would recognise that that particular code could be relevant to a previous transcript and would go back and find the relevant section in that other transcript and code it also. In coding the transcripts, some sections were coded with more than one code (Hewitt-Taylor, 2001; Miles and Huberman, 1994).

Reviewing the Coding from First Round Interviews

When the coding of the first round interviews was complete the researcher generated a number of reports in NVivo including a coding summary by node report which could be used as a means to review the coding. The researcher printed the report as she was concerned that she would not be close enough to the codes if she did not print them out

and review the hard copies. The researcher cut up the summary by node report and put the coded sections into bundles. The intention here was to make the process of detecting duplicates or codes that are very similar, or segments that have been miscoded easier. The researcher reviewed the data coded and also reviewed the definitions of the codes. Data that the researcher believed did not belong with a particular code was marked as 'uncoded'. The researcher then investigated if this data could be coded to another code and the name of the new code was written beside it. If the name of the code needed to be changed the researcher wrote the new name on the front of the bundle, and also on the NVivo node structure report. This allowed the researcher to have a record of the new and old name for the code facilitating her to cross check with the code book for the definitions. The hard copy bundles provided the researcher with a very good visual cue as to how important a code might be – the data for some codes was just a small slip of paper – whereas others were a little bundle so obviously had a lot more data coded to them. When the review of the codes was completed the researcher updated NVivo with the changes to the coding and generated a new set of NVivo reports.

The next step was for the researcher to determine the codes that together would form themes. The first cut of the themes was worked out on paper (see Figure P4.1) and then transferred into NVivo where the parent and child nodes to form the node hierarchy were created. In the days that followed the researcher reflected on the themes and decided to make two changes which were to move 'methods of learning' to become a sub-theme of 'medical education' and to move 'preparing to talk to the team' to be a sub-theme of 'social processes'.

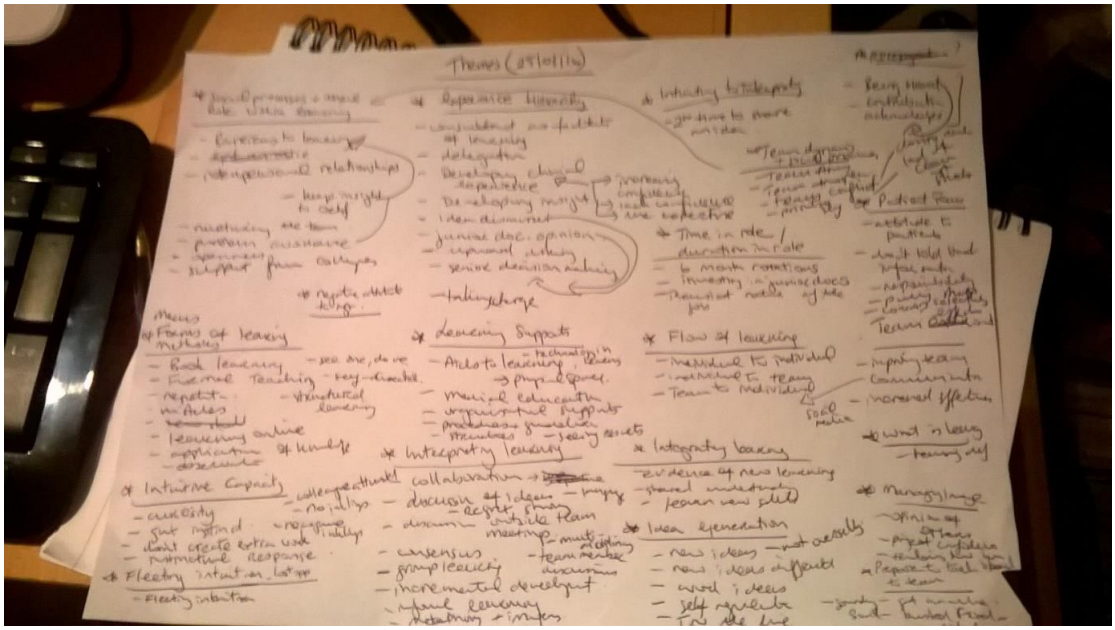

Figure P4.1: Initial theme identification

Developing the Second Round Interview Guide

In parallel with coding the first round of interviews the researcher developed the interview guide for the second round of interviews. From the analysis of the first round interview transcripts the researcher identified the following areas for inclusion in the second round interviews:

- Have the participants noticed anything about working with their team since the last interview that they'd like to mention?
- To get a better picture of the team(s) each participant is a member of, ask; how many members are there?, is the team composed of the same profession or multi-disciplinary?, do they work with the same people each day?, is shift work involved?, and, are they with the same team throughout their rotation?
- For participants who did not mention rotations in the first round interviews, what do they think about rotating and does it have an effect on their learning?
- For those who did not mention use of social media, seek whether they use it and for what?
- For participants where the word 'idea' did not really resonate, come back to that topic and try to tease it out more - ask them what does the word 'idea' mean to them.

- During the coding process the researcher created a code for individual to individual learning and was struck that some of the learning seemed to be between two individuals and not just between individual and team. The preliminary conceptual framework does not really provide for that. The second round interview was an opportunity to seek further data on this anomaly.
- Some further questions in relation to the initial themes from the initial findings.

Taking these areas into account the researcher developed the interview guide for the second round interviews which is available at Appendix 1.

Second Round Interviews

The second round of interviews took place either at the researcher's offices, or at the participants' place of work. Before the interviews commenced all participants were offered another opportunity to review the consent form and ask any questions (Brinkmann and Kvale, 2015; Patton, 2015). Each was asked for their permission for the interviews to be recorded (Patton, 2015) and advised that all questions were voluntary; should they wish to skip any questions they could. Following each interview, the researcher captured her impressions and reflections on the interview for her reflective log (Brinkmann and Kvale, 2015; Carcary, 2009; Koch, 1994). Finally, to support data validation within the study, all participants were offered the opportunity to review the transcript and make any amendments or clarifications that they wish. Ten of the eleven participants participated in the second round of interviews. Despite communication with the researcher about potential dates for the interview, one participant did not ultimately commit to meet the researcher for the second interview.

Coding the Second Round Interviews

Having transcribed the interviews the researcher familiarised herself with them (Braun and Clarke, 2006), comparing the answers for each question to get a sense of what the responses were like and whether there were similarities and differences amongst them. After the initial familiarisation the transcripts were imported into NVivo and were coded.

The researcher used memoing to record her thoughts and observations while coding. Following the coding the researcher generated an NVivo report and compared sources and references for each node across both interviews and for the first and second round of interviews separately. A number of new codes were created as part of coding the second round interviews and the researcher incorporated those nodes within the node hierarchy and into the code book.

The researcher then reviewed the themes to see whether saturation had been reached (Eisenhardt, 1989). The check for saturation levels included the codes from the first and second round interview and the document protocols (see below) which had also been coded. While conducting the second round of interviews the researcher had noticed that some interviewees provided similar responses to what they had said in the first round of interviews. There were also similarities in the responses provided across interviewees to the interview questions. These indicated to the researcher that saturation was likely being approached. In checking for saturation the researcher examined the responses coded to each node in NVivo to decide whether or not the essence of what was coded to each was the same or if there were differences. The iterative nature of the process continued (Dey, 1993). The check for saturation took longer than the researcher expected as this process led to additional coding, un-coding and recoding of data and refinement of some definitions. Reading through the data that had been coded to each node, sparked off other ideas about how some items could also be coded to other nodes, or how some items did not fit the node they were coded to. The researcher also noticed occasions where the items coded to a node were all related to each other, but the definition of that node did not quite match up, so in those cases the definitions needed to be amended. Some nodes were renamed to make it clearer what the node is about e.g. use expertise, became use expertise of colleagues, new ideas became new ideas figured out by team. The researcher exported the node definition report into an excel spreadsheet and reviewed the number of sources and the number of references for each node and noted on it whether the node was at saturation, or whether it would need further clarification. The researcher concluded that there were eight nodes that required further follow up and clarification with the participants. These nodes provided the areas from which the interview guide for the clarification interview was developed (see Appendix 2).

Clarification Interviews

The third round interview was a clarification interview because saturation had been reached in the vast majority of themes. The interviews were to confirm the intent of the participants, and was a form of reflexive practice for the participants as well as for the researcher. The ten participants that participated in the second round interviews were contacted and asked to participate in the clarification interview. The researcher assumed that the participant who did not participate in the second round interview did not wish to continue with the research and following consultation with her Supervisor did not contact them to participate in the clarification interview.

Eight of the participants participated in the clarification interviews. Table P4.1 below provides a summary of the research participants. The interviews took place over the telephone and all were recorded using a speaker phone and a dictaphone. The researcher also took copious notes of the interviews, in case the recording would not be clear enough to allow for transcription. In all but one case the recording allowed the researcher to transcribe the interview. In that case the researcher's notes were typed within two hours of the interview. All participants were once again offered the opportunity of reviewing the transcript/ notes of the interview. The researcher recorded her observations following each interview. The transcripts were imported into NVivo and coded. No new codes were created at this stage. Again the researcher used memos to record her observations and thoughts regarding coding these clarification interviews. The researcher did make subsequent changes to the coding hierarchy during the course of writing Paper 4. This occurred in the process of extracting the findings from the data which resulted in some data being un-coded or recoded to particular nodes and to the decision to separate the medical education theme from the learning supports theme. The learning supports theme was ultimately made a redundant node.

Specialty	Training level	1st Interview	2nd Interview	Clarification Interview	Total Length of Interviews	Reviewed transcripts	Gender
Anaesthesia	Higher Specialist Training equivalent	04.12.15	14.04.16	23.06.16	112.87 mins	Did not choose to review	Male
Anaesthesia	Basic Specialist Training	21.12.15	18.04.16	Did not participate	82.2 mins	Chose to review – no edits	Male
Anaesthesia	Basic Specialist Training	15.01.16	22.03.16	07.07.16	125.02 mins	Chose to review – no edits	Female
Radiology	Higher Specialist Training	09.12.15	18.04.16	23.06.16	118.71 mins	Chose to review – no edits	Male
Psychiatry	Basic Specialist Training	27.11.15	31.03.16	21.06.16	139.94 mins	Chose to review – no edits	Female
Psychiatry	Higher Specialist Training	30.11.15	22.03.16	28.06.16	105.02 mins	Did not choose to review	Male
Emergency Medicine	Higher Specialist Training	17.12.15	Did not participate	Did not participate	62.39 mins	Chose to review – no edits	Male
Surgery	Streamline Training 2 Higher Specialist Training	08.01.16	15.04.16	14.07.16	87.55 mins	Did not choose to review	Female
Surgery	Basic Specialist Training	21.01.16	19.04.16	Did not participate	68.9 mins	Chose to review – no edits	Male
Surgery	Higher Specialist Training	25.01.16	11.04.16	01.07.16	99.07 mins	Did not choose to review	Female
Intern	N/A	10.12.15	24.03.16	25.07.16	130.7 mins	Chose to review first interview – edits returned Chose to review second interview – no edits Did not choose to review clarification interview	Female
Total					**1,132.37 mins**		

Table P4.1: Summary of study participants

Documentary Review

In parallel with conducting and transcribing the second round interviews the researcher began reviewing the organisational documents that she had previously identified. The researcher utilised a document protocol (provided in Paper 3) to provide a standard means of reviewing documentation to determine relevance to the study (Miles and Huberman, 1994). The document protocol serves as a means of ensuring reliability within the design of the case study (Yin, 2014). The document protocol allowed the researcher to create a summary of how each document is relevant to the study themes (Crossan and Berdrow, 2003; Miles and Huberman, 1994). The researcher identified 20 documents to be reviewed using her knowledge about NCHDs and training in the Irish health system and the Health Service Executive (HSE) (see Appendix 3). Following the review only one document was deemed to be highly relevant and nine to be somewhat relevant (Table P4.2).

Number Reviewed	Number Highly Relevant	Number Somewhat Relevant	Number Not Relevant
20	1	9	10
Number Coded in NVivo			
8	1	7	0

Table P4.2: Summary of relevance of documents reviewed and coded in NVivo

The document protocols for those ten documents were analysed further using NVivo to determine whether they could corroborate or explain data collected from the interviews (Tamim and Grant, 2013). Ultimately eight document protocols were coded in NVivo (Table P4.3).

No	Author/ Publisher / Relevance	Title	Year	Document Code
1	Medical Council Somewhat Relevant	Doctors' Education, Training and Lifelong Learning in 21st Century Ireland	2015	D1
2	Medical Council Highly Relevant	Your Training Counts 2014	2014	D2
3	Medical Council Somewhat Relevant	Your Training Counts 2014 Spotlight on health and wellbeing	2014	D3
6	Medical Council Somewhat relevant	Your Training Counts 2015 Trainee experiences of clinical learning environments in Ireland 2015	2015	D4
11	Department of Health Somewhat relevant	Strategic Review of Medical Training and Career Structure Interim Report 12th December 2013	2013	D5
12	Department of Health Somewhat relevant	Strategic Review of Medical Training and Career Structure Report on Medical Career Structures and Pathways Following Completion of Specialist Training 11th April 2014	2014	D6
16	Forum of Irish Post Graduate Medical Training Bodies Somewhat Relevant	Supporting Postgraduate Medical Trainees in Ireland	2016	D7
20	Medical Council Somewhat Relevant	Progressing Development and Implementation of Outcomes-based Intern Training	2016	D8

Table P4.3: Documents for which the document protocol was coded in NVivo

When the coding of the transcripts and the documents was complete the researcher utilised an NVivo report to determine what themes appeared in both the interview transcripts and the documents and what themes only appeared in the documents (Table P4.4).

Nodes coded in both interviews and documents	Nodes only coded in documents
• Consultant as facilitator of learning • Developing clinical experience • Collaboration • Informal learning • Post-graduate medical training as a learning experience • Clinical learning environment • Clinical V teaching • Interpersonal relationships	• Feedback on clinical performance • Identity as medical professionals • Training for trainers • Bullying • Hidden Curriculum • Participative social processes

Table P4.4: Node comparison across interviews and documents

Case Study Database and Data Collection Plan

The researcher continued to maintain the case study database as a means of increasing the reliability of the study (Yin, 2014) (see Figure P4.2a) and to record how the data collection actually transpired over the course of the study (see Figure P4.2b).

No	Item	Location
1	Methodology and research design paper	..\Methodology paper\Methodology_LDoyleFINAL_Jan16.docx
2	Project plan and actual plan	..\Project Plan\Project Plan DBA Data Collection.xlsx
3	Submission to Ethics Committee	C:\Users\user\Documents\DBA\Ethical Approval
4	Interview Guide for interview 1	..\Interview guide\LDoyle interview template Oct 2015 FINAL.docx
5	Consent form	..\..\Ethical Approval\Revised submission following committee feedback\ldoyle ethics form Oct 2015FINAL.docx
6	Letter of introduction combined with consent form	..\Letter of Introduction\version used\LDoyle Letter of Intro and consent Oct 15 FINAL.docx
7	Introductory email	Intro email no consent form.docx
8	Log of contacts with Training Bodies to seek participants	DBA Research Project - Contacts.docx
9	Contact details for participants	Participant Contact Details.docx
10	Participant Names and Participant Codes	Potential Research Participants file password protected in work office
11	Participant Profile information	..\Transcripts\participant overview information.xlsx
12	Hard copy consent forms	With researchers files at home
13	Hard copy individual participant overview information	With researchers files at home
14	Record of whether participants wanted to see transcripts or not	Circulation of transcripts.docx
15	Cover email to send transcript to participant	cover email for transcript.docx
16	Reminder email when no response receive to transcript	email no response re transcript.docx
17	All transcripts	C:\Users\user\Documents\DBA\Methodology\Transcripts
18	All recordings	C:\Users\user\Documents\DBA\Methodology\Recordings
19	Interview reflections	..\Transcripts\Interview Reflections.docx
20	Record of project meetings with supervisor	..\..\DBA Project Meeting Log\LDoyle_DBA Project Meeting Logs.docx
21	Document protocol	..\Document Protocol\Document protocol final.docx
22	List of documents to review	..\Documentary Review\Documents for the study.docx
23	Hard copy reflective log entries	In researcher's reflective log journal
24	Familarisation with interview one - what struck me from the interviews and initial findings	..\..\Design Implementation & Initial Findings\Initial Findings Jan 2016v2.docx
25	Design Implementation and Initial Findings Paper March 2016	..\..\Design Implementation & Initial Findings\Design Implementation & Initial Findings LDoyleFINAL.docx
26	Design Implementation and Initial Findings Paper May 2016	..\..\Design Implementation & Initial Findings\Paper\Design Implementation & Initial Findings LDoyleFINALMay2016.docx
27	Hard copy version of the code book developed while coding Interview 1	Researchers hard copy files at home
28	Nvivo File	C:\Users\user\Documents\DBA\NVivo
29	Nvivo Backup File	C:\Users\user\Documents\NVivo 11 Recovery
30	Nvivo Reports 08.03.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 08.03.16
31	QDA Process Audit Trail	..\..\Design Implementation & Initial Findings\QDA Process.docx
32	Development of interview guide for interview 2 with rationale for questions	C:\Users\user\Documents\DBA\Design Implementation & Initial Findings\Interview 2
33	Interview guide for interview 2	..\..\Design Implementation & Initial Findings\Interview 2
34	Email inviting participants to interview 2	
35	Nvivo Node Strucure Report for Interview 1 08.03.16 edited on 12.03.16	Researchers hard copy files at home
36	Nvivo Coding Summary By Node Report for Interview 1 08.03.16 cut into bundles	Researchers hard copy files at home
37	Memo on review of node summary report 08.03.16	..\..\NVivo\Memo on review of node summary report 08.0316.docx
38	Nvivo Reports 18.03.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 18.03.16
39	Nvivo Reports 19.03.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 19.03.16
40	Memo on the creation of themes from interview 1 codes	..\..\NVivo\Memo on creation of themes from the codes from round 1 interviews 25.03.16.docx
41	Handwritten themes 25.03.16	..\..\Design Implementation & Initial Findings\WP_20160326_001.jpg
42	Documents reviewed using document protocol	C:\Users\user\Documents\DBA\Methodology\Documentary Review\Reviewed with protocol
43	Nvivo Reports 26.03.16	..\..\NVivo\NVivo Reports 26.03.16
44	Nvivo Reports 29.03.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 29.03.16
45	Nvivo Reports 24.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 24.05.16
46	Nvivo Reports 25.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 25.05.16
47	Nvivo Reports 29.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 29.05.16
48	Nvivo Reports 30.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 30.05.16
49	Nvivo Reports 31.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 31.05.16
50	Nvivo Reports 06.06.16	..\..\NVivo\NVivo Reports 06.06.16
51	Nvivo Reports 08.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 08.06.16
52	Nvivo Reports 11.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 11.06.16
53	Nvivo Reports 18.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 18.06.16
54	Nvivo Reports 19.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 19.06.16
55	Nvivo Reports 22.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 22.06.16
56	Nvivo Reports 25.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 25.06.16
57	Nvivo Reports 03.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 03.07.16
58	Nvivo Reports 06.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 06.07.16
59	Nvivo Reports 07.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 07.07.16
60	Nvivo Reports 09.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 09.07.16
61	Nvivo Reports 13.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 13.07.16
62	Nvivo Reports 14.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 14.07.16
63	Nvivo Reports 14.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 24.07.16
64	Nvivo Reports 01.08.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 01.08.16
65	Nvivo Reports 07.08.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 07.08.16
66	Familarisation with interview two - what struck me from the interviews	..\..\Findings & Analysis\Familiarisation with Second Round Interviews Prior to Coding.docx
67	Document to work through saturation check	..\..\Findings & Analysis\Saturation after round 2 interviews.xlsx
68	Nodes following saturation check 31.05.16	..\..\NVivo\NVivo Reports 31.05.16\Nodes 31.05.16.xlsx
69	Saturation after round 2	..\..\Findings & Analysis\Saturation after round 2 interviews.xlsx
70	Items to be clarified after staturation check	..\..\Findings & Analysis\Items to be clarified after saturation.xlsx
71	Node map in powerpoint comparing coding from round 1 and incorporating 2nd round into hierarchy	..\..\Findings & Analysis\Node map 11.06.16.pptx
72	Round 3 clarification interview questions	..\..\Design Implementation & Initial Findings\Interview 3\Clarification Interview QuestionsFINAL.docx
73	Round 3 clarification interview guide	..\..\Design Implementation & Initial Findings\Interview 3\Clarification Interview QuestionsFINAL.docx
74	Participants contacted for clarification interview	Participant Contacted for clarification interview.docx
75	Notes from clarification interviews	Researcher's hard copy files at home
76	Comparison of nodes from interviews and document review	..\..\Findings & Analysis\Document Nodes Compared with Interview Nodes 22.06.16.pptx
77	Node map with codes round 1, round 2, and documentary review	..\..\Findings & Analysis\Node map 11.06.16 - 22.06.16.pptx
78	Node map with codes round 1, round 2, and documentary review and final version	..\..\Findings & Analysis\Node map 11.06.16 - 24.07.16.pptx
79	Document nodes compared with interview nodes	..\..\Findings & Analysis\Document Nodes Compared with Interview Nodes 22.06.16.pptx
80	Thesis sections including prefaces	C:\Users\user\Documents\DBA\Thesis

Figure P4.2a: Case study database

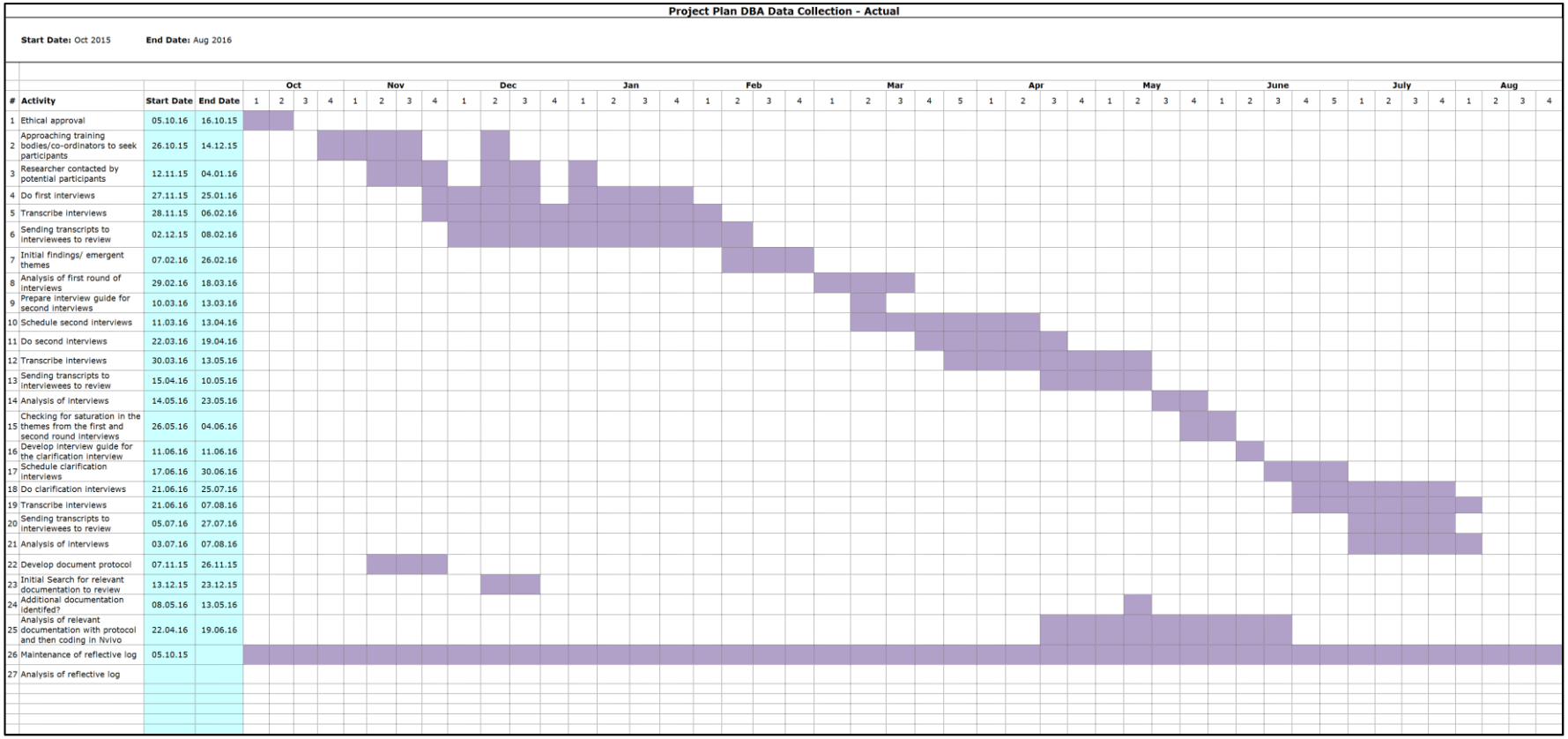

Figure P4.2b: Data collection actual October 2015 to August 2016

Review of Researchers Reflective Log

The researcher has maintained and reviewed her reflective log as an aid to avoid unconscious bias and to assist with theory development. It has assisted the researcher to review how her thoughts and ideas have developed over the course of the research.

Conclusion

The forthcoming Paper 4 offers insight into the research findings and analysis of same relating to this research study.

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APPENDIX 1 – INTERVIEW GUIDE FOR SECOND ROUND INTERVIEWS WITH RATIONALE FOR QUESTIONS

PREAMBLE/ INTERVIEW ARRANGEMENTS

Thank you very much for agreeing to take part in this follow up interview. I very much appreciate your support in this research study.

As agreed, this interview will take no more than an hour.

Do you mind if I record the interview?

I'll maintain confidentiality under the consent agreement and if you like I'll send you the transcript to review.

Your participation in this interview is voluntary. You are not obliged to answer any of the questions asked.

Rationale	Questions
Lead in question.	1. To begin with I'd like to ask if you have any questions or observations from our last interview? Probe: • Is there anything that has occurred to you since the interview that you'd like to add?
Lead in question.	2. Have you noticed anything about working with your team since our last interview?
Learning Supports – Different teams/ team composition. To better understand the team each participant is part of.	3. It would be helpful to me to get a better picture of the team that you're part of, could you tell me: • How many of you are there on the team? • Are you all the one profession or multi-disciplinary? • What are the job titles of your team mates? • Are you part of the same team for the whole rotation or do you change? • Do you work with the same people each day, or does it change? • Do you work shifts? • Are you dedicated to this team or split over a number of teams? • If split, do you have a favourite? ○ Why? • If you're on a new team since January, what are the differences between this team and your old team?

Interpreting learning – conduit of communications/ sharing information. To find out whether those who didn't mention social media use it in their team or for their learning.	4. Do you use any social media platform or app as part of being in this team? Probe: • If yes, for what purpose? • What about for your learning? (P4, P5, P11 spoke about this in Interview 1 – so don't intend asking them this question)
Intuitive capacity – time in role/ duration in role. To find out what those who didn't mention rotations think about whether or not they affect their learning.	5. Do you think that rotating to different jobs during your training has an effect on your learning? Probe: • If yes, what effect? (P2 & P11 already spoke about this in interview 1 – so don't intend asking them this question)
This next part is about what you do when you're figuring something out and learning in the team.	
Interpreting learning – figuring out new ideas. Trying to shed more light on processes for figuring out something new, might also be help in teasing out individual to individual depending on responses.	6. In this team when you don't know something what are you expected to do? Probe: • Was this the same in previous teams?
Preliminary CF. Teasing out individual to individual theme to see if I can get more data on it.	7. If you are trying to figure something out or are unsure of how to proceed with something, who do you ask? 8. How do you approach that individual/ those individuals? a. Probe: Example 9. What do you do with the information? 10. Does this help you learn? 11. In instances where you've helped members of your team to learn something, how does that typically happen? Probe: • Can you give me an example?
Experience hierarchy – seniority's impact on learning.	12. Do you learn from peers who are at the same level as you? • Do you have an example? 13. Would you learn from a more junior colleague?

Trying to verify the hierarchy in learning, upward asking themes with the participants and also checking out about learning from those at the same level, or more junior.	• Do you have an example of this? 14. Has a more senior colleague learnt from you? • Can you tell me about that? 15. From the first round of interviews, it's seems that asking a senior colleague what to do is a common strategy for learning amongst NCHDs. • Would you agree with that view in your experience?
Interpreting learning / sense making Ask participants if they use stories as part of sense making.	16. Do you use stories as a means of passing on learning to other colleagues? 17. Have other colleagues used stories as a means of passing on learning to you?
Interpreting learning – informal learning. Informal learning seems to be really important, I'm trying to gauge their thoughts on this.	18. Does learning take place informally? • Can you think of an example? 19. How significant to your learning, if at all, is learning that takes places informally?
Intuitive capacity – instinct as a catalyst for learning. Follow up to gut instinct to see about whether participants feel their training helps them to develop it.	20. Last time, I asked you about using your gut instinct at work. As a follow on to that conversation, what does gut instinct mean to you? 21. Do you feel that your training encourages you to develop your gut instinct? Probe: • In what way?
Intuitive capacity – idea generation. For those with whom the word 'idea' didn't resonate this is to try to tease that out more. Am going to ask all except P11.	22. Last time I asked a number of questions about ideas, and I wonder could you tell me what does the word 'idea' mean to you? Probe: • Use response to ask for an example? (This already came up with P11 – so don't intend asking them this question)
This next part is about working in a team environment.	
Learning supports – social processes Do participants see interpersonal relationships having in	23. Do you enjoy working in a team environment? 24. Can you describe the relationships you have developed in the team? Probe: • Have you an example of this?

influence on their learning.	25. Do these relationships play a role in what you learn? 26. Do these relationships play a role in how you learn? Probe: • Have you an example of this?
Interpreting learning – conduit of communications/ sharing of information. Have asked about social media above – seeing if anything else comes up eg: social processes etc.	27. Is there anything in place in your team that you think helps to improve communication and information sharing? Probe: • In what way does it improve communication and information sharing?
Clarification questions – will vary for each participant. **From looking back over our first interview, there are just a couple of questions I'd like to revisit for clarification – would that be okay?**	
(P1, P3, P7, P8)	28. I asked you about this the last time we spoke, but would like to revisit it if ok with you? Was there a time that you and your team figured out something new together? – could you think of an example of when that happened?
(Looks like I didn't ask P4 this first time round)	29. If more than one idea is put forward, how does the team decide which one to go with? 30. Are the other ideas kept for another occasion?
(P5) First answer was unclear	31. Does the team help you when you're trying to find something out? Probe: • Have you got an example of that? 32. Last time you said that you hadn't used metaphors and imagery to explain an insight to team members at work – is that still your view? 33. I wanted to follow up on using WhatsApp – you mentioned you use it if you have a question or need advice – who answers the queries? Probe: • Are the responses always from your team members? • What would be the job titles of the people who answer the queries?
(P2)	34. Last time when I asked you about a time when one of your team members had an idea about something and it led to the team learning something new, you said that you were not in the team long enough at that stage for

	team members to have ideas that lead to learning something new – I wonder is that still the case, or can you think of an example now?
(P9)	35. Last time when I asked you to describe when you've experienced a shared sense of understanding arising in the team, you mentioned that was difficult because you change teams every day – I wonder is that still the case, or can you think of an example now?
(P10)	36. Could you give me another example of when you've experienced a shared sense of understanding arising in the team?
(P3) Answer was unclear	37. I would like to follow up on the question about using metaphors and imagery from the last time. Can you tell me what the word 'metaphor' means to you? Probe: • Can you tell me what the word 'imagery' means to you? • Can you give me another example of when you've used either to explain an insight to your team members at work?
(P7) Follow up on metaphors and imagery	38. Last time you I asked you about using metaphors and imagery to explain insights to your team at work, and you thought you probably did, but weren't fully sure – could I ask you that question again?
Close the interview	
	39. We're nearly at the end is there anything that you'd like to add? 40. Was there anything that came up that you were surprised at? 41. Was there anything that didn't come up that you thought would? 42. Have you any questions?

I would like to thank you very much for taking part in the study. Any data collected in the study will be securely kept under lock and key. I will use codes/pseudonyms for yourself and your hospital in the study so that identification will be difficult. When the interview is transcribed I will forward you a copy for review.

THANK YOU.

APPENDIX 2 – CLARIFICATION INTERVIEW GUIDE

No	Theme to clarify	Question	Who to ask
1	Terminology changing	Have you noticed a change in the words or the terms that you use since you started your training? (This question was only asked in 6 of the second round interviews – so could use it again to ask the 4 others)	P1 P2 P5 P9
2	Language	What part does the type of language used by someone play in your understanding of what they're saying? Or Do you feel that you and your colleagues use a common language in terms of terminology, phrases, or are there variations in the language that is used? What impact does this have on shared understanding? Is the language something that new members of the team need to get used to when they join?	All
3	Intuiting to interpreting	What makes you share an idea with your team/colleagues who are present? Can you think of a time that you did that?	All
	2nd time to share an idea	What would you do if you were interrupted when explaining an idea to your team? Can you tell me about a time that this has happened?	All
4	Shared understanding	How can you tell that your team has the same understanding about something? What would have happened to bring that about?	All
5	Keep insight to self	Are there times at work when you would have a thought or an idea about something but would choose to keep it to yourself? What would be your reasons for that? Could you give me an example?	All
6	Teaching style	A number of the respondents mentioned that a senior colleagues/consultants approach to teaching had a potential impact on their learning. What part if any does the teaching style of a senior colleague/consultant play in your learning?	All
7	Taking charge	Are there times when it's your role to make the decision as to what is going to happen with a patient and to give that direction the other colleagues present? Do you have an example of that?	P1 P2 P3 P4 P5 P8 P9 P10

APPENDIX 3 – ORGANIZATIONAL DOCUMENTS REVIEWED, THEIR RELEVANCE AND THEIR CODING STATUS IN NVIVO

No	Author/ Publisher	Title	Year	Link (if available)
1	Medical Council Somewhat Relevant CODED	Doctors' Education, Training and Lifelong Learning in 21st Century Ireland	2015	https://www.medicalcouncil.ie/News-and-Publications/Reports/Doctors-Education-Training-and-Lifelong-Learning-in-21st-Century-Ireland.pdf
2	Medical Council Highly Relevant CODED	Your Training Counts 2014	2014	https://www.medicalcouncil.ie/News-and-Publications/Reports/Your-Training-Counts-Survey.pdf
3	Medical Council Somewhat Relevant CODED	Your Training Counts 2014 Spotlight on health and wellbeing	2014	https://www.medicalcouncil.ie/News-and-Publications/Reports/Your-Training-Counts-health-and-Wellbeing.pdf
4	Medical Council Somewhat Relevant CODED (didn't code anything)	Your Training Counts 2014 Spotlight on trainee career and retention intensions	2014	https://www.medicalcouncil.ie/News-and-Publications/Reports/Your-Training-Counts-Trainee-Retention-and-Career-Intentions.pdf
5	Medical Council Not Relevant	Medical Workforce Intelligence Report A Report on the 2014 Annual Registration Retention Survey	2014	https://www.medicalcouncil.ie/News-and-Publications/Reports/Medical-Workforce-Report-2015.pdf
6	Medical Council Somewhat relevant CODED	Your Training Counts 2015 Trainee experiences of clinical learning environments in Ireland 2015	2015	https://www.medicalcouncil.ie/News-and-Publications/Reports/Your-Training-Counts-2015-pdf-.pdf
7	NDTP Not relevant	Annual Report 2014	2014	http://www.hse.ie/eng/staff/leadership_education_development/met/annrepts/hse-ndtp-annual-report-2014.pdf
8	Department of Health and Children Somewhat relevant CODED (didn't code anything)	Preparing Ireland's Doctors to meet the Health Needs of the 21st Century, Report of the Postgraduate Medical Education and Training Group (Buttimer 2006)	2006	http://health.gov.ie/wp-content/uploads/2014/03/buttimer.pdf
9	Department of Health and Children and the Department of Education and Science Not relevant	Medical Education in Ireland – A New Direction, Report of the Working Group on Undergraduate Medical Education and Training (Fottrell Report 2006)	2006	https://www.education.ie/en/Publications/Policy-Reports/Medical-Education-in-Ireland-A-New-Direction-Report-of-the-Working-Group-on-Undergraduate-Medical-Education-and-Training.pdf

No	Author/ Publisher	Title	Year	Link (if available)
10	Department of Health Not relevant	Strategic Review of Medical Training and Career Structure Terms of Reference 7th October 2013	2013	http://health.gov.ie/wp-content/uploads/2014/04/SRMTCS_Terms_of_Reference.pdf
11	Department of Health Somewhat relevant CODED	Strategic Review of Medical Training and Career Structure Interim Report 12th December 2013	2013	http://health.gov.ie/wp-content/uploads/2014/03/SRMTCS_Interim_Report_FINAL.pdf
12	Department of Health Somewhat relevant CODED	Strategic Review of Medical Training and Career Structure Report on Medical Career Structures and Pathways Following Completion of Specialist Training 11th April 2014	2014	http://health.gov.ie/wp-content/uploads/2014/04/SRMTCS_CareerStructures_Report_FINAL.pdf
13	Department of Health Not Relevant	Strategic Review of Medical Training and Career Structure Final Report 30th June 2014	2014	http://health.gov.ie/wp-content/uploads/2014/07/SRMTCS_Final_Report_300614_FINAL1.pdf
14	RCPI Not Relevant	Training 21st Century Clinical Leaders	2014	https://www.rcpi.ie/news/publication/training-21st-century-clinical-leaders/
15	RCSI Not Relevant	Annual Report 2014 – 2015	2015	http://www.rcsi.ie/files/2015/20151008105651_RCSI-Annual-Report-2014-2015-F.pdf
16	Forum of Irish Post Graduate Medical Training Bodies Somewhat Relevant CODED	Supporting Postgraduate Medical Trainees in Ireland	2016	Researcher obtained a copy
17	NDTP Not Relevant	Annual Assessment of NCHD Posts 2015 – 16	2016	http://www.hse.ie/eng/staff/leadership_education_development/met/ed/rep/annual-assessment-of-nchd-posts-2015-161.pdf
18	NDTP Not Relevant	Annual Report 2015	2016	http://www.hse.ie/eng/staff/leadership_education_development/met/annrepts/hse-ndtp-annual-report-2015.pdf
19	NDTP Not Relevant	Strategic Plan 2016 – 2020	2016	Forthcoming
20	Medical Council Somewhat Relevant CODED	Progressing Development and Implementation of Outcomes-based Intern Training	2016	Discussion document

PAPER 4

Student Name	Louise Doyle
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Paper Name	Paper 4 Findings & Analysis – DBA – Class of 2017
Title of Paper	How the Multi-levels of Individual Learning and Team Learning Interact in Public Healthcare Organisations
Date Submitted	21st December 2016

ABSTRACT

The aim of this research is to study how the multi-levels of individual learning and team learning interact in public healthcare organisations. An interpretivist paradigm is adopted which is in sympathy with the social constructionist theoretical underpinnings of the study. A single case study approach is put forward as a suitable method to investigate a contemporary phenomenon, such as learning in organisations, in its natural context, as it allows for the subjective and contextual experiences of the participants to be incorporated. In this paper, the researcher documents the findings resulting from three rounds of semi-structured interviews with eleven participants. In liaison with a review of relevant professional documentation and researcher reflective log entries, the researcher familiarised herself with the data and identified a number of themes, each of which is discussed within this paper. The next steps in the research study are outlined.

KEYWORDS

Individual learning and team learning, healthcare, semi-structured interviews, interpretive case study.

INTRODUCTION

This research aims to study how the multi-levels of individual learning and team learning interact in public healthcare organisations. The resultant research questions are: How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels? The study utilises a preliminary conceptual framework (Figure 4.1) developed by the researcher through relevant literature engagement to explore the multi-level interaction of individual and team learning.

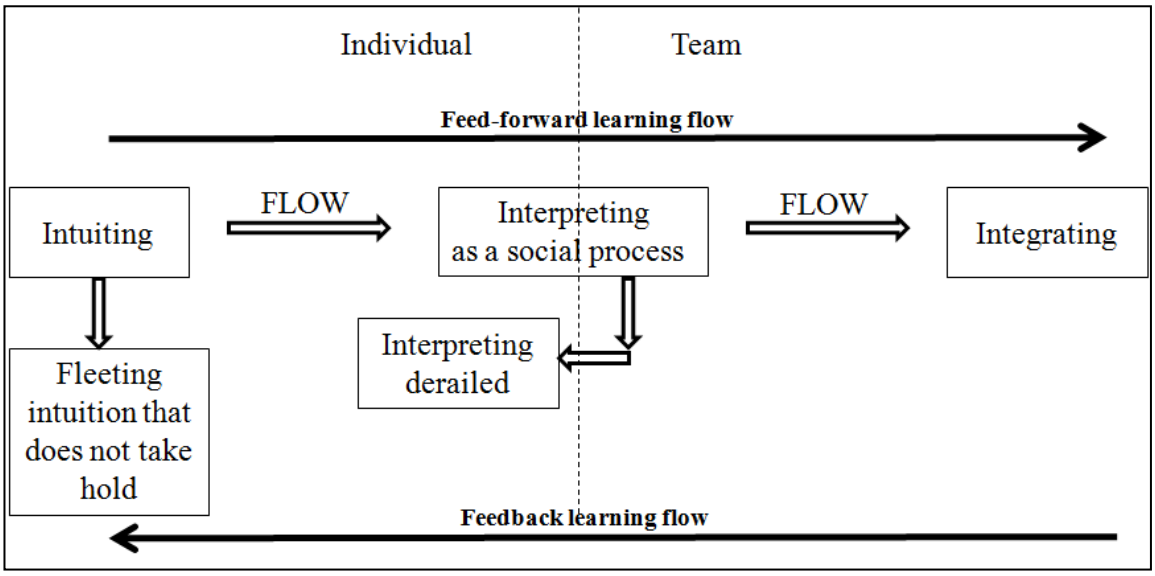

Figure 4.1 Multi-levels of individual and team learning interact: preliminary conceptual framework

An interpretivist paradigm is adopted for the study, which is in sympathy with the social constructionist theoretical underpinnings. The researcher works in the Health Service Executive (HSE) - National Doctors Training and Planning (NDTP) unit in Ireland as a business manager; the observed case environment in this study. A single case study approach is put forward as a suitable method to investigate a contemporary phenomenon, such as learning in organisations, in its natural context, as it allows for the subjective and contextual experiences of the participants to be incorporated.

Given the research aim and the resultant research questions the research design for this interpretive case study involves three rounds of semi-structured interviews over an eight month period with eleven participants (P1-P11), each of whom is a Non-Consultant

Hospital Doctor (NCHD[6]) working in the HSE. These findings are supported by the identification and review of relevant professional documentation (D1-D20) and the subsequent coding of eight of these documents (D1-D8); maintenance of a case study database and entries in the researcher's reflective log. This paper briefly describes the design implementation of the study, followed by a presentation of the findings arising from the data analysis. This study aims to increase understanding as to how effective team working can be nurtured so that team members can develop insights and learn together, which will equip them to respond to the high levels of change in their organisation. This understanding could then be used to improve the learning experiences of NCHDs and other health professionals in the Irish healthcare system. HSE-NDTP are supporting this study given that it has the potential to develop understanding as to how to enhance the effectiveness of learning interactions in medical and other healthcare teams.

DESIGN IMPLEMENTATION

The design implementation of this study took place between October 2015 and September 2016, and involved obtaining ethical approval, developing the data collection plan, conducting three rounds of semi-structured interviews, review of relevant professional documentation, maintenance of the case study database and the researcher's own reflective log. Paper 3 describes the implementation of the research design over the initial five months and the Preface to this Paper 4 describes the study's implementation in the last seven months of the study. For the purposes of this paper the design implementation process is summarised as follows. Following recruitment of the research participants the researcher carried out the first of three rounds of semi-structured interviews using an interview guide. The researcher then familiarised herself with the data in the typed transcripts and this led to the extraction of emergent themes. Following this familiarisation process, the transcripts were then imported into NVivo and coded. The iterative coding process was supported by memoing. The researcher began to create the code hierarchy, identifying possible themes and sub-themes.

[6] Non-Consultant Hospital Doctor (NCHD) refers to persons employed in the public health service in Ireland as Interns, Senior House Officers, Registrars, Senior Registrars, Specialist Registrars or otherwise for the purpose of providing medical or dental services and/or the pursuance of medical or dental training who for the purposes of such employment are not employed as Consultants.

From analysing the first-round interview transcripts the researcher identified the areas for inclusion in the second-round interview guide, which was used when conducting the second round of interviews. The researcher also familiarised herself with these transcripts prior to coding them in NVivo. Once transcribed the researcher compared the sources and references for each node for each interview separately, and then across both interviews. While conducting and transcribing the second round interviews the researcher reviewed the organisational documents using a document protocol. The researcher concluded that one document was highly relevant and that nine were somewhat relevant and the document protocol for these ten documents was analysed further. Ultimately eight document protocols were coded in NVivo. The researcher revised the code hierarchy to incorporate new codes created from coding the second-round interviews and the document protocols. The researcher then reviewed the themes with a view to seeing whether saturation had been reached, which continued the iterative nature of the process and resulted in additional coding, un-coding and recoding of data. The researcher concluded that a small number of nodes required follow up and clarification with the participants and developed the clarification interview guide to do this. These eight interviews were transcribed and coded and the researcher continued to use memoing to record her thoughts and observations about the coding. When extracting the findings from the data the researcher made some further changes to the coding hierarchy which resulted in some data being un-coded or recoded and some themes being split or altered. To assist with visualising the relationship between themes and between themes and sub-themes in the context of the research questions, the researcher utilised thematic maps, which further consolidated the findings into seven key themes. Throughout the researcher maintained the case study database and her reflective log.

FINDINGS

In pursuit of the research questions the researcher considered the interaction between the themes and sub-themes using thematic maps (Basit, 2003; Miles and Huberman, 1994; Weng, 2012). This process consolidated the findings into seven main themes; intuitive capacity, interpreting learning, integrating learning, flow of learning, experience hierarchy, social processes and their role in learning and reflection. Figure 4.2 below

illustrates the final version of the thematic map. A summary of the seven main themes as extracted from the data is available at Appendix 1.

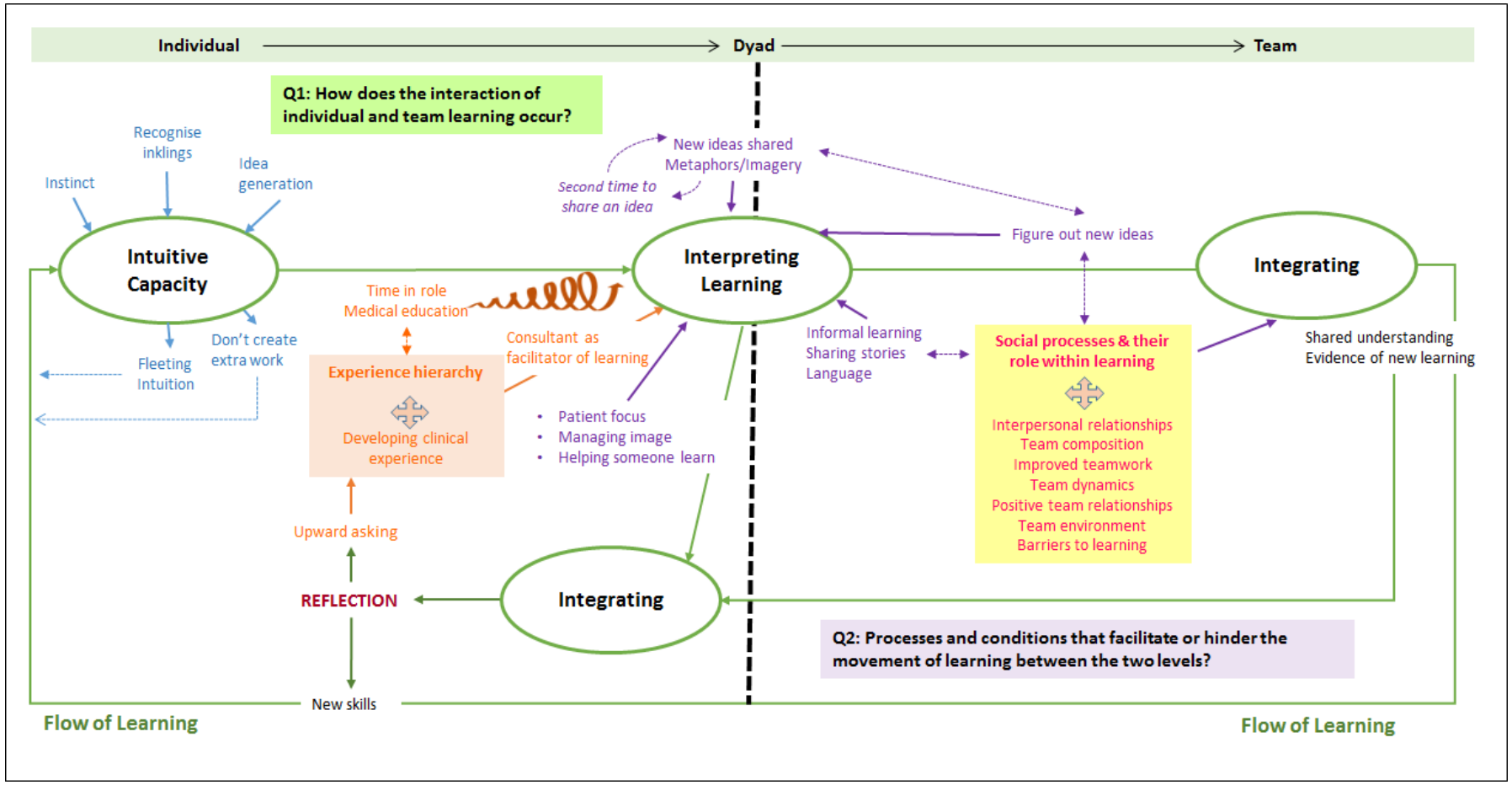

Figure 4.2 Thematic map: Multilevel individual/ team learning interaction in public healthcare organisations

Each of the seven main themes illustrated in the thematic map is elaborated upon below.

Intuitive Capacity

Intuitive capacity is evident in the findings. All participants identified occasions where their gut instinct has been a catalyst for learning; "… *her eyes totally lit up and there was … something in the way she seemed to pick up on that* …" (P1), "… *I was like I didn't know anything, I was just feeling that something is not good* …" (P3). This is an instinct the NCHDs trust; "… *you have to be able to go with your gut … it's good to doubt yourself and question yourself a little bit but you can't overly do it* …" (P6), "… *if … you're still thinking about that patient and it's still bothering you, you should just go see them … as in my gut, if I feel uneasy* …" (P10). However, one participant spoke about not sharing their instinct with junior colleagues or with patients until there was evidence to confirm it. Participants recognised that they valued their 'gut instinct' more as their experience increased; "… *experience … tells you, something is going to happen now, something is happening, … because you have seen that already, it's not inbuilt … the first time* …" (P3), "… *it takes time to develop, because you need to have … knowledge that you can put together … then … come up with some ideas of what might be at play* …" (P5). These respondents did not necessarily see the development of their 'gut instinct' as being a deliberate goal of their training, rather an aspect of their ongoing learning. One participant believed that the training would actively discourage the application of gut instinct; "… *they'd knock that on the head, and kick it out the door*" (P11).

Sometimes the intuiting process does not take hold and the recognition of the insight melts away before the individual has fully grasped it. Five of the participants did not recognise this notion of fleeting intuition; "… *I'm not sure really, I can't think of anything … that wouldn't normally be how my mind works …*" (P9), and believe they recognise an inkling; "… *I … listen to my ideas … if I get an inkling I … give it a bit of thought usually*" (P1). The other participants were familiar with having the inkling of an idea but losing it before it's fully grasped; "… *all manner of things … the way that … the phlebotomy trolleys [are] in a different place on each ward, and emm patient charts* …" (P5), "… *every now and again I'd get a flash of insight and it would just totally breeze past me* …" (P10).

Most participants in the study shared a common view that ideas are; "… *imagination or creative thought*" (P5), they could be suggestions and; "… *something new probably, or a new way of doing something*" (P8), "… *a eureka moment in my head* …" (P10). One participant saw the word 'ideas' as indicating a large-scale change, and that this is something that NCHDs do not have an opportunity to be part of. They described the role for ideas within their day to day work as being limited as they; "… *deal with facts* …" (P3), and "… *practical projects*" (P8). Their work is perceived to be; "… *not creative, really it's reactive* ..." (P6), primarily about; "*making decisions … and implementing the decisions …*" (P11), and; *"... who's going to do all the parts of the task"* (P8).

There was recognition that sharing ideas may not always be welcomed and can lead to additional workload and this limits intuitive capacity in some cases, which in turn can stifle learning and prevent the interpreting process from taking place; "… *we finish in five weeks … I don't know whether anybody's going to even want to put that effort in* …" (P5), "… *if you had good ideas and they're not listened to … you know it's extra work or it might cause someone to have to stay in late* …" (P10), *"... you eh hold things back because ... they'd say we can't change that, or … why don't you do an audit on that and … I don't have time to do that* …" (P2).

Interpreting Learning

Interpreting learning is evident between participants and their teams, but also between participants and other individuals, when they were in conversation with another colleague. The inclusion of the dyad in the thematic map represents this occurrence. The findings suggest there are various aspects at play in the interpreting of learning, and these influence its effectiveness. The process of interpreting learning can lead to the emergence of new ideas and participants could recall times when the team had figured out a new idea; "…*we had an idea about how we would vet the outpatients … I had started the idea and he developed it further*" (P4), "…*someone brought up the idea that maybe we would have a typed up handover … so then everybody would be on board* …" (P10). However, some participants struggled to identify occasions when they and their team had figured out a new idea; "… *there's really nothing coming to mind on that one*" (P7), "… *it's hard*

to think of something …" (P1). Notably, some of the participants who could not think of a time their team had figured out something new together, could recall instances where ideas had been shared by themselves; *"… I suggested one of the Regs do … a presentation …*" (P2), "… *[I] just suggested a 'how to' folder and type up … what information you need, what to do … so people have added to it* …" (P5), "… *I remember when I was an intern, thinking that [drug] should be given at the same time every day … and you speak to other interns and say … shouldn't they … be given at 5pm* …" (P8). Also, just over half the participants believed that ideas should; "… *stand and fall on their own merit* …" (P2), and should not be over sold; "… *I tend to under sell it, rather than over sell it* …" (P11), "*… if it's justified to get it done it should be justifiable in truth* …" (P6).

If NCHDs did not get to express the idea fully, they may try again, but would be conscious of how they were coming across the second time; "… *I probably shied a bit away from saying exactly what I was trying to say … I'd already said it twice badly …*" (P2). Respondents were also conscious of how much time had passed in the interim; "… *you're less likely to bring something back up on a Friday having talked about it on a Monday …*" (P9). If an interruption had occurred, the perceived stature of the person who had interrupted an NCHD would have a bearing on whether they attempted to express the idea again; "… *it would depend on who the person is interrupting … [or] … is what I'm saying important, and is it really necessary that I'm heard* …" (P11). Participants also identified situations where interruptions may occur from outside or from colleagues not part of the current conversation e.g. a query about another patient; "*if that interruption is urgent then we can listen to that …*" (P3), one participant saw this as the only form of interruption that could occur.

Utilising metaphors is another aspect of interpreting learning and while NCHDs appreciate the value of metaphors when describing medical procedures; *"… we would often kind of compare things … think of the lungs as a balloon … the blood vessels as pipes* …" (P7), they did not appear to use them in explaining insights and ideas to each other; "… *to team members' no"* (P2), "*not to team members unfortunately*" (P11). Instead, NCHDs use stories as a common means of sharing learning and experiences; "*… like clinical vignettes* …" (P1), "… *it's much more effective … people remember stories*

…" (P2), "*definitely anecdotal stories, I think always strikes a memory cord* …" (P4), "… *it … helps you understand the dynamic of a situation … as opposed to very dry sterile way of learning from a book* …" (P10). In contrast, metaphors and imagery are primarily used as an aid to explaining something to a patient, junior colleagues or medical students; "*I use it a lot for patients [to] try and explain conditions* …" (P11), "… *to patients a little* …" (P2), "… *if I'm teaching say new trainees or students* …" (P4). An example of this interpreting process was explained in more detail by one interviewee, as summarised in Exhibit 4.1.

I came in the morning and [the patient] just looked not good and he'd been seen multiple times overnight and kind of all the tests had been ordered but things needed to be expedited faster than they were planned, and the consultant came 20 minutes after me and immediately agreed and we both just felt there was something very wrong with the patient, that wasn't immediately apparent. There were a number of masking factors that made you think maybe things were alright and that had been the impression overnight, because objectively the patient did seem alright, and the patient was very sick and ended up having an operation, and that kind of sensation of there's something very wrong here is quite common.

Exhibit 4.1: Interpreting as instinct in practice

The language used by doctors influences the interpreting process and is seen as being different to 'everyday' language; "*there are stock phrases … almost like a code …*" (P1), and some specialties are seen as having a more specialised language again. This shared language is seen as an aid to understanding; "… *if I'm calling somebody in the middle of the night … using a few terms they can have a very rapid understanding* …" (P11). NCHDs become more effective at communicating with colleagues as their experience increases; "… *it's like osmosis … you're noticing change in tone, change in body language … that indicates that the phrase is bigger than the words mean*" (P1), "… *over time from training, … I'm a lot more aware of what the … average person would understand and what they wouldn't* …" (P8), "… *the Registrar … they'd only have to say maybe five or six sentences and [the consultant] immediately would understand* …" (P10). NCHDs verbalise an idea or an intuition to explain it to others, in particular when there is an impact on patient care; "… *if I feel like the person isn't getting the best … I would speak up quicker* …" (P1). The value of using shared language and articulating collective experience in a team environment was articulated as;

> "… we were all ... sharing thoughts and opinions … saying, actually no I've already asked her about that, I don't think that's what's going on, and someone else would say, well I examined her and I found this …". (P9)

Other considerations include the timing of when to share the idea and whether it offers potential for learning.

The findings illustrate that NCHDs actively manage their professional image; "*... some will ... appear to very proactively go after [a problem] … looking like you're active and then disengaging* …" (P2), which influences the manner in which the team members interpret. NCHDs are conscious of how what they say might be interpreted by peers and more senior colleagues/ consultants; "*... when you're with the people you know, you'd be ... a lot more forthright ... when it's ... superiors that you don't know you'd have to ... be more measured* ..." (P6). There is a desire to impress senior colleagues/ consultants, to project an air of confidence and to demonstrate competence; "*... at the start you're trying to make a good impression, and you're working hard and you don't ask too many questions* ..." (P10). This may influence how often an NCHD would seek assistance, or how they would speak about an idea to colleagues; "*... it depends on a relationship you have with your seniors but very few people will turn around and say I don't know ...*" (P11), "*... say it's in the night ... you could ring [the consultant] ... but ... you don't want to do that too often ... you have to show a certain element of being able to deal with responsibility ...*" (P6). Findings suggest that NCHDs would speak about their clinical experience differently, depending on whether the setting is a formal or an informal one; "*... everyone's keen to portray ... normative behaviour in the formal teaching ... whereas informally they might say I tried [something] and actually it really worked well ...*" (P2). The participants all recognised the advantages of tailoring the way they would speak about an issue or an idea in order to get buy-in for it; "*... you try and make it relevant to the person you're talking to ... make them feel valued and kind of necessary ...*" (P8), "*... make it attractive to them*" (P9). Some believed that this is something they would commonly do and a minority of the participants thought it was a strategy that they did not employ often enough.

Having the best interests of patients to the fore is an added impetus for NCHDs to engage in the interpreting process. Participants were very clear about not withholding information that relates to patients or patient care; "*... absolutely the primary concern [is] the safety of the patient ...*" (P7), "*... there's nothing I wouldn't share if it was … for the patient ...*" (P11). The prioritisation of patients and the focus on their best interests came across strongly from participants; "*... [of] prime importance is the patient, we're all here to make things as ... safe and ... good ... for the patient*" (P3), "*... this team … it's very patient focused, it's very respectful of patients …*" (P1), "*... I think that everybody in the health service ... has the patients' interest at heart*…" (P8). The documentary evidence supports the need to; meet patient needs, have high standards of patient care and a focus on patient safety to ensure best patient outcomes (D1), (D4), (D6).

The study findings show that informal learning plays a central role in how an NCHD develops understanding; "… *a lot of our learning would be … ad hoc … we'd have to learn in a certain situation and its problem based …*" (P6), *"… informal teaching … something that happens kind of informally in the theatre tea room between cases … in reality that is a lot of what you learn …*" (P8), "… *I would probably say 70% of what I'm learning, emm maybe 65 [is informal]*" (P1). Informal learning can occur when team members discuss and work through ideas so that sense-making emerges; "… *when we all talked it out, we got an idea of why the tear looked that way and from that … we had a better understanding …*" (P4). Discussions may take the form of collaboration and problem solving; "… *if we had a difficult case three of us would look at it together and try and form a consensus …*" (P4), "… *we do a lot of MDTs … patients would be discussed … and a consensus is taken*" (P11). Sometimes sub-groups of the team, or just a couple of team members will discuss an idea; *"… there'd be one or two of us … just discussing [an idea] … and talking to each other*" (P5), *"[learning] best takes place informally … informal interactions, or two people, so somebody together ... a bit of back and forth there ...*" (P2). Where participants are members of multi-disciplinary teams, those colleagues also contribute to the development of ideas and learning; "… *we decided that … I'd bring it to the wide MDT … once I'd … got that input then it seems much more doable and kind of like it might work …*" (P1), "… *[in] multi-disciplinary meetings … while there is obviously a hierarchy to people's opinions like everyone can … chime in … we are all ... working towards the same answer*" (P10).

Respondents acknowledge the informal means through which learning moves from being part of the understanding that senior colleagues possess to being part of what more junior colleagues also learn; "*I have a lot more informal chats that lead to … learning point*s …" (P9), "… *it happens informally, so like I finish my clinic and afterwards I discuss the cases … with my consultant* …" (P2), "… *I do read books and I discuss with the consultants and my senior and junior colleagues* …" (P3), "… *most learning … is informal and the role of consultants, GPs and other clinical teachers is key to the learning experience of trainees*" (D2).

How the interpreting of learning occurs can be influenced by the approach adopted by an individual to help a colleague to learn. Some NCHDs encourage colleagues to express their views and ideas as part of figuring out a complex case. Others see their role as a conduit to pass on how things are done; "*so it's just basically passing it down ... passing on what I've learnt*" (P5). Indeed, senior colleagues/ consultants have their own way of doing things; "… *medicine is … subjective … different people do things differently* …" (P8), "… *one consultant could decide … we'll manage this patient this way and another consultant would do it in a totally different fashion* …" (P7). Some approach helping others by giving part of an answer and referring to a paper which can be followed up for more detailed information; "*the consultant that I'm with at the moment, he's very interested in … evidenced based practice*" (P1). In particular, the teaching style of a senior colleague/ consultant can have a large impact on how learning is interpreted; "*... some people will just say go and work it out yourself and other people ... will tell you stuff … other people ... will be a bit more collaborative ...*" (P2). Some senior colleagues/ consultants appear to take a very active role in teaching and this is appreciated by NCHDs as it is seen as providing them with a richer opportunity to learn; "*... it's a huge impact if somebody takes the time to teach … a lot … leave you at it … but ... if they do teach, it's a huge impact ... it solidifies my learning ...*" (P11). However, other consultants adopt an approach where the NCHD can learn from observing or interacting with them, but the consultant may not be actively teaching how to perform the task; *"... some people will almost give a running commentary ... some … ask you questions ... other[s] ... will ... not say very much and you would ... have to ask them a question ...*" (P8).

Experience Hierarchy

The findings suggest that experience hierarchy is an influence on how an individual participates in interpreting learning. A hierarchy of experience exists within the medical profession and this is central to the context within which NCHDs work and learn. At the top of the hierarchy of experience are the consultants; "*... these senior guys … they've got thirty, forty years of clinical experience, like that's very difficult to argue with*" (P6), "*… the experience of the consultants is so crucial …*" (P1). This results in seniority playing a critical role as a facilitator of learning for NCHDs; "*... you tend to learn more from more experienced consultants ...*" (P4), "*... there's a lot of … mimicry or learning by … gradual experience, by watching what the consultant does …*" (P8). There is an underlying belief that this hierarchy is; "*a healthy approach to transfer the knowledge down the tree, from the consultants, senior colleagues, juniors … interns or the doctors starting from fresh*" (P3), as "*the most senior person will almost always have seen something before ...*" (P8). Others understand that relying on experience is; "*… just prudence and knowing your limits*" (P6), particularly when the consultant/ senior doctor is the decision maker; "*the senior person calls the shot …*" (P11), "*I will ... straight away call my consultant ... that will be the final word ...*" (P3). However, not all respondents agree with this perspective; "*… some teams I've worked on in the past, you didn't even get to question you just did, without understanding why …*" (P11). This same participant said an individual doctor's place in the hierarchy can lead other colleagues to be presumptive as to their level of experience and expertise; "*… there's an assumed knowledge that I know you have …*" (P11), intimating challenges associated with learning from within an experience hierarchy.

If an NCHD is unsure how to proceed they are expected to; "*… [ask] your superior, no matter what level you're at …*" (P6), and to escalate queries and questions to their senior colleagues/ consultant for a decision; "*… if the patient is unwell and you don't know what to do you have to escalate immediately and that's kind of drummed into you …*" (P8), "*… if there's doubt among the group [of NCHDs] or a patient's safety [is] at risk we quickly go look to one of the more senior consultants …*" (P4). The consultant's decision is usually implemented; "*… I suppose [I] apply it then … it's not an option really, that's what you do*" (P7), regardless of suggested alternatives from NCHDs; "*… so ... my*

decision was totally overruled" (P2). Only one participant referred to checking the information provided on occasion to confirm its accuracy. As an NCHD develops their clinical experience through; "… *learning from experience, like if somebody has X problem this is the way this is managed*" (P11), "… *on ward round you get asked questions* …" (P5), they develop insight as to how to carry out their role most effectively; "*... going from a state of direct observation, to the consultant … being outside discussing the next case … and being allowed to proceed without direct supervision*" (P7). Through this progressive cycle of development, the NCHD's confidence grows and they draw on other colleagues' expertise as required; "… *if I don't know something clinically I just ask someone else to see the patient* …" (P1), "… *having the backup of the consultant on certain ones that you can't deal with then is very big* …" (P6). The interactive nature of the experience hierarchy and the influence of developing clinical experience as highlighted in the thematic map (Figure 4.1) is articulated in Exhibit 4.2.

I'd a girl in the other day with a ruptured ectopic [pregnancy] and we did a thing called a fast scan which is ultra sound and she had loads of blood in her abdomen, and then we wanted to give her O negative blood and she had misgivings. I felt that she did need the blood and explained why. A lot of doctors go through their career without seeing any ruptured ectopics, but this [was] my third one and they lose a huge amount of blood, one and a half litres, two litres into the abdomen, and you only have five litres of blood. We did give her the O neg and she had a litre and half in her abdomen when they brought her to theatre. So, it was just I had the benefit of having seen these cases before and how sick they can get.

Exhibit 4.2: Experience evolution in practice

Procedures, guidelines and routines are available for many situations and act as a learning support for NCHDs; "*... we have clear guidelines to deal with any kind of emergencies* …" (P3), "*if there's a set protocol in the institution I would obviously adhere to it* …" (P4), "*... we have very good guidelines … written by one of the consultants for … the main situations that you come across and ... everyone gets a book on day one* …" (P6), "*... in general the ... patient care actual work side of things is very kind of regimented* …" (P8). Receiving feedback is an important aspect of developing clinical experience and according to the documentation reviewed, some NCHDs believe that the level of feedback that is received on their clinical performance is not sufficient; "*trainees' views on their experience of feedback are concerning … capacity and capability for feedback needs to be built into the clinical learning environment*" (D2). Notably, a lack of feedback was not explicitly mentioned by participants in the study, suggesting a difference between the internal documentary evidence and that which is exposed through this empirical study.

Some participants noticed changes in the terminology used by them as their training progresses; "… *it's experience teaches you what you need to put in, what… to take out … the words to use to show across how serious something is*" (P10), "… *I've probably adopted some of them [colloquialisms]* …" (P7), "… *the terminology is completely different from other areas of medicine, so it takes six months to a year to understand it* …" (P4). Their identity as a medical professional takes shape; "*in the clinical environment, through a process of enculturation, trainees learn what is required of them and form their identity as medical professionals*" (D2), "*learning to be a doctor is also about socialisation into the profession of medicine*" (D1). While deferring to senior colleagues is common place, participants in the study had experienced taking charge and being the decision maker regarding patient care in certain circumstances; "… *in an emergency situation … you've very directive, you're not discussing the pros and cons of the plan, that's the plan and we're doing it*" (P7), "*if … somebody is dying in front of you, you need to be able to give direction and people to follow you without question*" (P11), *"… on call … you … have to make an impression and an assessment and … if I'm happy I would communicate that* ..." (P1).

The post-graduate medical education that NCHDs acquire influences their ability to contribute to discussions and problem solve as part of the interpreting process. The post-graduate medical training experience varies among the participants, with some citing good support from their consultants; "… *consultants, GPs and others who act as clinical teachers … are very well-regarded by trainees* …" (D2), "… *the consultants are very much hands on in terms of training* …" (P5), trainers; " … *trainers who are trained ... will be better equipped to provide a successful learning environment* …" (D7), their post-graduate medical training body; "… *the college work place based assessments structure is a huge part of how I demonstrate my learning* …" (P1), "… *you're actually assessed formally, someone observes you … ensures that you can do a certain amount of skills* …" (P7), and a good standard of teaching in the hospitals; "… *we have very good teaching for the specialist registrar scheme, so once a month we go to a different hospital around the country* …" (P6).

Others are less convinced on the quality of the post-graduate medical training; "… *a lot of the topics and the ways they were taught were very random, spontaneous they weren't really taught in a logical coherent [manner]* …" (P4). They find that quality varies very much based on who the NCHD is working with, as this dictates how much actual teaching is received; "… *there was dedicated teaching once a week … the person at the bottom of the pecking order was given this job of teaching …*" (P10), "… *there's no structure to it … the teaching is based on individuals … who take it upon themselves to teach* …" (P10). The general consensus is that much of the medical training at post-graduate level is self-directed; "… *it's up to you, you keep up with … whatever you should have per your exams and … your year of training* …" (P3), "… *there's no formal learning none what so ever* …" (P5), "… *you are expected to do your own personal learning* …" (P9), "… *it's much more individual and self-directed … and there's no formal acknowledgement of that* …" (P1), "… *it's mostly informal … so a lot of it would just be day to day … collecting scraps of information about topics over time* …" (P8). These NCHDs do not perceive their training body is providing very much training to them; "… *the college … puts a bunch of learning objectives … it creates … flat pack doctors who are kind of off the shelf, the lowest common denominator* …" (P2), "… *there's not enough teaching [at] post-graduate level … we come in six … maybe seven days a year, that's it … there's no specialty training* …" (P10), "*there is significant variability between specialties in the quality of the medical training experience nationally*" (D5).

It is recognised that the quality of the clinical learning environment varies; "… *it is evident that more can be done in some places to make the clinical environment a better place to work and to care for patients as well as to learn to be a doctor …*" (D2). There is also tension between providing a training and learning experience for NCHDs and providing a clinical service to patients; "… *it's a very difficult … job to learn … it all depends on … seniors to teach … and everybody's very stretched … it's all service driven at the moment* …" (P11). While training is perceived to be important, "… *it's a training post and therefore time should be given to teaching and training* …" (P10), "… *a value needs to be put on training … we have to figure out a way to try and train ourselves, while providing a service* …" (P11), some highlight the challenge of making time to attend formal training sessions in a busy schedule, "… *we get, the … three-hour session, we often wouldn't get to because of clinical busyness* …" (P1), "… *the college … do …*

teaching … about like 10 days or 14 days a year … the only … problem is that taking a day away from the hospital is quite disruptive … sometimes it's met with derision …" (P8). Notably, as NCHDs get deeper into the training for their particular specialty, some noticed that they are forgetting their earlier medical training; "*… I don't use my medical knowledge as much anymore, so [its] kind of fading …*" (P10), "*… we get very specialised … and … you lose a little bit of sight about … medically managing patients …*" (P11).

As previously mentioned, while much learning for NCHDs takes place informally, a range of methods of learning to develop their medical training were identified by participants, the most predominate ones being; formal teaching, structured learning, learning through observation, self-directed learning, learning online and learning from books.

Throughout their training NCHDs rotate through different hospitals, usually spending six months or a year in each hospital. The study found that rotating to a new hospital requires a period of adjusting which can be disruptive to NCHDs learning; "*... you get your head around it and you feel a little bit less inept from about six months in or five months in …*" (P2), "*... I find it incredibly disruptive … you're just figuring out where you are and … then have to move again …*" (P9), "*… there tends to be … a warming up period … you probably lose … two to four weeks every time, in terms of just finding your feet …*" (P8). Rotations do offer the opportunity to get exposed to new training environments, new teams and new trainers which can enhance the learning experience of NCHDs; "*… it's good exposure to deal with different patients, different people … to … absorb their knowledge, and transfer your knowledge and skills …*" (P3), "*... you learn from different consultants and different teams, and how different hospitals operate ...*" (P4).

However, it is felt that there is a lack of reward for investing in and training NCHDs who are going to be moving to a new hospital in a year's time or less; "*… you put all the effort in and somebody else is getting your rewards ...*" (P5), "*... you can't expect someone to teach you everything unless they're invested in you or you're invested in them ...* (P11). Other draw backs of rotations include limited opportunities to interact with permanent

staff; "*... you are kind of in and out … but the staff that are there permanently ... [there] doesn't seem to be any kind of opportunity … to discuss ideas ...*" (P5). One NCHD believed that the short duration of time spent in each role, coupled with the rotations to different hospitals has a negative impact on idea creation, idea sharing and willingness to try new ideas; *"... at the end of my rotation ... just now I know what's going on ... you don't share your ideas … you're in a job where no one cares about your ideas ... you're gone in six months …*" (P2).

Integrating Learning

Integrating learning is evident from the data where instances of new learning were recognised, and was perceived to lead to greater efficiencies amongst the team and in patient care; *"... everyone just seemed … [to] know a lot more about each patient ... it … got the team involved in patient management …*" (P10), "*... we do things either better, quicker, faster ... patients usually do better … out of hospital quicker ... you can see … people growing in confidence, in how they perform ...*" (P11). Participants identified shared understanding being present through the nature of the interaction between the team members; "*... we … discuss all the patients ... if there's no question that means we're on the same line*" (P3). The belief that silence represents understanding is echoed in a number of participant responses, "*... when there's agreement it's quite quiet*" (P1), "*... without having to say it to everybody individually [they're] … doing the same thing … there's good communication ... they understand what they're doing*" (P11). Shared understanding can also be evidenced through observation of body language; "*you can tell from ... non-verbal clues … how fervent someone is in agreement with you ...*" (P6), "*… body language is key …*" (P4). The integrating of learning was also evident at the individual level where participants recalled the development of skills; "*… learning would take place by … doing a skill under supervision or observing a skill being done and then actually practicing it*" (P7), "*… there'd be gradually learning skills … it's called see one, do one, teach one where somebody would show you how to do an operation, you gradually learn to do it by doing parts of it …*" (P8).

Flow of Learning

The flow of learning is another theme evident in the data. The flow of learning between individuals appears distributed between description, action and replication; "… *somebody … saying you can only do this, you got to do that*" (P5), "… *you … describe their case to someone … superior to you … they will either give you advice or go and see the patient with you …*" (P6), "… *[the consultant] would give you a spiel [description] on how they do it and then you would know for the next time* …" (P8), "… *[the consultant] said 'I will show you one, I will watch you doing one and you'll do one on your own' …*" (P11), "… *I just gave her some advice … how to do a presentation* …" (P1). Despite the experience hierarchy there is evidence that senior colleagues learn from junior colleagues, but again these tended to be instances of individual to individual learning; "… *when you move hospital consultants would ask you … 'how is so-and-so doing this operation?', what were they doing … in the other hospital* …" (P8), "… *the consultant there was so open … seeking my view on things … so I did feel like there were times when I taught them things* …" (P1), "… *I've gone to a conference and picked something up and I've shared that with more senior people* …" (P7). Only one participant did not believe there was an opportunity for a senior colleague to learn from them.

The feed forward flow of learning from the individual to the team or group was present; "… *my training colleagues … are … asking me about the literature and … [to] give us some ideas and I usually give them* …" (P3), *"… I … printed off copies gave it to them and explained what I had read in the paper* …" (P4), "… *often if the interns have come from particular medical service that we haven't got as much experience [of], they'll often tell us what we need to do* …" (P11). Those outside the team may also enhance learning; *"… a porter has … shown me and … an anaesthetic nurse … and a consultant some gadgety thing which actually made life easier on the bed* …" (P7). The feedback flow of learning from the team to the individual was also evident; "… *I found the team were great to approach … about … progression, and training days and even procedures* …" (P10), "… *I could ask a few members on the team who might know the patient better or might have more experience with this diagnosis … the team will offer their opinion* …" (P2). Modern telecommunications also provides instant access to team expertise; "… *we've a*

WhatsApp group[7] *… the interns will send a message out that they're having … a problem … we can give them quick answers*" (P11). Thus, NCHDs gain insight through collective experience to the benefit of individual learning; "… *the group work station … it's synergistic … it allows you … to … work with what you know [and] … with other peoples' knowledge and experience too* …" (P4).

Participants described learning flow between peers; "… *there's a really good cohesive group … of registrars … we learn from each other* …" (P1). This learning process promotes an action-reflection balance that was described by one participant; "… *we'd probably share information and generally it's often through discussion and reflection* …" (P7). Prior experience offers insight into current challenges; "… *if other people … have done procedures … or have seen things that I haven't … we always talk … so … you have some experience, like second-hand experience* …" (P10). In some instances, the learning from peers would be seen as less effective than learning from a more senior colleague; "… *because they're at the same level … or similar, your yield mightn't be as great* …" (P4), "… *within my own … specific peer group … you probably wouldn't learn off each other that much … 'cause otherwise your knowledge base would be more or less the same* …" (P8), "… *you're rarely with your same level, and … we're all competing for the same jobs, people don't like to admit that they don't know things* …" (P11). The potential to learn from more junior colleagues was also recognised; "… *they can reinforce things you might have forgotten* …" (P4), "… *that intern, the way that she does assessment … I found it really useful and I've … incorporated it into my own assessments* …" (P1), "… *the Reg I work with at the moment … I'm stealing his vocabulary* …" (P2), "… *some of the interns are very good … I don't use my medical knowledge as much … if I had a medical issue I'd be happy to ask them* …" (P10).

[7] WhatsApp is an encrypted, instant messaging system for use on mobile smartphones. It uses the Internet to send text messages, documents, images, video, user location and audio messages to identified group members.

Social Processes and their Role within Learning

The findings indicate that the social processes at work in the medical workplace influence the interaction of individual and team learning. They are described as participative in professional documentation (D2) and include unwritten social rules and expectations that influence a doctor's learning. These can take the form of an 'informal curriculum'; "... *(comprising unscripted, unplanned and highly interpersonal interaction between trainees and other people at the clinical site*)" (D2), and a 'hidden curriculum';

> "... (comprising the network of unwritten social and cultural values, rules, assumptions, and expectations at the clinical site and beyond) [that] powerfully shape how doctors learn once they enter the workplace)"
>
> (D2), (Medical Council, 2014: 23).

Social processes that appear to facilitate learning include; a senior colleague or consultant acknowledging the contribution of the NCHD; "… *he got back to me ... and said ... I think we'll do your idea first* …" (P8), "… *he was asking me to bring something ... for him to learn ... it was really good for my confidence* …" (P1), and the NCHD feeling heard; "*even if my consultant does not agree with that ... he explains why we are not taking that idea into action* …" (P3). This echoes the concept that when supervisor support is present learning is encouraged (Noe *et al*., 2014).

As anticipated in the formal documentation (D2), interpersonal relationships affect the learning of NCHDs at work, through influencing the nature of the social processes that occur. Where NCHDs perceived interpersonal relationships as being positive their sense of comfort and belonging increased and they trusted their colleagues; "... *there's a lot of openness when you've good relationships with people, you don't feel like anyone is going to think less of you for asking questions* …" (P1). This makes it easier to tease out ideas and ultimately learn; *"... once you're confident ... colleagues ... trust you and ... your clinical judgement ... it's easier to open up ... without them thinking ... you don't know very much* ..." (P9). When those interpersonal relationships are not positive, for example; "… *if someone's going to be awkward, or ... pedantic or ... very instructive* …" (P7), then they may inhibit the willingness of NCHDs to engage openly in discussion and enact sense making.

NCHDs identified creating a positive team environment where the behaviours are positive, open, respectful and supportive as being important to helping them learn; "… *you get a feeling … of team … it's multi-disciplinary … they want your input before they make their plan and … they're … feeding back about how they're getting on* …" (P9). In contrast, a less supportive environment is found to have a negative impact on team development; "*if we are positive then we can help each other, if not ... that will not make us a good team ...*" (P3), "*... if the team members were very cocky, over confident, [that] … they'd dismiss the idea or ridicule it too much, I probably was less likely to suggest an idea ...*" (P4), "… *that will impact … the team environment* …" (P7).

In addition, this study identified experiencing support from colleagues when difficult and challenging situations occur; "… *[we] just made sure that person didn't feel alone and just say like that could have been any of us* …" (P5). Senior consultants' willingness to try new approaches compounded these benefits; "… *the consultant was very flexible … he was very open to doing something slightly differently*" (P9), "… *you have to have somebody at the top who's open … and doesn't feel threatened or intimidated* …" (P11). Encouraging input (Zietsma *et al*., 2002) from the NCHDs are factors in the organisational climate that support individuals in sharing insights and engaging in the interpreting process.

Social processes can also be barriers to the interaction of individual and team learning. A key barrier is when individuals choose to keep an insight to themselves. This can happen if individuals are not feeling confident in themselves at that time; "… *a very junior person dealing with a lot of senior colleagues … might be … apprehensive about sharing … thoughts* …" (P7), "… *if I was … not having as good a day, or … I'd made a suggestion that wasn't great earlier … that might … push me into being … very sure of a suggestion before I open my mouth*" (P9), or they believe the senior colleague knows best; "… *I've probably a tendency to assume that their experience is a better way, as opposed to what I've read somewhere or a new idea* …" (P11), "… *they know best* …" (P5), or if they believe the content of the insight may reflect badly on them; "… *they were going to think I was un-empathetic or that I was narrow minded* …" (P1), "… *when I was more junior perhaps it was fear of losing face or … that they may have perceived I should have known*

…" (P11), or from previous interactions it has been perceived that colleagues are not receptive to input; "… *it's [a] very old school specialty … people aren't looking for new ideas … a lot of the procedures we do haven't changed in a long time* …" (P10). A further reason to withhold an insight would be to avoid information inadvertently being shared with the patient in an inappropriate manner. This barrier arises from having the best interests of the patient in mind and prioritising it over letting junior colleagues become aware of the more senior colleague's insight.

A culture that encourages blame and where bullying and undermining behaviour occurs in the clinical learning environment was identified as a barrier to learning in the documentation that was reviewed; "… *the experience of being bullied … of observing others being bullied, and of experiencing undermining behaviour from a senior doctor is endemic among trainees in Ireland* …" (D2), "… *trainees who reported … bullying also had poorer views of the clinical learning environment*" (D2), "… *experiencing bullying and perceiving others being bullied or undermined is corrosive to the development of medical professionalism*" (D2). The source of bullying and undermining behaviour can be; "*the educator and/or clinical supervisor … consultants/GPs, peers, other health professionals, managers and patients and families*" (D7). These documentary findings were not borne out in the current study as only one participant mentioned the existence of a "*blame culture*" (P11). Other barriers to learning include workload and busyness; "… *the workload, they're so overburdened that they sometimes forget to fill the forms* …" (P3), "… *there might be a time mid-morning you want to explain an idea but everybody's in a rush and you don't get that moment* …" (P4), "… *there's a lot more to tease out on it and then you've people going on holiday … it just gets a bit manic when … you're on call and there's lists on* …" (P5). Avoiding and not wanting to engage with problems, were mentioned by two participants as reasons for not providing insight and one participant spoke about the length of time that has passed since a case reducing the likelihood of asking follow up questions about it.

Social processes can have a more negative effect on team dynamics, such as side discussions that take place outside team meetings; "… *there's some meeting that happens outside the team meeting that then seems to supersede that, that you may or may not find*

out about …" (P2). These can affect decisions made at team meetings to the detriment of team learning; "… *the consultant was … pretty annoyed because it seemed as if people had rode back on the joint decision … it was the first time I'd seen him pull rank* …" (P1). In some instances, there is a lack of clear management structure and conflict can arise between team members as a result; "… *there's three of us in the middle … who try to mediate or create common ground* …" (P4), "… *there's a weirdness … to find a common line manager between a consultant and a clinical nurse specialist you nearly have to go to the Minister for Health* …" (P2). Clinical training can impact on how ideas are progressed; "… *you have an idea … and they have a different idea about it, but … they're not trained to have an idea in that area, so … there can be a … lack of concordance* …" (P7), resulting in a lack of trust among the team members; "… *nurses, doctors, if there's anything … they just close ranks completely, so there's not much kind of trust there* …" (P5).

For some NCHDs the social processes within interpreting an idea would include preparing to talk to the team. Prior to sharing the idea with the whole team they may see what support there is for it among individual team members, or to 'sense check' the idea with a third party; "*I would quite often talk to the consultant on his own before talking to the wider team, or else I might talk to somebody like outside as in my partner or [family member]* …" (P1), "… *if I thought an idea was … good … but it was going to be dismissed quickly or not understood I might practice talking about the idea* …" (P4), "… *maybe get a devil's advocate on-board … I always kind of discuss it with one or two people … someone like at your level and then maybe someone a little bit more senior* …" (P10).

The research participants all stated that they enjoyed working in a team environment; "… *we've got kind of mutually supportive fun* …" (P1), "… *we spent lots of time together … that was a … remarkably social team*" (P8). Some had clearly developed friendships with colleagues that they believed would last beyond their membership of that team; "… *the people you do develop a really good bond with, you know that it's going to be lifelong* …" (P11), whereas others viewed relationships as positive and collegiate but through a more professional lens; "… *I couldn't say I'd developed any friendships ... but certainly have made good solid acquaintances* …" (P7). While participants all indicated, they

enjoyed working in a team environment, the team composition of their teams varied. Team composition as part of the social processes of an NCHD's team can influence both the interpreting and the integrating of learning as it determines the level at which team members know one another and how frequently they work together; "*... we change every day, so you could be with a different consultant and a different Reg … you could be with the same consultant and a different Reg ...*" (P9). Some participants work in a team setting with colleagues from the same discipline and some were members of multi-disciplinary teams; "*... it's … more multi-disciplinary … more ... team … orientated ... much more complicated and much more ... multi-dimensional care for the patient*" (P3). For some participants, the colleagues that they work with vary on a daily basis due to rota patterns within the team; "*... there's three consultants and they rotate weeks ... the Regs … rotate a little bit ...*" (P5). For a couple of the participants their on-call work actually took place in different hospitals to where they work during their normal rota. In that circumstance they could be working with colleagues that they were meeting for the first time, or that they knew but did not work with regularly.

Good team communication is valued amongst NCHDs and as part of the social processes that influence learning, it supports the integration of learning. Online communication systems promote fluid engagement; "*... we have like an online system … so information sharing about patients is there and it's heavily emphasised*" (P1). Multi-disciplinary team meetings are also seen as useful tools for improving team communication; "*... a multi-disciplinary meeting ... is the most useful for sharing information amongst the team*" (P2). Some participants recalled ideas aimed at improving team communication and facilitating shared understanding; "*... we would reassess like the list of patients like in the morning ... communicate it … so … we were all on the same page*" (P10), "*I move[d] ... our round to a quarter past seven so ... the night nurse ... give[s] us a direct pass over ... [its] actually worked out really well … we've very good communication ...*" (P11). NCHDs also influenced the effectiveness of their teams, through implementing their ideas; "*... one of the guys just posted up a suggestion [to] ... print off the updated list for the afternoon/evening round …*" (P5), "*... by having this list … it made … the patient outside the hospital more real ...*" (P10). By promoting team contributions around proposed ideas; "*everybody … made further suggestions and then we agreed ...*" (P5), NCHDs enhanced team communication and ultimately improved the adopted change. In addition, the use

of social media plays a strong role in efforts to improve teamwork in hospital environments; "*... text messaging would be used to keep in contact, and ... all of the NCHDs have a group chat on WhatsApp ...*" (P7), "*[WhatsApp] … disseminates information and … aids in communication, because every single member of the team is notified … as to what's going on with patients, so that's really working out well for us ...*" (P11). This approach also improves team productivity; "*... they would just send a WhatsApp … the first person to see it replies …[it] just speeds things up ...*" (P8). The psychiatry participants were the only participants who did not use social media in the course of their work[8].

Reflection

The seventh theme is reflection, as several of the participants demonstrated that they had reflected on their experiences between interviews; "*... what surprised me was how impactful it was … the using your gut thing, and that's something that I've been thinking over and over since ...*" (P1), "*... I am interested in am I a more didactic teacher then I would like to be? …*" (P2), "*... some of the questions were harder to answer in my current role ... we work in a different team dynamic ...*" (P9), or had reflected on their learning as a result of being a study participant; "*... it's made me think a lot about the way technology's changing … with WhatsApp and these different apps for learning and how they're being used ...*" (P4).

CONCLUSION

This research aims to understand how the multi-levels of individual and team learning interact in public health care organisations. Having conducted three rounds of semi-structured interviews, a review of professional documentation and in liaison with her reflective log, the researcher analysed the data and identified seven key themes. Three of these themes correspond to the three learning processes of intuiting, interpreting and integrating along with the fourth theme flow of learning all of which were part of the

[8] The emergency medicine participant did not discuss use of social media and as this participant only participated in the first round of interviews the researcher did not have an opportunity to ask them about it.

preliminary conceptual framework (Figure 4.1). The findings indicate that learning does not just flow or move between the individual and their team, but also between smaller groups of individuals and indeed between two individuals. This learning may be integrated at the level of the individual and may not always become part of the stock of learning at team level. The themes of experience hierarchy and social processes and their role in learning are both influencing themes. They influence the nature of the interaction that occurs during learning, particularly at the interpreting stage which is the bridge between individual and team learning. The upward asking sub-theme within experience hierarchy suggests also that in addition to intuiting providing a starting point for learning, asking more senior colleagues what to do maybe another starting point. The final theme is reflection by the individual which can prompt the asking of questions or contemplation of what they are learning and how they are developing their clinical experience and interacting with other colleagues within the experience hierarchy (Figure 4.2).

NEXT STEPS

Having completed the data analysis to extract the research findings and ultimately the key themes relating to this study, the next steps include a discussion of the findings, contemplated through consideration of extant literature and in pursuit of a refined framework for how the multi-levels of individual and team learning interact. The research conclusions, recommendations, contributions and reflective insights will also be considered in the forthcoming work.

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APPENDIX 1 – SUMMARY OF THE RESEARCH FINDINGS

Theme	Sub-theme		Theme	Sub-theme
Intuitive Capacity	Instinct Recognise inklings No inklings Fleeting intuition - lost opportunity for learning Idea generation Don't create extra work		Social Processes and their Role within Learning	Contribution acknowledged Enjoy team environment Hidden curriculum Interpersonal relationships Openness Participative social processes Positive team relationships Prepare to talk to the team Support from colleagues Team dynamics and social processes Barriers to learning Team composition Improving team work
Interpreting Learning	Approach to helping someone learn Incremental development Informal learning Language Metaphors and imagery New ideas figured out by team New ideas shared by individual Stories in learning Managing image Patient focus			
Integrating Learning	Evidence of new learning Learn new skills Shared understanding		Experience Hierarchy	Consultant as facilitator of learning Delegation of tasks Developing clinical experience Implementing senior opinion Presumption of experience Senior decision making Taking charge Upward asking Time in Role – Duration in role Medical education
Flow of Learning	Individual to individual Individual to team or group Learning from junior colleagues Peer learning Senior colleague learning		Reflection	Participants reflecting on something associated with the interviews

Section 3

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

INTRODUCTION

This research aims to study how the multi-levels of individual learning and team learning interact in public healthcare organisations. The resultant research questions are: How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels? In this study, collective learning begins with individual learning (Argote and Miron-Spektor, 2011) and organisational learning is defined as "the process of change in individual and shared thought and action, which is affected by and embedded in the institutions of the organisation" (Vera *et al*., 2011: 154). Whilst prior research portrays the existence of multi-levels of learning in an organisational setting (Crossan *et al.,* 1999), multi-level research in organisational learning is lacking, and research delving more deeply into how the levels interact to form organisational learning is required (Crossan *et al*., 2011; Decuyper *et al*., 2010; Noe *et al*., 2014; Swan *et al*., 2010).

This study seeks to increase our understanding of organisational learning by researching actual learning processes (Easterby-Smith and Lyles, 2011; Shrivastava, 1983) in order to enhance our understanding of how the multi-levels of learning interact by focusing on the interaction between the individual level and the team level of learning in public healthcare organisations. There is a prevalence of teamworking in the delivery of patient care in hospitals and public healthcare organisations, however teams in healthcare are not always effective (West and Markiewicz, 2016). The interest in the connection between learning and how effective teamwork can increase patient safety is growing (Ortega *et al*., 2014; Lewis and Tully, 2009; West and Markiewicz, 2016). From a practitioners' perspective the study has the potential to develop understanding as to how to enhance the effectiveness of learning interactions within organisations in the health sector and potentially, in other sectors. While knowledge does play a part in the nuances of interpreting and in learning, it is outside the focus of the research.

In pursuit of the research questions the researcher carried out a single interpretive case study in the public health service in Ireland, involving three rounds of semi-structured interviews with eleven participants (P1-P11), each of whom is a Non-Consultant Hospital

Doctor (NCHD). The researcher is a member of the corporate structure within the HSE, and as such has the dual role of practitioner and researcher. However, the study took place in the hospital setting with participants involved in the delivery of front line patient care which is a different aspect of the overall organisation to that which the researcher is based in, thus mitigation for dual role challenges are as an outsider. The research purpose, design, data collection process, findings and analysis are documented in Section 2 of this thesis (cumulative paper series). These findings are supported by the identification and review of relevant professional documentation, maintenance of a case study database and entries in the researcher's reflective log. This concluding section begins with the articulation of key insights based on the research findings in interaction with prevailing literature and the proposed conceptual framework, leading to the presentation of the refined learning framework. This is followed by the research conclusions, resultant contributions to knowledge, recommendations for both practitioners and researchers, research limitations and suggested areas of further research.

KEY INSIGHTS

This section discusses the key insights arising from the findings in light of prevailing literature. The research findings exhibit seven main themes; intuitive capacity, experience hierarchy, interpreting learning, social processes and their role in learning, flow of learning, integrating learning and reflection. Figure S3.1 (Section 2, Paper 4) is replicated here and illustrates these seven themes as they relate to multi-level individual/ team learning interaction in public healthcare organisations.

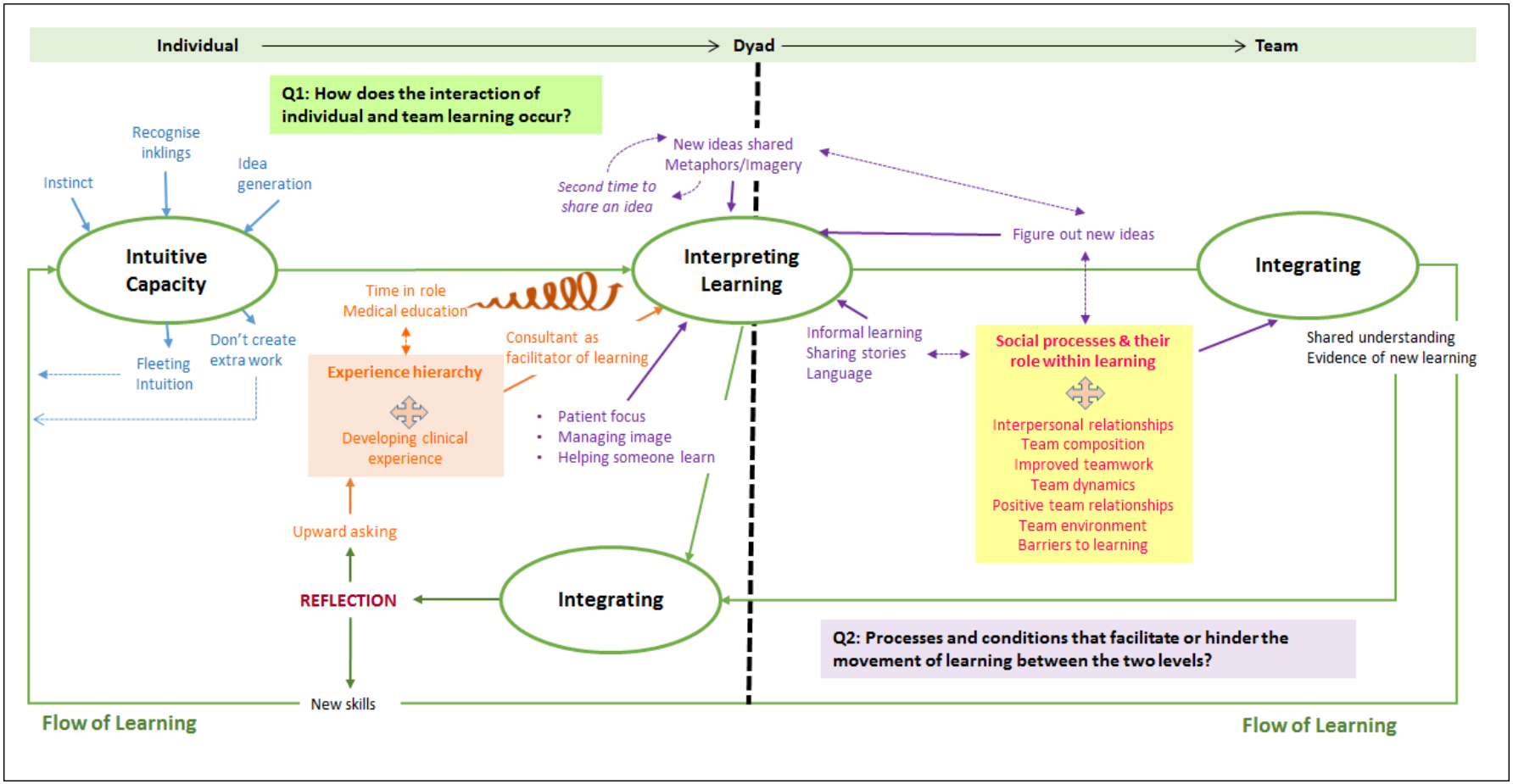

Figure S3.1 Thematic map: Multi-level individual/ team learning interaction in public healthcare organisations

Key insights relating to the themes as exhibited in Figure S3.1 are summarised below.

Intuitive Capacity and Experience Hierarchy in Public Healthcare Organisations

The view that individuals are the element within organisations that are capable of learning (Mazutis and Slawinski, 2008; Richter, 1998), is borne out in the findings. The findings exhibit that where an individual recognises a pattern or possibility taking shape at the preconscious level, grasps it and begins to interpret it, either by themselves or with others; this action is consistent with how intuiting is portrayed in the literature (Berends and Lammers, 2010; Bontis *et al*., 2002; Crossan *et al*., 1999; Hilden and Tikkamaki, 2013; Lawrence *et al*., 2005; Lehesvirta, 2004; Mazutis and Slawinski, 2008; Sadler-Smith, 2016; Santos and Steil, 2015; Vera and Crossan, 2004; Zietsma *et al*., 2002) and in the healthcare environment specifically, (Adams *et al*., 2016; Chilcote, 2016; Lyneham *et al*., 2008; Rew and Barrow, 2007; Rosciano *et al*., 2016; Woolley and Kostopoulou, 2013). The participants demonstrate intuitive capacity through the occasions when their gut instinct has been a catalyst for learning; "… *you have to be able to go with your gut…"* (P6), and also in situations where they specified having an insight but not sharing it. Crossan *et al*. (1999) described intuition as possibly being experienced as a sensation for which the individual has no literal language; the description of gut instinct as a feeling (Rosciano *et al.*, 2016; Sadler-Smith, 2016) is something described by the participants; *"I was just feeling that something is not good …*" (P3). This aligns with the experience of a sensation, it is non-verbal or pre-verbal in nature.

Participants recognise that their gut instinct developed as their experience increased; "… *experience … tells you, something is going to happen now, something is happening, …*" (P3), which is similar to the concept of expert intuition (Berends and Lammers, 2010; Crossan *et al*., 1999). Expert intuition draws upon the individual's prior learning and experience to create insights (Berends and Lammers, 2010; Crossan *et al*., 1999). The study's findings suggest that participants have insights arising from prior learning and experience that allow them to predict what is likely to happen in a given situation, or what the likely medical diagnosis will be. They recognise a pattern from the past (Crossan *et al*., 1999) occurring once again in the present. This is suggestive of cognitive maps or

mental models (Bontis *et al*., 2002) developing as NCHDs gain experience and progress with their training. The information the NCHDs pay attention to is influenced by the mental models they have developed which will in turn influence how they will access and interpret that information in the future (Kim, 1993; Zietsma *et al*., 2002). Those with highly developed cognitive maps will have a greater range of potential ways of seeing and doing things and interpreting things than others (Crossan *et al*., 1999). Interestingly, there may be occasions when insight or intuition is not shared with more junior colleagues, the findings indicate that on those occasions a higher value is placed on patient confidentiality than on the learning of more junior colleagues.

However, for intuiting to be the catalyst of learning, the instinct and inklings that occur to an individual must be recognised and not disappear before being fully grasped. Five of the participants believe that they recognise their inklings and listen to their ideas and are unfamiliar with the sensation of being aware of an insight but it slipping away before being grasped. The other participants relate very clearly to the notion of fleeting intuition; "… *every now and again I'd get a flash of insight and it would just totally breeze past me* …" (P10) and recognise it as a frequent occurrence. It is unclear whether those who did not recognise fleeting intuition also experience it and are simply unaware of it, or whether they actually do listen to all of their ideas. It is possible that participants could not recollect an instance of fleeting intuition when talking to the researcher, so stated that this does not happen to them. The concept of fleeting intuition would appear to be an extension to how intuiting is described in the literature (Crossan *et al*., 1999). Fleeting intuition represents a lost learning opportunity as it may not be recalled at all by an individual or there may be a very loose sense of what the intuition is about, but as it has not fully formed in the individual's conscious mind it may not be accessible to them at will. It may of course re-surface on another occasion and it may or may not be grasped at that time and form the beginnings of an idea that feeds into the interpreting process.

The findings indicate that the intuitive capacity of NCHDs may be limited by the circumstances in which they work as they; "… *deal with facts* …" (P3), and "… *practical projects*" (P8). Firstly, there is a perception amongst participants that their work does not present much opportunity for idea creation or offering innovative thoughts. Instead, the

work is perceived to be; "… *not creative, really it's reactive ...*" (P6), and primarily about "*making decisions … and implementing the decisions …*" (P11). When a course of action is being determined, previous experience is relied upon and the most senior colleague or consultant will decide what is to be done. Of note in this study is the healthcare context, as within the public hospital system, a power or autocratic culture is more likely to prevail (Malone, 2010), a fact related to the hierarchical influence on interpreting learning in this organisational environment. The findings suggest that participants often believe that the consultant knows best; "... *we … look to one of the more senior consultants ...*" (P4), and to; "*... assume that their experience is a better way, as opposed to what I've read ...*" (P11), they may be reluctant to offer a suggestion for fear it may be perceived as criticism of the more senior colleague, which could have negative repercussions for them (Pfeffer and Sutton, 2000). In these circumstances, the leader is the dominant member and this can be a barrier to team learning (Edmondson *et al.*, 2001; Rushmer and Davies, 2004), it is also illustrative of a lack of psychological safety on the part of the participant (Edmondson, 1999; Edmondson *et al.*, 2001; Ortega *et al*., 2014; Roloff *et al*., 2011; Van den Bossche *et al*., 2006).

Other participants perceive their senior colleague/ consultant to be more open to ideas and believe they could put forward a suggestion, with the final decision still being made by the consultant; "... *the senior person calls the shot ...*" (P11). These differing perceptions of what type of interaction is possible with a more senior colleague/ consultant highlight the important role that interpersonal relationships between colleagues holds as part of the social processes in the workplace. It also points to the impact the experience hierarchy can play in influencing whether or not insights or ideas are verbalised to become part of the interpreting process. Secondly, intuitive capacity may be limited by a desire not to create extra work either for oneself or for colleagues; "*... you know it's extra work or it might cause someone to have to stay in late …*" (P10). Recognition that the intuiting process may be stalled by the individual's own beliefs or perceptions as to what may occur should they share an insight or idea offers additional insight about the interaction of the intuiting and interpreting processes. Lehesvirta (2004) similarly recognises that individuals need to be willing to share an intuition but in contrast found that individuals would share an intuition if they believe it to be worth sharing and there is someone present who they think would be interested in their idea.

While the assumption that intuiting is a starting point for learning is borne out in the findings, the findings also suggest that there may be another starting point for learning. NCHDs are part of a hierarchy of experience within the medical profession which generally incorporates a number of layers and results in seniority playing a critical role in the learning of NCHDs. Seniority and experience are highly regarded, and junior colleagues defer to the judgement of those with seniority; "*... these senior guys ... they've got thirty, forty years of clinical experience, like that's very difficult to argue with*" (P6). If an NCHD is unsure how to proceed they are expected to escalate queries and questions to their senior colleagues/ consultant for a decision. Not knowing how to proceed and seeking help from usually a more senior colleague represents a potential alternative starting point for individual learning. The senior colleague/ consultant provides the necessary direction or instruction and it is carried out; "*... I ... apply it ... it's not an option really, that's what you do*" (P7). This results in the individual NCHD learning how to manage that particular situation and they will be aware of what to do the next time it arises; "*... there's a lot of ... mimicry or learning by ... gradual experience* …" (P8), indicating that their mental map is developing. Experience is valued and relied upon and there is a belief that when there is a question as to how to proceed or what to do, it is a matter of continuing to escalate the issue until you reach a person in the hierarchy who knows what to do; "*a healthy approach to transfer the knowledge down the tree, from the consultants, senior colleagues, juniors ... interns or the doctors starting from fresh*" (P3).

The findings indicate that when NCHDs do not know what to do, they seek out the answer through accessing the learning and experience of more senior colleagues, they are not encouraged to come up with new and innovative ways to address the problem. It is accepted that the situation they are faced with has occurred before and that there is a 'tried and tested' approach to be implemented; "*... the most senior person will almost always have seen something before* …" (P8). They learn by retrieving information already stored in the team (Decuyper, 2010), in the form of understanding already possessed by more experienced team members, and/ or guidance that is available in procedures and guidelines documenting the appropriate steps to follow in a situation. Since many of the situations NCHDs would encounter are time sensitive they require the correct or appropriate treatment to be implemented without delay, the most efficient way of doing this is to ask someone with experience who has already learnt what to do; "… *[ask] your*

superior, no matter what level you're at …" (P6). The senior colleague/ consultant is in a position of authority, therefore it is their responsibility to interpret and make sense of the information presented to them, to draw meaning from it and to determine a course of action (Daft and Weick, 1984; Edmondson, 2003; Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015).

Interpreting Learning as a Social Process in Public Healthcare Organisations

The study views interpreting as a social process at the intersection of the individual level and the team level of learning. Learning is viewed from a social constructionist perspective in this study, meaning that learning and understanding emerge from social interaction that takes place within a specific context (Easterby-Smith *et al*., 2000); "… *when we all talked it out, we got an idea of why the tear looked that way and from that … we had a better understanding* …" (P4). Intuiting transforms into interpreting, and through that process meaning is arrived at (Daft and Weick, 1984; Hilden and Tekkamaki, 2013; Mazutis and Slawinski, 2008). Metaphors can often play a role in the interpreting process (Crossan *et al*., 1999; Hilden and Tekkamaki, 2013; Maitlis and Christianson, 2014; Srivastva and Barrett, 1988) and understanding new experiences (Sandberg and Tsoukas, 2015); *"… we would often kind of compare things … think of the lungs as a balloon … the blood vessels as pipes* …" (P7). The findings illustrate that NCHDs primarily use metaphors and imagery as an aid to explaining something to a patient, junior colleagues or medical students but not to explain insights and ideas to each other; "… *to team members' no"* (P2). This lack of the use of metaphors in normal peer conversation, supports the position that problem solving and dealing with situations is predominately through finding out from more experienced colleagues how to proceed, rather than putting forward innovative suggestions. The use of stories (Brown and Duguid, 1991) is common in the respondent relayed sense-making processes; and it is through stories, conversation and discussion that insights and understanding emerge and develop (Richter, 1998). Stories form part of the stock of learning NCHDs hold (Christianson *et al*., 2009; Lehesvirta, 2004) and also enable easy transfer of learning to others as; "… *it … helps you understand the dynamic of a situation …"* (P10). For NCHDs much of the interaction that leads to learning takes place informally, which is comparable to other research findings (Lehesvirta, 2004; Noe *et al*., 2014).

These professional conversations, discussions and meetings provide an opportunity for interpreting to take place, for the experience of more senior colleagues to be shared with more junior colleagues, but also that more junior colleagues have an opportunity to contribute to the discussion. Some conversations may involve a sub-set of the team, or a dyad and these more informal interactions can facilitate the crystallisation of insights as they are verbalised and interpreted by a pair of colleagues or dyad or indeed a small group; *"[learning] best takes place informally … informal interactions, or two people, so somebody together ... a bit of back and forth there ...*" (P2). The findings show that even participants who could not recall figuring out an idea with their team, could recall instances when they had shared an idea with one or more colleagues. Without opportunities such as these that allow individuals to engage with others and surface their ideas and their learning then the flow of learning can become stifled at the individual level (Bontis *et al*., 2002). The findings indicate that both structured multi-disciplinary team (MDT) meetings and the more informal conversations that arise between teams and colleagues are important mechanisms in how healthcare team members interpret and create understanding together.

The literature envisages interpreting being derailed resulting in the learning process being interrupted (Berends and Lammers, 2010). As interpreting is the bridge between individual level learning and group or team learning then if the learning process breaks down at this point the flow of learning beyond the individual into the team will not happen. The findings support the learning process being interrupted on occasions and indicate that the context is vital to determining whether the learning processes are derailed or if there will be a second attempt to express or share the idea in instances where the first attempt failed. The experience hierarchy and the individual's understanding of the social processes in their workplace are both influential as to whether the individual will express the idea a second time. Within the relayed experience hierarchy respondents defer to more senior colleagues. An interruption by a more senior colleague may lead to derailment of the interpreting process, unless the NCHD believes that what they were saying is really important, in which case they will try to introduce it again; "*… it would depend on who the person is interrupting … [or] … is what I'm saying important, and is it really necessary that I'm heard …*" (P11). If there is a lack of familiarity with the individuals present, it may cause an NCHD to be more reticent in responding to,

expanding on or finishing their point. In addition, if there has been a time lag from when the issue was first discussed the NCHD may not bring it up again, thereby losing the opportunity to learn from it.

Sense making in a healthcare team environment

To make sense of things, to interpret and build on insights together, a common language is key; "*there are stock phrases … almost like a code …*" (P1). A shared language is the tool through which discussion of past experiences, and expression of thoughts is made possible, and so is essential for the interpreting process (Mazutis and Slawinski, 2008; Richter, 1998). The literature suggests that use of metaphors and language choice are connected as part of interpreting (Crossan *et al*., 1999), however, in the case of NCHDs the two may not be closely connected as respondents rely more on professional terminology; "*… if I'm calling somebody in the middle of the night … using a few terms they can have a very rapid understanding …*" (P11). NCHDs also seem to refer to the past and previous experience as a primary source of learning and problem solving; "*… it's experience teaches you what you need to put in, what… to take out … the words to use to show across how serious something is*" (P10). As a result, there appears to be less need to explain new innovative insights and ideas to colleagues, which is where the use of metaphors would arise. Use of the more technical and specialised language affiliated to the NCHD profession may also limit the use of metaphors that may not fit with their professional language. This is consistent with the concept of interpreting being influenced by the context or environment that the individual is part of. The language used by NCHDs and consultants is an example of the language heavily shaped by the context and the nature of the tasks involved (Crossan *et al*., 1999). This is facilitated through a shared grammar and professional terminology which allows an agreed course of action to emerge as equivocality is reduced (Crossan *et al*., 1999; Daft and Weick, 1984). This awareness of what the language is conveying and how to express things in a similar way is often learned informally, rather than through any structured, deliberate teaching; "*… it's mostly informal … so a lot of it would just be day to day … collecting scraps of information about topics over time …*" (P8). The learning is occurring through increased familiarity with how other team members both express and do things and from participating in the team tasks (Decuyper *et al*., 2010; Reagans *et al*., 2005), by "*osmosis*"

(P1) as one participant put it. This cultivation of the professional language is another means through which the professional identity of the NCHD takes shapes, they are becoming a practitioner (Anderson and Thorpe, 2004; Mann, 2011; Richter, 1998; Swanwick, 2005). It also illustrates the role of the experience hierarchy in absorbing NCHDs and exposing them to examples of what is required of NCHDs at each level of the hierarchy including consultant level.

The findings show that speaking up for the patient and acting in the best interests of the patient would spur on an NCHD to contribute to the interpreting process. That NCHDs want to do their best for the patient, and realise what could be at stake for the patient if all the information is not available is clear in the findings; "*… if I feel like the person isn't getting the best … I would speak up quicker …*" (P1). Even though some NCHDs may be more reticent depending on who else is part of a conversation, if they believe the underlying best interest of the patient is not being served this would be a strong reason for them to speak up (Edmondson, 2003).

Interpreting as a social process in a rotating team environment

The process of interpreting is one of these participative social processes that NCHDs engage in and the interpersonal relationships of NCHDs at work influence the nature of the social processes that occur; "*learning to be a doctor is also about socialisation into the profession of medicine*" (D1). Strong and positive interpersonal relationships increase the sense of belonging of the NCHD and their perception that they are trusted by their colleagues. Where the interpersonal relationships are good, the social processes support the sharing of these insights, teasing out of ideas and learning amongst NCHDs, much of which occurs informally; "*... there's a lot of openness when you've good relationships with people, you don't feel like anyone is going to think less of you for asking questions …*" (P1). How close individuals and groups are and the types of contacts that occur also influence learning (Salk and Simonin, 2011), these contacts form part of the 'informal curriculum'. Psychological safety (Edmondson, 1999; Edmondson *et al.*, 2001; Ortega *et al*., 2014; Roloff *et al*., 2011; Van den Bossche *et al*., 2006) and trust (Argote and Miron-Spektor, 2011; Boak 2016) have been identified as two aspects of a working

environment that can promote learning. How psychological safety is perceived can be influenced by the quality of the relationships between individuals in the workplace (Noe *et al*., 2014). Normally trust is more likely to be present in teams who are experienced working together (Reagans *et al*., 2005), however as the findings show, NCHDs move teams frequently and have to build up trust and confidence with their new colleagues; "… *there tends to be … a warming up period … you probably lose … two to four weeks every time, in terms of just finding your feet* …" (P8). Teams which have been stable over time may also learn better than newer teams (Boak, 2016; Edmondson *et al*., 2007; Timmermans *et al*., 2011; West and Lyubovnikova, 2013) this is a further challenge that NCHD teams need to overcome as in some cases their team composition can vary regularly due to differing rota patterns. As Edmondson *et al*. (2007) highlight teams learn at different paces. The experience hierarchy provides structure for the participants within the study; "*... you learn from different consultants and different teams, and how different hospitals operate* ..." (P4). The findings suggest that the experience hierarchy defines who does what, this together with quality of interpersonal interactions and the informal learning opportunities that team members exploit inform the speed at which teams learn.

For some NCHDs the social processes within interpreting an idea would include preparing to talk to the team. Tailoring how an idea is presented to suit the audience normally requires advance thought to choose the most beneficial way of expressing it, to give it the greatest chance of success, and may result in less authentic communication. This approach could be seen as manipulating or spinning information (Mazutis and Slawinski, 2008); "*... maybe get a devil's advocate on-board … I always kind of discuss it with one or two people … someone like at your level and then maybe someone a little bit more senior …*" (P10). Prior to sharing the idea with the whole team they may see what support there is for an idea, or to sense check the idea with a close colleague or even a relative in some cases; "*I would quite often talk to the consultant on his own before talking to the wider team, or else I might talk to somebody like outside as in my partner or [family member]* …" (P1). This illustrates the role that trust and psychological safety (Argote and Miron-Spektor, 2011; Edmondson, 1999; Ortega *et al*., 2014) and closeness between groups and individuals (Salk and Simonin, 2011) play here as NCHDs decide who to share the idea or insight with before the whole team. They may also wish to test the idea with someone who could give them a counter view or find flaws in the idea. This

shows that there is a desire to be successful in putting the idea across and to be perceived well by the team when the opportunity arises.

The nature of NCHD employment requires them to rotate to different hospitals throughout their training at various intervals, six months being the most common duration per rotation. This means that NCHDs are regularly getting used to a new team environment, and settling into working with new colleagues. The composition and longevity of the team will influence the social processes that occur within the team and how individuals engage in interpreting within that team (Crossan *et al*., 1999). The research participants all stated that they enjoyed working in a team environment, citing the value of having a; *"remarkably social team"* (P8), with whom you; "*develop a really good bond with"* (P11). Participants viewing their team relationships positively is consistent with the Medical Council's findings regarding teamwork and collaboration (Medical Council, 2014). While team relationships were deemed to be positive, the composition of the participants' teams vary. Some participants work in a team setting with colleagues from the same discipline and some were members of multi-disciplinary teams. For some participants the colleagues that they work with vary on a daily basis due to rota patterns within the team; "*... we change every day, so you could be with a different consultant and a different Reg"* (P9). Others did their on-call work in different hospitals to where they work during their normal rota.

For those that did not have a set team, they did appear to find some of the interview questions more challenging to think of examples for; "*... some of the questions were harder to answer in my current role ... we work in a different team dynamic ...*" (P9). They may have identified more with the wider department that they are part of, within which they would have particular colleagues they have closer relationships with, but they do not necessarily experience the typical sense of being part of a team that works together every day and who get to know each other and form bonds that enable them to work more effectively as familiarity increases. Despite the changing team members, the findings suggest that the experience hierarchy provides clarity as to what the expectations are from team members occupying the various roles on any given day and that this together with a focus on the patient provides task cohesion (Decruyper *et al*.,

2010) for NCHDs; "*... absolutely the primary concern [is] the safety of the patient ...*" (P7). The experience hierarchy providing clarity of role and responsibilities for NCHDs is akin to Berends and Lammers (2010) perspective that identity and power are provided by positions within a larger social structure; "… *[in] multi-disciplinary meetings … while there is obviously a hierarchy to people's opinions like everyone can … chime in … we are all ... working towards the same answer*" (P10). The literature suggests that when task cohesion, which involves a shared commitment by team members to achieve the task, is present it supports learning processes within teams (Van den Bossche *et al*., 2006). This provides a team structure which according to Noe *et al.* (2014) has been shown to facilitate learning.

The interpreting process would appear not to be experienced consistently by all individuals or indeed to be experienced consistently on each occasion by the same individual. The quality and learning potential of the interpreting process is influenced by the nature of the interaction that occurs. If the other individual(s) is actively trying to help their colleague to learn, or to collaborate with their colleague, the potential is far greater for the sense making to be deeper than if the other individual(s) is less interested or more passive and less welcoming of input and discussion; "*if we are positive then we can help each other, if not ... that will not make us a good team ...*" (P3). While interpreting can still occur it will not be as rich. It is the difference between understanding what to do in this situation, but not really understanding why that is, or what the other options may be; "… *some teams I've worked on in the past, you didn't even get to question you just did, without understanding why ...*" (P11). This has echoes of the difference between single loop and double loop learning (Argyris and Schon, 1978). It is particularly relevant in the case of how a senior colleague/ consultant interacts with other NCHDs as their behaviour in particular can influence the quality of the interpreting process (Edmondson *et al*., 2007), and the degree to which NCHDs would want to engage with them again to learn or find out something; "… *having the backup of the consultant on certain ones that you can't deal with then is very big* …" (P6).

An individual's own confidence in their clinical expertise and judgement grows as they gain experience and their sense of identity as a medical professional strengthens; "*in the*

clinical environment, through a process of enculturation, trainees learn what is required of them and form their identity as medical professionals" (D2). This evolutionary process enables them to contribute to the interpreting process with greater ease over time; "*you can see … people growing in confidence, in how they perform* ..." (P11). How their senior colleagues interact with them can also assist and strengthen their confidence levels. Findings from the study show that the attitude and behaviour of the senior colleague/ consultant can support learning through being open to input, ideas and suggestions and by acknowledging the contribution of NCHDs, thus fostering positive social processes that contribute to a supportive, open working environment. This corroborates similar findings in the literature (Noe *et al*., 2014; Roloff *et al*., 2011). These behaviours encourage junior colleagues' clinical development and in turn help to enhance their confidence as a doctor. The importance of having a climate and culture that supports learning has been shown in previous studies to be essential to encouraging learning behaviours (Noe *et al*., 2014). The participants in the study identified that the team culture was a support for their learning reinforcing the literary findings.

Flow of Learning

The flow of learning from the individual to the team and from the team to the individual was present in the findings, as per the literature (Berends and Lammers, 2010; Crossan *et al*., 1999). The flow of learning between individuals was also evident and shows that one-to-one interaction is a valuable means of accessing learning from team members who may be more senior in the experience hierarchy, enabling the development of understanding and experience and growth as a professional; "*… it's synergistic … it allows you … to … work with what you know [and] … with other peoples' knowledge and experience too* …" (P4). Prior experience from within the team is fed back to the more junior colleague and is prioritised over creative or innovative responses to the situation, this emphasis on prior experience could be seen as inhibiting the potential for new learning to emerge (Crossan and Berdrow, 2003; Zietsma *et al*., 2002). Interestingly a value was placed on; "*second-hand experience*" (P10), where another colleague describes their experience of something yet to be personally encountered by an individual. Swan *et al*. (2010) also encountered accessing previous experience via personal networks in their research. This finding relates back to the value that is placed on prior experience in

this context, specifically how has this event been handled before, and what does that experience tell us to do. This also intimates a single loop learning approach to problem solving (Argyris and Schon, 1978). Of note in the findings is the notion that learning from a peer may not present a strong learning opportunity, as it is presumed that a peer in the same specialty will have developed similar understanding and experience; "… *because they're at the same level … or similar"* (P4) and therefore would not be able to add much learning for an individual. The use of organisational processes, procedures and guidelines; "*...we have very good guidelines ...*" (P6), are other examples of learning at the team or organisational level being fed back to individual members of the team (Mazutis and Slawinski, 2008).

NCHDs use of social media applications to access the learning stored within the team and; *"to keep in contact"* (P7), thereby generating the flow of learning is exhibited in the findings. These online tools enable individuals to engage in conversations and; *"disseminates information"* (P11) and expertise thereby facilitating the flow of learning (Noe *et al*., 2014). Some organisations have been trying to leverage social media to increase networking and connections within the organisation, and others have seen it as a threat to productivity (Noe *et al*., 2014). However, the use of social media applications such as WhatsApp appears from this study to have become common place within medicine as it; "*... aids in communication, because every single member of the team is notified ... as to what's going on with patients"* (P11*)*. While this appears to be an effective means of sharing learning it again is part of the informal nature of learning in this context. Consultants may only rarely be part of these groups and NCHDs participate in them predominantly using their own devices rather than hospital equipment.

The flow of learning between the levels can be inhibited by barriers to learning such as defensive routines including, the withholding of information and the spinning or manipulating of information (Mazutis and Slawinski, 2008). The findings regarding withholding of information, (Mazutis and Slawinski, 2008) by NCHDs are nuanced. NCHDs are very clear about the responsibility to communicate anything relevant about a patient; "*... absolutely the primary concern [is] the safety of the patient ...*" (P7), "*... there's nothing I wouldn't share if it was … for the patient ...*" (P11). However, the

findings indicate that there may be circumstances where NCHDs would keep an insight to themselves; when they are not feeling confident (P1, P7, P9, P11), when they believe a senior colleague knows better (P5, P7, P8), if they thought expressing the insight could reflect badly on them (P1, P11), or if other colleagues are perceived to be unreceptive to input (P2, P10), and to prevent information being inadvertently shared with a patient before it is confirmed. It does not appear that there is much engagement in the spinning or manipulation of information (Mazutis and Slawinski, 2008) with just over half the participants (P2, P5, P6, P7, P8, P11) believing information should; "… *stand and fall on their own merit* …" (P2) and not be oversold. However, some NCHDs are conscious of the value of preparing to talk to the team and identifying what support exists for the issue or to 'sense check' it before broaching it with the full team. Whilst not directly spinning or manipulating information it does display an awareness of the importance of doing some groundwork to enhance the likelihood of success when talking to the team. The findings suggest that NCHDs are cognisant of whether the setting is formal or informal and moderate their participation or their contribution to the conversation accordingly; "... *everyone's keen to portray ... normative behaviour in the formal teaching ... whereas informally they might say I tried [something] and actually it really worked well* ..." (P2). To appear to be conforming to known practices in formal settings, could be considered an additional defensive routine, as it determines if they are; "*more measured"* (P6) or if they contribute depending on the setting. Of note is the view that in formal settings; "... *everyone's keen to portray ... normative behaviour*" (P2) when contemplating their approach. Finally, the competitive nature of obtaining NCHD posts and peers not wanting to appear less competent, skilled, or informed than each other, may drive NCHDs not to display a lack of understanding, even if this is the case.

Bullying and undermining behaviour also represent a barrier to learning in the literature as they serve to reduce the psychological safety (Edmondson, 1999; Edmondson *et al*., 2001; Ortega *et al*., 2014; Roloff *et al*., 2011; Van den Bossche *et al*., 2006) experienced by the individual, however, bullying was only identified as a factor in the documentation reviewed (D2, D7) and did not arise in the interviews with any of the research participants, with only one respondent mentioning the existence of a '*blame culture'* (P11). '*Workload*' (P3) and '*busyness'* (P4, P5) can also be barriers to learning as individuals

are focused on the achievement of specific tasks and opportunities to discuss less urgent matters such as previous cases or possible improvements are not seen as priorities.

Swan *et al*. (2010) argue that the mechanisms that facilitate the flow of learning are unclear in the literature. This research goes some way to addressing that gap as follows. Good interpersonal relationships between colleagues where there is trust, and a sense of belonging leads to familiarity and informality. These mechanisms facilitate the flow of learning through creating psychological safety to ask questions without the fear of being judged for not knowing something, and to share stories and experience about clinical situations that have been encountered. In addition, in this context the shared commitment to the best interests of the patient and the experience hierarchy which creates the circumstances where the senior colleagues/ consultants direct the junior colleagues also assist the flow of learning. How those interactions within the experience hierarchy are experienced depends on the quality of the interpersonal relationships that exist within the team.

Integrating Learning

Learning that has been integrated arises from shared understanding, or shared mental models (Decuyper *et al*., 2010; Dionne *et al*., 2010) which facilitates co-ordinated action taking place (Crossan *et al*., 1999). Individuals work together to implement agreed actions arrived at through common language and discussion. To work effectively teams of NCHDs must form following each rotation and part of this formation involves absorbing less experienced NCHDs so that each team member develops a shared understanding of what is expected of them in their role to bring about the required joint action (Boak, 2016). Much of the learning that occurs here is unstructured, and takes place informally between colleagues (Jiang *et al*., 2016; Swanwick, 2005), through observation and experience of completing tasks as part of the team (Reagans *et al*., 2005). The findings exhibit that, when there is an absence of queries and questions as to how to proceed then shared understanding is presumed to exist. In some instances, when the right actions are being carried out it is also considered evidence of shared understanding. However, a lack of further questions or discussion may not be a reliable indicator of

shared understanding, but instead arise because a team member(s) is unwilling to ask a question as they are; *"trying to make a good impression"* (P10), or to show others that they do not understand. As such, the performance of work-based tasks correctly is perhaps a more reliable indicator of shared understanding occurring.

The findings showing learning occurring in dyads illustrates collective learning happening in a team environment, where the whole team is not involved. Instead it may be; "*one or two of us"* (P5) who are peers, or a senior colleague and a junior colleague etc. whose interaction results in collective learning. Individuals may access the learning and understanding that exists at the team level via interaction with one or two individuals, and this enables them to learn, to develop skills, to make improvements etc., thereby integrating learning themselves. Also, a couple of individuals in a dyad may work on an issue or an idea together, enabling them to take joint action and integrate the learning. On occasions where the team is all together e.g. an MDT meeting, the opportunity for all members to learn together is present, however, the informal nature of much of the learning creates the prevalence of learning in pairs or smaller groups, or in conversation with peers or more senior colleagues/ consultants.

Reflection

A number of the participants reflected upon their experience participating in the study, stating; "*how impactful it was"* (P1) and that it made them; "*think a lot"* (P4) about how they approach learning in their professional setting, which is; "…*often through discussion and reflection* …" (P7). The findings illustrate that reflection can lead to the formation of questions that can in turn feedback into the interpreting process and also to recognition of the need to refine skills or to acknowledge where an individual's skills development has reached. While Edmondson (2002) utilises cycles of action and reflection to depict team learning, the scenario where reflection may have a role alongside the learning processes of intuiting, interpreting and integrating corroborates in part Hilden and Tikkamki's (2013) incorporation of reflective practice as an extension of the 4I framework (Crossan *et al*., 1999).

Table S3.1 below summarises the key insights regarding each theme as exposed in the finding divides and them into those that corroborate and those that extend the literature.

Themes	Findings that corroborate existing literature	Findings that extend existing literature
Intuitive Capacity and Experience Hierarchy	• Description of how intuiting occurs	• Recognition of fleeting intuition, which is a lost opportunity for learning
	• Intuitive capacity evident	• Intuitive capacity may be limited in a number of ways; the perception that the nature of the work does not provide much opportunity for idea creation or innovative thought; deferring to the judgement of more senior colleagues/ consultants is seen as the correct approach; the desire to not create extra work
	• 'Gut' instinct a catalyst for learning, develops as clinical experience increases and is similar to expert intuition	• Role of interpersonal relationships and the experience hierarchy in influencing whether or not 'gut' instincts, insights and ideas are expressed by an individual
	• Development of mental models evident	• Asking questions may be another starting point for learning in addition to intuiting
	• Need willingness to share the intuition	• Recognition that the intuiting process may be stalled by the individual's own beliefs or perceptions as to what may occur should they share an insight or idea offers additional insight about the interaction of the intuiting and interpreting processes
Interpreting learning as a social process	• Description of how interpreting occurs	• Metaphors used less frequently in normal peer conversation, problem solving draws on past experience of colleagues rather than innovation
	• Interpreting as a social process	• Context is vital in determining whether a learning process remains derailed or if a second attempt will be made to express the idea
	• Use of stories as part of sense-making processes and transfer of learning to others	• The experience hierarchy and the individual's understanding of the social processes in their workplace, level of familiarity and if there has been a time lag are influential in whether an idea will be expressed a second time
	• Large part of learning in the workplace takes place informally	• Use of professional terminology reduces use of metaphors in interpreting by NCHDs
	• The occurrence of interruption to the learning processes	• Acting in the best interests of the patient would spur an NCHD to contribute to the interpreting process
	• Learning of the professional language happens informally	• The interpreting process would appear not to be experienced consistently by all individuals or be experienced consistently on each occasion by the same individual.

Themes	Findings that corroborate existing literature	Findings that extend existing literature
		Its quality is influenced by the nature of the interaction that occurs
	• Interpersonal relationships at work influence the nature of the social processes	• Good interpersonal relationships between colleagues where there is trust, and a sense of belonging leads to familiarity and informality. These mechanisms facilitate the flow of learning through creating psychological safety to ask questions without the fear of being judged for not knowing something, and to share stories and experience about clinical situations that have been encountered
	• Psychological safety and trust promote learning in the workplace	
	• Even though team composition varies regularly the experience hierarchy provides structure and task definition	
	• Task cohesion amongst team members provides structure that facilitates learning	
	• Attitude and behaviour of senior colleagues/ consultant is important for learning and confidence building	
	• A climate and culture that supports learning is important	
Flow of learning	• Description of how learning flows	• Learning from a peer in the same specialty not seen as a strong learning opportunity
	• Accessing learning via personal networks	• NCHDs keeping insights to themselves is nuanced
	• Use of organisational processes, procedures and guidelines to feedback learning	• Shared commitment to the best interests of the patient, and the experience hierarchy assist the flow of learning
	• There is not much engagement in spinning and manipulation of information however the value of preparing to talk to the team is recognised	
Integrating learning	• Description of integrating learning	• An absence of queries and questions can lead to a presumption of shared understanding
		• Learning occurring in dyads illustrates collective learning happening in a team environment

Table S3.1 Summary of themes - key insights

REFINED LEARNING FRAMEWORK

At the outset of the study the researcher developed a literary-informed preliminary conceptual framework to represent how the multi-levels of individual and team learning might interact in healthcare organisations (Section 2, Paper 1). The conceptual framework draws upon the multi-levels of learning within organisational learning, along with the Crossan *et al*. (1999) 4I framework. The preliminary conceptual framework for how the individual and team levels of learning interact is illustrated in Section 2, Paper 1 and is reproduced below (Figure S3.2).

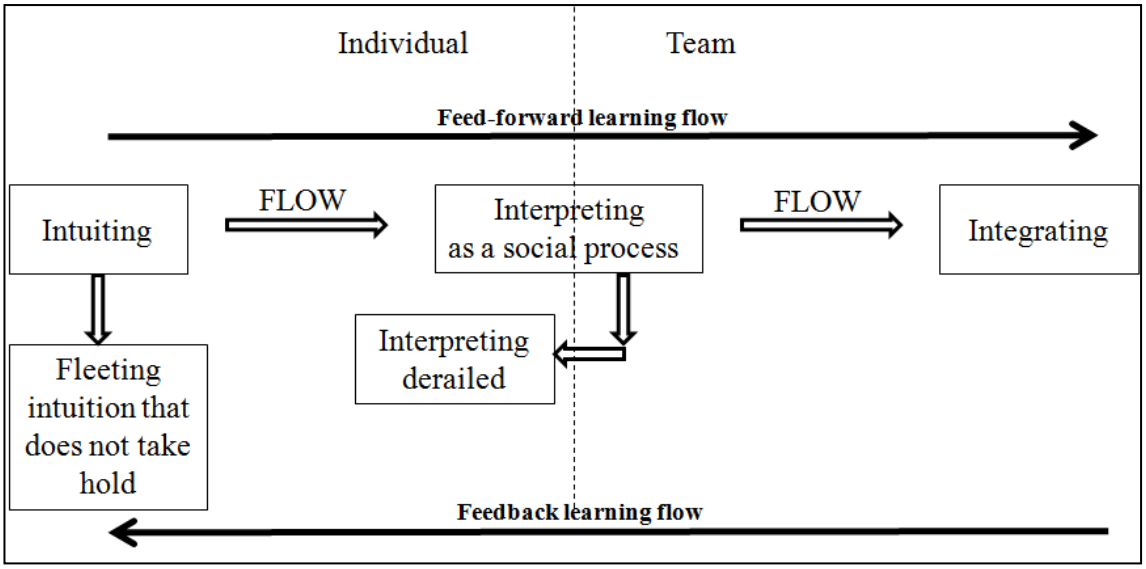

Figure S3.2 Multi-levels of individual and team learning interact: preliminary conceptual framework

The preliminary conceptual framework positions the individual as the starting point for collective learning (Argote and Miron-Spektor, 2011; Richter, 1998), and provides a basis for exploring how the interaction of individual and team learning occurs. It seeks to illustrate learning flowing successfully, and also unsuccessfully between the individual and team level, through the first three processes of the 4I framework; intuiting, interpreting and integrating (Crossan *et al*., 1999). If learning occurs it can become individual learning and possibly go on to also form part of team learning. For learning to occur the individual must grasp the intuition when it is present, and the proposed conceptual framework, incorporates fleeting intuition in recognition that this may not always occur. The preliminary conceptual framework conceptualises the complete or

partial interruption or derailing of learning processes which may occur at any level (Berends and Lammers, 2010). It depicts how the process of learning moving from the individual to team learning is not always effective and it can breakdown and stop. Within the proposed framework, interpreting is conceived of as a social process at the intersection of the individual and the team levels of learning. Delving more deeply into the interpreting process should develop further understanding of how learning flows between the individual and the team, as the mechanisms that underpin this flow remain unclear (Swan *et al*., 2010). The framework also demonstrates that the processes of learning at individual and team levels are influenced by a feedback flow of learning from higher levels. In summary, the preliminary conceptual framework illustrates that there are processes and conditions that facilitate or hinder the interaction between the individual and the team levels of learning that are not yet fully understood and these are the main focus of this research.

Carrying out the research and analysing the data led to the development of a thematic map depicting the multi-level individual/ team learning interaction in public healthcare organisations. The thematic map is replicated at Figure S3.1 above. The thematic map illustrates learning interacting at the individual and team levels through the three processes of intuitive capacity, interpreting learning (as a social process) and integrating learning. It shows both the feedforward and feedback flows of learning through the intuiting, interpreting and integrating processes. It recognises that intuitive capacity does not always feed forward to interpreting as the intuition can be fleeting, and therefore not fully grasped, or the individual may decide not to share the intuition, thereby stopping the learning process. It provides for an idea being shared a second time if the individual feels they did not get to express it fully, or were interrupted, while also providing for the learning to be derailed. It depicts that collective learning may not always involve the whole team learning, but that interpreting of learning can involve two or more colleagues in a dyad, or a sub-group of the team, as opposed to the whole team. This learning may become integrated at the level of the individual or dyad only, or in some cases also at the level of the team. The thematic map includes the themes of experience hierarchy and social processes and their role within learning as influencers of the respective intuiting and interpreting learning processes. 'Upward asking', one of the sub-themes within the experience hierarchy is highlighted to show the role that asking more senior colleagues/

consultant how to proceed can play in leading to the interpreting of learning. The final theme of reflection is included as an aspect of individual learning which can lead to further questions and/ or recognition of what has been learned by the individual.

In considering the preliminary conceptual framework and the thematic map together, a number of key differences are present. Firstly, a potential additional starting point for learning arises from asking questions and this is contained in the thematic map. In addition to fleeting intuition being a reason that the intuiting process does not develop into interpreting, the thematic map also depicts the desire not to create extra work as another potential barrier here. The thematic map also acknowledges that collective learning does not always involve the full team. Learning can take place in a dyad or amongst a sub-group of the team and this learning may or may not become integrated at the level of the team. It also recognises that the interpreting process may result in learning being integrated at the level of the individual but not the team. While the preliminary conceptual framework provides for interpreting being derailed, the thematic map (Figure S3.1) shows that there may be a second attempt at expressing an idea in some instances, where the interpreting process has been interrupted or derailed. Finally, the thematic map introduces the influence of the experience hierarchy and the social processes and their role in learning on the learning processes. In pursuit of a refined learning framework the researcher considered the preliminary conceptual framework, the thematic map and the differences between the two. The refined learning framework is presented at Figure S3.3 below.

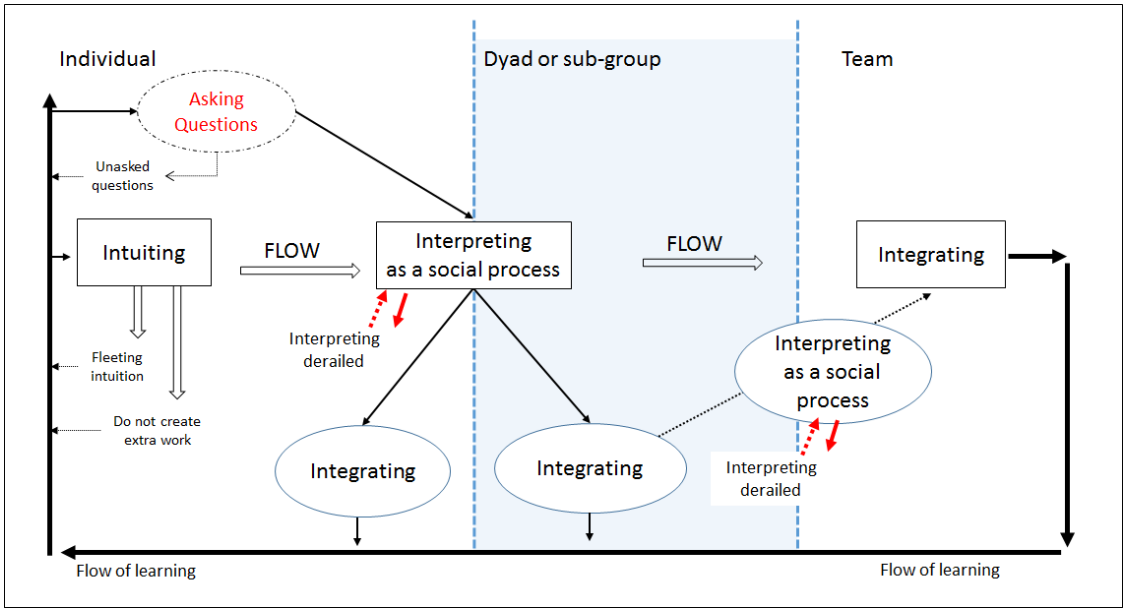

Figure S3.3 Refined learning framework: Multi-levels of individual and team learning interaction

The refined learning framework continues to see learning as beginning with the individual. However, it provides for two potential starting points for individual learning to occur. The first is intuiting, as described by Crossan *et al*. (1999). It also includes the experience of fleeting intuition, where the insight is gone before it is fully grasped by the individual, this can limit the intuiting stage and prevent interpreting from occurring. Also, included as a potential limitation of intuiting is the notion that if an insight or an idea was perceived to result in the creation of extra work this may not be welcomed, either by the individual themselves, or by colleagues. Depending on how strongly held this belief is it may also limit intuitive capacity and prevent the development of an insight or an idea through a conscious decision not to share an insight. The second starting point for learning is asking questions, which also leads to the interpreting process. There can be unasked questions that are not voiced by the individual thereby prevent interpreting from occurring (Pfeffer and Sutton, 2000). The refined learning framework recognises that learning may feedforward from an individual to a team and may feedback from the team to the individual, with the social interaction that occurs during the interpreting process being the bridge between the individual learning and the team learning.

Interpreting is conceived of as a social process, which means its quality will be influenced by the nature of the social processes that the individual and their colleagues are part of in public healthcare organisations. It is possible for the interpreting process to be derailed

as during an interaction or conversation an individual may be interrupted, and the conversation may move in a different direction, or the individual may not articulate the idea/ question in a way that they are satisfied with. It is also possible for an outside interruption to occur that temporarily or fully disrupts the conversation. It will depend on the individual's own response to what has occurred as to whether they purse the point and attempt to re-direct the conversation, re-iterate their perspective, or reconvene the conversation so that the development of shared understanding can continue. The individual's level of experience, time in the role and/ or perceived expertise may also influence these events.

The refined learning framework provides for the scenario where learning occurs for the individual through interaction with another individual (dyad), or with a sub-group of the team. This type of interaction may result in the individual learning something new in which case that learning is integrated at the individual level perhaps in the form of a new insight, skill or experience. This learning then feeds back into the individual's intuitive capacity and/ or forms the basis for additional questions. It is possible for interpreting to be derailed (as described above) in this scenario also. Alternatively, if a dyad, or sub-group develop an insight or an idea together through discussion they may reach shared understanding which allows them to take joint action and the learning is integrated for those individuals. It feeds back into the flow of learning influencing what each individual may intuit or ask questions about in the future. The learning may remain amongst those individuals, or it may be shared with the wider team. This sharing may occur in the context of a team meeting, in a case conference, more informal team discussion, it may be that the team leader/ manager becomes aware and asks for it to be shared with the whole team. The sharing will involve more interpreting leading to shared understanding and the integrating of the learning at the team level. The interpreting may be derailed here also. The shared understanding that develops at the team level *may* on occasions be somewhat different to what had existed amongst the dyad or the sub-group, as through the interaction and conversation with the wider team, the learning may be refined and improved and that becomes the shared understanding that can be enacted by the team. This learning then forms part of the feedback flow of learning.

RESEARCH CONCLUSIONS

In studying how the multi-levels of individual learning and team learning interact in public healthcare organisations, there are two resultant research questions: How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels? These two research questions are interrelated; however, it is attempted to answer each separately below. This exercise is somewhat artificial as in practice they are intertwined.

The study sheds light on how the interaction of individual and team learning occurs in public healthcare organisations. The interaction can occur in two ways. Firstly, the individual intuits something which they grasp and they express this to others within the team which triggers the interpreting process of learning. Secondly, the individual asks a question which taps into the learning within the team experience hierarchy also triggering the interpreting process. A shared common language enhances the interpreting process allowing the development of ideas and facilitates the use of stories to share memorable experiences and insights that develop understanding. The interaction of individual and team learning can occur in both formal and informal settings, including through the use of social media applications. This study suggests a greater proportion of individual and team learning occurs in informal settings where interpreting and developing understanding takes places either in dyads, small groups or with the whole team. The study indicates that a team does not necessarily act as a single entity, always in time with each other and learning together. Dyads or sub-groups of the team may engage in intuiting or asking questions that feed the interpreting process and that leads to joint action and the integrating of learning by those dyads or sub-groups. That learning may come to the attention of the wider team through conversations and interactions and through further interpreting involving the wider team and become integrated at the level of the team. It is possible that the further interpreting may lead to an enhancement of the learning through the input of additional members of the team resulting in the learning that is integrated amongst the whole team being somewhat different to what was originally integrated by the dyad or sub-group that began the learning. Interpreting is a social process at the intersection of individual and team learning, if it is derailed the learning process stops. The findings indicate that the context is key to whether an interruption will derail the

interpreting process or not. The context includes; the source of the interruption, the degree of importance placed on what is being said or done, familiarity with those present and if a time lag has occurred.

Understanding of the second research question; What are the processes and conditions that facilitate or hinder the movement of learning between the two levels (individual and team)?, has also increased. The processes and conditions that facilitate the movement of learning are presented first. Their presence facilitates the movement of learning, and their absence would hinder the movement of learning. The first step to facilitating the movement of learning from intuiting to interpreting is that the individual is willing to share an insight or an idea or to ask a question that they have so as to trigger the interpreting process. The development of clinical experience which formulates cognitive maps increases the intuitive capacity of an individual and also their ability to interpret more effectively. However, the work context may temper the intuitive capacity of an individual in this study as there is a perception amongst participants that a lack of opportunity for idea creation or innovation exists in their work. Utilising a shared common language is another process or condition that supports the movement of learning. In this study the language is technical in nature, comprising of a shared grammar and professional terminology. The cultivation of this professional language happens both formally and informally and informs the development of the individual's professional identity, which has both a personal and a social component (Mann, 2011). This gives the individual both the language and the persona to participate in the interpreting of learning and the movement of learning from an individual to the team. As an individual's own confidence as a medical professional grows it empowers them to contribute to learning processes thus facilitating the movement of learning within the team. Acting in the best interests of the patient is central to being a medical professional and it serves to spur on an NCHD to contribute to the interpreting process. This in turn contributes to the movement of learning as interpretation occurs at the individual and team level in this organisational setting.

Strong interpersonal relationships facilitate the movement of learning and are influenced by team composition and team longevity. A tradition of NCHD role rotation every six

months has an impact on both composition and longevity in the public healthcare context. These relationships create closeness between groups and individuals within a team or a department. This closeness may create the circumstances where dyadic or sub-group learning occurs, which is either in unison with or opposed to whole team learning. Even if the team is newly formed and the interpersonal relationships are still developing, task cohesion through the experience hierarchy and the focus on the patient facilitates the movement of learning and the co-ordination of actions amongst the team.

Much of the observed learning in this study occurs through informal interactions (Swanwick, 2015), the nature of which influences the quality and learning potential of the interaction. Individuals actively trying to help a colleague to learn will lead to greater movement of learning through a richer learning experience. A climate and culture that supports learning underpinned by psychological safety, trust and feelings of belonging can facilitate the optimum movement of learning. The leader's behaviour can be a central influence of this learning culture. Senior colleagues/ consultants who are open to input and suggestions from junior colleagues, encourage junior colleagues to develop their clinical experience and their confidence as medical professionals, which in turn encourages them to share their learning.

Social media applications are also found to facilitate the accessing of team learning, and the movement of learning between the team and the individual with greater informality and speed then would be the case in many other circumstances. Electronic modes of communication also permit the same message to be communicated to all team members simultaneously, helping with message consistency. Organisational processes, procedures and guidelines facilitate the movement of learning from the team to the individual and from the individual to the team and access can be enhanced through social media applications.

As mentioned previously and highlighted in the thematic map (Figure 3.1), the social processes are facilitators of the movement of learning when present, when absent these would hinder the movement of learning. Others processes that would hinder the

movement of learning are; not wanting to display a lack of understanding and therefore not asking questions or seeking clarification when it is necessary. The presumption that the absence of queries or questions indicates that shared understanding exists may also hinder the movement of learning as silence is not necessarily a reliable indicator of shared understanding.

CONTRIBUTIONS TO KNOWLEDGE

This research aims to study how the multi-levels of individual learning and team learning interact in public healthcare organisations. The contributions of this research are of value from both a practical and theoretical perspective;

Practical contribution to knowledge

This study provides greater insight into how the multi-levels of individual and team learning interact in public healthcare organisations. It illustrates how learning occurs so that individuals and teams can develop understanding which enables them to work effectively with less error to provide high quality safe healthcare (West and Lybovnikova, 2013), while also enabling them to respond to high levels of change in their organisations (Fleming, 2010). The findings from this study show the role that the willingness and confidence to share insights, intuitions and to ask questions play as triggers of individual learning. It also shows that this learning occurs within a context (public healthcare) where an experience hierarchy, interpersonal relationships and social dynamics form the backdrop to all learning interactions. The findings from this study have practical relevance to all who are interested in the effectiveness of post-graduate training and learning of NCHDs in the public healthcare system. This would include the Medical Post-Graduate Training Bodies, Intern Networks, the Health Service Executive, including hospitals that employ NCHDs directly. While the study was carried out in the public hospital system in Ireland, it may also have relevance within the private hospital sector and also in community healthcare settings.

The findings are particularly relevant given that the vast majority of medical post-graduate training is delivered on-the-job by consultants and other senior NCHDs in the Irish system. The findings indicate that the training received may vary considerably from NCHD to NCHD depending on how effective they are at building interpersonal relationships, taking advantage of informal spontaneous learning opportunities and how effectively they manage the social dynamics within their team and with their consultant on each rotation and whether this level of effectiveness remains constant as they rotate from clinical site to clinical site. Degrees of variability in the quality of the learning and training experiences for NCHDs have implications for the public health service and for patient safety. Particular aspects of the NCHD post-graduate learning experience that could be improved are expanded upon below.

Findings from the study illustrate a number of aspects of the post-graduate training experience of NCHDs that could be improved so as to increase the consistency and the quality of the training experience for NCHDs, who are being invested in with the intent of creating Ireland's future consultant workforce. The study shows the central role that informal ad hoc learning plays in the post-graduate training of NCHDs. NCHDs learn informally on the job and interact with more senior colleagues/ consultants in the experience hierarchy to seek answers, discuss aspects of patient care, increase their understanding and develop their clinical experience. The informal nature of the learning, means that it is not consistent across individual NCHDs or across hospital sites and is heavily influenced by the approach of senior colleagues/ consultants to their more junior colleagues.

The ability to maximise informal learning opportunities requires the ability to develop good interpersonal relationships and an appreciation of the social processes operating in the workplace. Without the sense of trust and comfort that comes from having good interpersonal relationships with work colleagues the likelihood of NCHDs contributing fully to the interpreting process or being unafraid to ask questions is reduced. However, the quality of the learning experience of NCHDs should not be down to the quality of the interpersonal relationships they establish as this will vary considerably from individual to individual. In addition, participants also mentioned the self-directed nature of their post-

graduate medical training. While some of the learning can be self-directed, too much reliance on this approach leaves room for inconsistency in the learning of NCHDs, which may cause problems given that it is assumed that an individual possesses the requisite level of learning that corresponds to their place in the experience hierarchy. The experience hierarchy is highly influential within the NCHDs' workplace. It provides the context for how NCHDs and consultants interact. The findings illustrate that NCHDs are very unlikely to challenge a senior colleague/ consultant regarding a decision as to how a particular course of action should proceed. This means that NCHDs defer to the more senior doctor, even if they have a potentially better idea (Rushmer and Davies, 2004). This may ultimately impact on patient care if the better idea could have resulted in a better outcome for the patient. While the existence of an experience hierarchy within the medical profession is not new, its impact on the daily interactions amongst doctors and on how that may affect learning occurring is worth highlighting explicitly.

The findings illustrate the tensions that exist with employing NCHDs for the dual purpose of being part of the provision of services to patients while concurrently obtaining their post-graduate medical training. The pressures that hospitals are under to meet the service demand often places the provision of training into second place. This manifests itself in a number of ways such as the time allocated for theatre procedures and numbers booked for outpatient clinics are done on the basis of an experienced doctor completing all the work. They do not take account of the fact that a more junior NCHD may take longer than a senior colleague to perform the same procedure or assess a patient. It may also manifest in NCHDs being unable to attend formal teaching sessions due to the clinical workload on a given day. Senior colleagues/ consultants adopt different approaches to teaching or facilitating the learning of more junior NCHDs (McGowan *et al*., 2013). It is apparent from the findings that it is extremely valuable for NCHDs when a senior colleague/ consultant takes an active interest in their learning. This may take the form of first showing them step by step how to do a procedure and then supervising them performing each step, or it may take the form of discussing a patient prior to an appointment and then again following the appointment. These learning opportunities are tailored to the NCHDs involved and are created by senior colleagues/ consultants who are keen to ensure that NCHDs are developing the required understanding and also providing good patient care.

Rotations to different hospital and clinical environments have an impact on the learning of NCHDs. During the settling in period the learning of NCHDs may be inhibited as they are getting used to a new environment. Time is also needed to get settled into teams before some NCHDs feel like trust has been built up with new colleagues, thus allowing them to feel comfortable asking questions. Rotating may also influence the mindset of NCHDs, who view themselves as transient and therefore not valued as much as other staff who are permanently employed in the one location (McGowan *et al*., 2013). Rotations are a valuable part of the learning experience of an NCHD, however steps are needed to reduce the disruptive aspect of rotating on the learning of NCHDs and assist NCHDs to settle in quickly.

The findings also have practical relevance to enhancing the effectiveness of teamwork and learning interactions, advice about how to create both to support safety and quality is required (West and Lyubovnikova, 2013). Effective teamwork does not just occur by placing individuals together, the interpersonal relationships play a strong role in how the interaction and learning occurs in the team (Van den Bossche *et al*., 2006). It takes time to develop these, and it is a particular challenge where team members are rotating to new work settings on a regular basis. These relationships are key to the unstructured informal learning that occurs in the team. To enhance the effectiveness of teamwork efforts should be made to speed up the acclimatisation of individuals to their new team. This should be led by consultants/ senior NCHDs who can clearly articulate the desired culture for the team, including the approachability of senior colleagues and encouragement of asking questions and speaking up. It should communicate the value that is placed on learning and working together effectively for the good of the patient. It would be helpful to include a team building component designed to introduce individuals to each other, and to develop some team bonds. The consultants/ senior NCHDs should explain the approach to teaching and training within the team and how this is supported. They should also address how technology and social media are utilised to share learning and to answer questions within the team. This session needs to occur close to the start of each rotation. In addition, teams should consider what opportunities they have to meet informally perhaps at certain breaks, or in a social capacity so as to continue to foster good relationships and strengthen the ability of the team to work well together.

The experience hierarchy has a strong influence on the behaviour and the norms within this environment, while there will be a recognition of this amongst those working within it, but from an effective teamwork and learning perspective it needs to be highlighted as individuals need to feel safe to ask questions or to put forward an alternative view when interacting with senior colleagues/ consultants. As many learning and development professionals will be aware it is recognised that on the job learning is where most learning occurs at work. The 70:20:10 concept illustrates this arguing that 70% of learning occurs on the job, 20% through informal learning and only 10% through formal training (Hoyle, 2012). The quality of the interaction between colleagues in a team influences how effectively the 70% and the 20% of the learning will be. In particular consultants need to be aware of how their behaviour creates openness or otherwise to questions, suggestions and input from NCHDs, thereby enhancing the learning that occurs informally and on the job. If greater consistency is to be experienced by NCHDs through their training across different sites, consultants need to be adopting approaches to training and learning that has high levels of consistency and incorporates effective feedback for NCHDs. Some additional training for consultants may be required in order to achieve this.

Contribution to theory

This study serves to extend theory of organisational learning in the public healthcare setting. It sheds lights on the interplay of individual and team learning and extends the model advanced by Crossan *et al*. (1999). The refined learning framework for use in the public healthcare organisations is a key element of the contribution of this study to theory. It provides an additional starting point for individual learning in the form of asking questions. It recognises that intuition is not always grasped by the individual and so can be lost, and it recognises that ideas and insights are not always communicated by the individual. In seeing interpreting as a social process the revised learning framework addresses how learning may be derailed and what can influence the learning interaction to be rescued and get back on course. It introduces the provision for learning to be integrated not only at team level, but also by the individual and by a dyad or sub-group of the team. In enhancing understanding of how individual and team learning interact the study shows that learning stored at the level of the team can be accessed by an individual without requiring interaction with the whole team. It also illustrates that the team does

not always learn together, different parts of the team may learn different things which may or may not go on to be integrated by the whole team either in the current format or in a more refined format resulting from additional interpreting involving the rest of the team.

The researcher has already made a contribution to theory while undertaking the Doctorate in Business Administration (DBA) in a number of ways. The researcher presented a paper which was a conceptual review of how the multi-levels of individual learning and team learning interact at the UFHRD 2015 Conference. She along with her supervisors subsequently published the paper as an article in the Action Learning: Research and Practice Journal. The researcher also presented on her research at the WIT Research Day 2016. It is intended to submit further papers for publication in 2017.

From a methodological perspective the study also makes a number of contributions. There have been calls for more qualitative and longitudinal studies (Easterby-Smith, 1997; Mazutis and Slawinski, 2008) in the field of organisational learning. This study goes towards addressing that need, and provides an interpretive study with rich qualitative data from semi-structured interviews that has been triangulated with a review of relevant professional documentation and the documented research log entries of the researcher-practitioner in this case. This research enhances understanding about how the individual and team levels of learning interact drawing on the subjective, contextual experience of the individual participants. The study also contributes to organisational learning research carried out in the public sector context of which there has been a dearth (Rashman *et al*., 2009).

RECOMMENDATIONS FOR PRACTITIONERS

There is variation in the experience of NCHDs training in the hospital system and this suggests that there is scope to try and harmonise the experience of post-graduate medical training across hospitals and specialties. The experience of training as an NCHD should be positive, comprehensive and of consistent quality between hospital locations, but that

does not appear to always be the case. The informal nature of so much of the post-graduate medical training leaves a lot to be determined by the nature of the interaction and the style of the consultants who set the tone for what and how training takes place. This raises the issue of how do you standardise something that is so dependent on informal interaction to take place? These informal discussions amongst senior and junior colleagues can provide extremely rich learning opportunities, but based on the research findings, they occur spontaneously during a break, after a clinic, during a procedure in theatre, over a coffee. They are not scripted or set out in a curriculum but are the result of the lived experience of the doctors at that time. The interpersonal relationship between the colleagues influences the quality of that exchange. This approach leaves room for passing on incorrect methods or particular approaches that the senior colleague has adopted in the past that may now be outdated due to interim medical advances. It also makes the consultant a type of 'gate keeper' as to who has access to what learning and the nature of that learning (Berends and Lammers, 2010). The provision of feedback should be a key component of post-graduate medical training, however, insufficient feedback on clinical development is mentioned in documentation reviewed as a significant weakness in the clinical learning environment, although not necessarily highlighted by the participants in this study.

The findings indicate that NCHDs work within their teams and may have little or no contact with other permanent employees in the hospital who are not directly involved in the care of the same patients. Crossan *et al*. (1999) identified organisational structure as a factor that influences opportunities to share learning and this is an example of it in practice. Participants in the study spoke about occasions when they had shared an idea with colleagues and in some cases developed and interpreted an idea with their colleagues which led to an improvement being implemented by them. For that learning to flow beyond that team of NCHDs and become institutionalised within the organisation may prove challenging given that the NCHDs are likely to be rotating to another hospital site within six or twelve months. Improvements that are made in one team may have application in other teams, and a process or means of capturing these improvements so that they can be shared amongst NCHDs and other relevant healthcare professionals so as to sustain them beyond the individual NCHDs who implemented them in one team is needed.

More open dialogue within the experience hierarchy should be encouraged, so that consultants invite input from NCHDs in a way that NCHDs will not feel like they need to be careful about suggesting a new approach/ or questioning why a consultant is doing something a particular way. Part of what would be needed here is that senior colleagues/ consultants would not become defensive and interpret a question or a suggestion as a criticism but see it instead as a valuable part of the learning process while also recognising that there is the potential for them to also learn from their NCHDs on occasion.

In order to support the implementation of these recommendations, a training programme for consultants could be developed. The consultants are key individuals in creating the type of training and learning culture that is experienced by NCHDs. The aims of this programme could include communicating the importance of consistent high quality feedback given to all NCHDs as a matter of course, alleviating dependence on the nature of the interpersonal relationships that exists currently. Developing skills in giving effective and consistent feedback to encourage further good performance and to address when performance does not meet the required standards would be a further goal of this programme. Training would emphasise the role of the consultant in creating a safe environment where their more junior colleagues are more likely to speak up, to ask questions, to suggest ideas and to give their input. The development of a consistent approach to what high quality effective teaching looks like for each specialty would seek to ensure that the post-graduate training experience becomes more consistent across sites and specialties to reduce reliance on an informal and self-directed approach to educate our future consultants could also be considered.

RECOMMENDATIONS FOR RESEARCHERS

Conducting research in a health care setting does present some challenges, key amongst these is access to research participants. Accessing doctors to participate in research can prove particularly challenging (Levinson *et al*., 1998; McGowan *et al*., 2013; VanGeest *et al*., 2007). This researcher also found accessing NCHDs difficult given the very busy nature of their work and their requirement to rotate at frequent intervals to different hospitals, and finding an appropriate means of contacting a significant enough number of

them to obtain research participants. While the researcher is a member of staff of the organisation under study, her location within the corporate structure of the organisation meant that she is at a distance from the research participants who work in hospitals and are involved in the front-line delivery of patient care. Considering this the post-graduate medical training bodies were used as the route to contact participants, however if the researcher was not working in the National Doctors Training and Planning department of the HSE at the time of recruiting research participants, which facilitated access to the relevant post-graduate medical training bodies, this stage in the process would have taken longer to complete. It may in fact have made it very difficult to complete the study with NCHDs within the DBA timeframe of a four-year cycle. Researchers interested in doing similar research with NCHDs would need to consider these factors and ensure that they have adequate time allowed to obtain access.

Given that the research is taking place in a healthcare environment, the potential for disclosure of information regarding something harmful to patients, or of a criminal nature exists (Orb *et al*., 2000) and could occur during the semi-structured interviews. To address this risk ethical approval for the study was obtained. Researchers wishing to undertake research in a healthcare context should seek out the appropriate ethical approval at an early stage so that the ethical processes are included in the research design for the study. (See Appendix 2 for a copy of the ethical approval for this study).

Researchers considering a longitudinal study should also bear in mind that not all participants may participate at all stages of the study. This may be due to busyness in their working lives that ultimately despite their best intentions prevent them from participating. Researchers need to consider the design of the study and the participant numbers so that if more than one data collection point is required that the study will still be possible to complete even if all participants do not provide data at each point.

As with any research participants, researchers carrying out research with doctors need to facilitate them regarding the time and place to collect the data. On occasions the researcher carried out the semi-structured interviews at the doctor's workplace, to take

place at the end of the research participant's shift or perhaps on a day when they were on-call on site. The researcher needs to be aware that in these circumstances the research participant can be tired, be called away thus interrupting the interview, may need to cut the interview short, or may not be available to do the interview at the arranged time. These issues are outside the control of the researcher and would have to be accepted as part of the research process.

RESEARCH LIMITATIONS

Doctoral research by its nature, and in this case its professional basis as a Doctorate in Business Administration (DBA), has certain research limitations associated with it as a research approach. Firstly, the researcher-practitioner is a part-time research student, simultaneously carrying out their professional role while pursuing the DBA. The time in which the research study must be undertaken and completed is determined by the DBA programme timeframes (e.g. a four-year programme cycle). To successfully meet these timeframes the researcher must ensure that the scope of the study is feasible within the time permitted and that the level of access required to undertake the study will be available along with the time needed to analyse the data once gathered. The timeframe available may also limit the research methods it is possible to utilise. If a longer duration were available to conduct the research additional elements could be included in the study design, for example in this study a greater number of research participants, additional research contexts and additional research methods could have been included. However, time is not the only limitation that prevented the research being of larger scope, a feature of doctoral research is that the research is undertaken by a sole researcher, which again places limitations on the scope of what is achievable. Operating as a sole researcher, albeit it with the support of supervisors, limits the level of expertise available to design and undertake the research and analyse the data. It also means that at best a limited budget is available for the study, which is also a limitation. In this research study the requirement for the researcher to access participants via a third party (post-graduate medical training bodies or intern networks) limited the degree of persistence that the researcher could employ in seeking potential volunteers to participate in the study.

SUGGESTED AREAS OF FURTHER RESEARCH

The development of learning theory presents an intriguing avenue of further research. Researchers could consider additional longitudinal research in the healthcare environment, perhaps including NCHDs from additional disciplines, also NCHDs who are working in the health service but who are not part of post-graduate medical training programmes. These doctors occupy so called 'service grade' posts. Given that the experience hierarchy has such an impact on the formation and learning of an NCHD and as their experience develops their ability to input into the learning process also increases; it would be useful to include consultants in some future research, so as to obtain their perspective on how learning moves within their medical teams.

Widening the research context beyond the public hospital setting to include the community setting or perhaps also private hospitals to ascertain if the refined public healthcare organisational multi-levels learning framework is applicable in those contexts, and if similar findings occur. Including other members of the multi-disciplinary team (MDT) within future studies could also help to enrich our understanding of how the interaction of individual and team learning occurs within teams.

Researchers could also consider opportunities to include observation of team interaction as part of future studies. This would allow the researcher the opportunity to explore the refined learning framework in action. There are however significant access and ethical considerations to be addressed in order to carry out a study of this kind.

As has been acknowledged there is a shortage of organisational learning research that has been carried out in the public sector (Rashman *et al.*, 2009). A further area of future research could be to study the refined learning framework in a wider public sector context. There may also be an opportunity to observe organisations with different types of hierarchies and the impact of those hierarchies on the interaction of individual and team learning.

RESEARCHER REFLECTION

This section offers a short reflection on how the researcher has developed her research skills as a result of carrying out this research. As a personal account, this section is written in the first person. The research process has enhanced and developed my critical thinking and writing skills. I recognised the value of allowing time for something to gestate and take shape in my head before trying to write about it. This along with having a clear image of the end product to be produced in terms of a plan or structure for this document are key to writing efficiently and effectively. This insight serves me very well in the work context also. Engaging in an interpretive research process has allowed me to appreciate the value of different perspectives and views of reality to a greater degree than before the DBA. This awareness is useful in a professional context when aiming to influence or persuade others, or when having a challenging conversation and highlights the value of listening to the other person in order to ascertain how it is that they see the reality of the situation. I also developed greater comfort in dealing with ambiguity. There were occasions during the research process when the path ahead was unclear, for example when refining the research questions at certain points, it took time for clarity to re-emerge. I recognise that clarity does emerge and that the ambiguity and uncertainty is sometimes a necessary part of achieving the clarity and so they are useful if not always comfortable stages in the process. I also developed a greater appreciation for the role of language and how it can mediate between insider and outsider experiences. Use of a common language in a given context can help to remove barriers, enhance credibility, improve and approach when relating to colleagues and may also assist in developing rapport. I have become more attuned to the type of language being used by colleagues and others in the work context and the impact that this may have on individuals' perceptions of each other and on achieving the desired outcome from a conversation. This includes an awareness of how some individuals introduce language from a particular context and use it in other situations as a means to perhaps strengthen their position or impress their audience. Finally, I listen more to my intuition and have become more aware of the sensations experienced when an intuition occurs.

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Section 4

REFLECTIVE LOG – EXTRACTS

The researcher carried out a reflective log throughout and extracts were included in the examination copy. In the interests of confidentiality, these extracts have been removed from the bound thesis.

Please contact the researcher for further information if required.

APPENDICES

APPENDIX 1 – OVERVIEW OF THE HSE

The Health Service Executive (HSE) was established by Ministerial order on 1 January 2005 in accordance with the provisions of the Health Act 2004, as amended by the Health Service Executive (Governance) Act, 2013 as the single body with statutory responsibility for the management and delivery of health and personal social services to the population of Ireland. It replaced 10 regional Health Boards, the Eastern Regional Health Authority and a number of other different agencies and organisations in the Republic of Ireland.

The HSE employs over 100,000 people delivering public health services to the population of Ireland. In 2017 its annual budget is over €14 billion. The HSE manages services through a structure designed to put patients and clients at the centre of the organisation. Its vision is to develop a healthier Ireland with a high quality health service valued by all. The health and social care services are delivered through a number of national service delivery divisions, responsible for the delivery of services to the public. The national service delivery divisions are as follows;

- Acute Hospitals
- Social Care
- Mental Health
- Primary Care
- Health and Wellbeing
- National Ambulance Service

Delivery of health and personal social services is operationalised nationally though the Hospital Group, Community Healthcare Organisation and non-statutory service provider structures. The Irish acute hospitals system has been organised into seven hospital groups, each with its own management structure and linked to a major academic partner which it is anticipated will be established under legislation. In addition, there are nine Community Healthcare Organisations (CHOs) which are responsible for the delivery of primary and community based services responsive to the needs of local communities. In

addition to the services provided directly by the HSE it also enters into arrangements with service providers for the provision of health and personal social care services on its behalf.

Source: Health Service Executive (2015) *Code of Governance*, Health Service Executive: Dublin.

APPENDIX 2 - ETHICAL APPROVAL

Waterford Institute *of* Technology WIT

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Ms. Louise Doyle,
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REF: 15/GB/01

16th October 2015

Dear Louise,

Thank you for bringing your project *"How the Multi-levels of Individual Learning and Team Learning Interact in Public Healthcare Organisations"* to the attention of the WIT Research Ethics Committee on 5th October 2015.

Based on the revised WIT Ethical Approval Application Form and Supporting Documentation, I am pleased to inform you that we fully approve the conduct of this project.

We will convey this decision to Academic Council.

We wish you well in the work ahead.

Yours sincerely,

Prof John Wells,
Chairperson,
WIT Research Ethics Committee

Cc. Prof Denis Harrington & Dr Felicity Kelliher

APPENDIX 3 – CASE STUDY PROTOCOL

Design issue	Description
Research aim	To study how the multi-levels of individual learning and team learning interact in public healthcare organisations.
Research questions	How does the interaction of individual and team learning occur? What are the processes and conditions that facilitate or hinder the movement of learning between the two levels?
Research method	Interpretivist case study.
Timeframe for data collection	Approximately 9 months between September/October 2015 to June/July 2016.
Case selection process	Single case study involving Non-Consultant Hospital Doctors (NCHDs) working in the Irish public health service.
Case access	Approach NCHDs through the post-graduate training bodies/training coordinators who are in the appropriate specialties and stages of training for the study. In addition they must be in the same work location between July 2015 and June 2016.
Ethical issues	Informed consent. Confidentiality.
Research instrument	The primary research instrument will be the research protocol/interview guide.
Boundary device	Underlying organisational learning theory; Preliminary conceptual framework.
Techniques for data collection	Semi-structured interviews as the primary research technique. Each participant will be interviewed up to three times during the nine months. Review of relevant documentation. Maintenance of researcher's reflective log.
Data management	Data collection plan. Interview guides. Document protocol. Maintenance of a case study database.
Data analysis	Thematic analysis to include an audit trail of the process used and memoing to document ideas and to feed into theory formulation.

APPENDIX 4 – DATA COLLECTION PLAN (ACTUAL)

Project Plan DBA Data Collection - Actual

Start Date: Oct 2015 **End Date:** Aug 2016

#	Activity	Start Date	End Date
1	Ethical approval	05.10.16	16.10.15
2	Approaching training bodies/co-ordinators to seek participants	26.10.15	14.12.15
3	Researcher contacted by potential participants	12.11.15	04.01.16
4	Do first interviews	27.11.15	25.01.16
5	Transcribe interviews	28.11.15	06.02.16
6	Sending transcripts to interviewees to review	02.12.15	08.02.16
7	Initial findings/ emergent themes	07.02.16	26.02.16
8	Analysis of first round of interviews	29.02.16	18.03.16
9	Prepare interview guide for second interviews	10.03.16	13.03.16
10	Schedule second interviews	11.03.16	13.04.16
11	Do second interviews	22.03.16	19.04.16
12	Transcribe interviews	30.03.16	13.05.16
13	Sending transcripts to interviewees to review	15.04.16	10.05.16
14	Analysis of interviews	14.05.16	23.05.16
15	Checking for saturation in the themes from the first and second round interviews	26.05.16	04.06.16
16	Develop interview guide for the clarification interview	11.06.16	11.06.16
17	Schedule clarification interviews	17.06.16	30.06.16
18	Do clarification interviews	21.06.16	25.07.16
19	Transcribe interviews	21.06.16	07.08.16
20	Sending transcripts to interviewees to review	05.07.16	27.07.16
21	Analysis of interviews	03.07.16	07.08.16
22	Develop document protocol	07.11.15	26.11.15
23	Initial Search for relevant documentation to review	13.12.15	23.12.15
24	Additional documentation identifed?	08.05.16	13.05.16
25	Analysis of relevant documentation with protocol and then coding in Nvivo	22.04.16	19.06.16
26	Maintenance of reflective log	05.10.15	31.08.16
27	Analysis of reflective log	01.07.16	31.08.16

APPENDIX 5 – INTERVIEW GUIDE TEMPLATES

INTERVIEW GUIDE FOR FIRST ROUND INTERVIEWS WITH RATIONALE FOR QUESTIONS

Interview Guide Questions	**Themes from the literature**
General questions about learning	
Q1. When I say learning what does that term mean to you? Q2. How do you learn when you are at work?	• Opening questions - get the participant talking and get an understanding of what learning means to them, and how they learn at work. • Anything about mental models, or learning as a social process involving others?
Questions about learning in a team	
Q 3. How does learning take place in your team? Q4. Tell me about a time that you learnt something while with your team? Q5. If a problem or opportunity comes up how does your team approach it? Q6. Can you tell me about a time that you and your team figure out something new together?	• How does the participant perceive that learning happens in their team, is it a social process, who is perceived to be involved in learning, how does learning arise is the participant's team? • Do all team members participate in the learning? • Is composition of the team mentioned? • What processes and conditions are mentioned that facilitated or hindered the learning? • Are metaphors, stories, conversation, discussion mentioned? • Is there a sense of the participant intuiting eg: recognising patterns and possibilities that are preconscious and then trying to verbalise and these? • Or recognising a connection being triggered by what someone else says and then verbalising something that builds on what has been said already – interpreting. • Do they help each other to understand? Do they build on each other's ideas? • Is there reference to how individuals can mutually create a solution to a problem or learn about something in this way? • What about withholding information, or not participating in problem solving – if it occurs what is behind it from the participant's perspective? • Is this new understanding for all, or is it something some of the team are sharing with the rest? Interaction of individual and team learning, feedback flow of learning. • Is there a sense of shared understanding being arrived at – integrating – involving some actions being taken?
Q7. What happens if more than one idea is put forward, how does the team decide which one to go with?	• What are the processes and conditions around the team coming to support one idea over another? Are social processes, relationships, social structures at play here? Anything else? • Structural and professional boundaries? • Team composition?

Interview Guide Questions	Themes from the literature
Q8. Does the team help you when you're trying to find something out?	• How does the participant access the learning that exists in the team? • Do they approach whole team, or certain team members? • Contacts within social groups and closeness of groups and individuals? • Would team members notice they had an issue, needed help and offer it. Processes and conditions involved in these scenarios. • Would the participant not want the team to know they were trying to find something out? Defensive routines – not good to show lack of understanding about something? • Processes and conditions that hindered learning occurring?
More detailed questions about learning process in a team setting	
Q9. How do you and your team go about working on an idea? Q10. Can you describe a time that you shared an idea with your team members? Q11. Describe how you teased out that idea with your team?	• What processes and conditions are at work? • Social processes • Is there evidence of intuiting and interpreting ideas and building on each other's ideas, forming a common language? • Are metaphors, imagery, stories, common language used? • Does it happen in a formal team setting or more informally? • When did the idea occur? Was it in the moment or earlier? • Are all team members involved? • Is it a collective processes or something else? • Structures and processes – including social groups and closeness of groups and individuals
Q12. Did a new understanding of the issue arise as a result?	• Intuition being verbalised and then others joining in? • Language used, conversation, social processes at work? • Attempting to build on what is emerging through the conversation to reach a common language?
Q13. What about your gut instinct, do you use it at work? Q14. Have you used metaphors or imagery to explain an insight to your team members at work?	• Gut instinct – link with intuiting, recognising something preconscious • Verbalising insights through use of metaphors or imagery to explain to themselves/others?
Q15. Have there been times when you chose not to share an idea with your team members?	• When did the idea occur? Was it in the moment or earlier? • Anything about inhibitions to share it?

Interview Guide Questions	Themes from the literature
Q16. Have there been times when you've held back information? Q17. What stops you sharing an insight with other team members?	• Anything about having an idea but deciding not to share it – was this for defensive reasons? • Anything about intuition having a sense of something and then trying to put that into words, were metaphors involved or did the language used evolve in conjunction with other team members? • Anything about the conditions that made them comfortable/not comfortable to share idea? • Defensive routines – withholding? • Role of social processes? • Contacts within social groups and closeness of groups and individuals? • Structural and professional boundaries? • Role of organisational structure?
Q18. Have there been times when you've had the inkling of an idea but it had gone before you'd grasped it?	• Anything about fleeting intuition – losing the idea before having enough of a sense of it to express it?
Q19. Tell me about a time that you tried to share an idea with team members but didn't get to explain it fully? Q20. Have there been times when you felt your idea wasn't being properly considered?	• Anything about feeling like don't have ideas, or ideas are not good enough to share, having an idea but the moment has passed so not expressing it? • Picking up on body language or what is said by others as being encouraging/discouraging of expressing ideas in the team? • Anything about not having the opportunity to share ideas and so not bothering anymore and being disengaged? • What hindered the process? • What was behind not sharing it fully, was it something within themselves that told them to stop, maybe feeling in mid expression that they didn't get it themselves, or that it didn't have merit, or something else they picked up in body language of others, or being interrupted and the conversation being taken over by others, or something else happening? • Interpreting being derailed – breakdown in the flow of learning between individual and team? • Is it possible to get sharing the idea back on track if feel unfinished, not successful? • What were others doing, role of social processes here? • Structural, professional boundaries? • Is team composition mentioned?
Q21. Have there been times when you've talked about your idea to someone else before talking to the whole team about it? Q22. Have there been times when you've tailored how you spoke about an idea for those present to increase changes of buy-in?	• Contacts within social groups and closeness of groups and individuals? • About social processes? • Organisational structure – influences who talks to who? • Team composition? • Defensive routines – manipulating?

Interview Guide Questions	**Themes from the literature**
Q23. Have there been times when you've tried to sound more confident in your idea than you really were?	• Structural and professional boundaries? • Defensive routines – spinning?
Q24. Tell me about a time when one of your team member had an idea about something and it led to the team learning something new	• Flow of learning from the individual to the team – feed forward, intuition to interpreting? • Use of language, sense making occurring in the team? • Social processes? • Team composition?
Q25. Have there been times when a team member has run an idea past you in advance of talking to the whole team?	• Defensive routines – spinning, gaining support • Structural and professional boundaries? • Contacts within social groups and closeness of groups and individuals?
Q26. How do you know when the team has the same understanding about something? Q27. Describe when you've experienced a shared sense of understanding arising in the team?	• Interpreting to integrating learning in the team? • Use of language, conversation and dialogue, sense making? • Use of metaphors, imagery? • Social processes at play in the team? • Anything about taking action – integrating?
Q28. What are the structures that help you learn when you are in at team setting?	• Social processes? • Organisational structure? • Structural and professional boundaries? • Contacts within social groups and closeness of groups and individuals? • Team composition?
Q29. How do organisational processes/ procedures influence your approach to learning at work? Q30. How do organisational processes/ procedures influence your team's approach to learning at work?	• Feedback flow of learning – organisational level to team level to individual level • Social structures do they fit into org procedures • Does the feedback flow inhibit new learning – being bound by processes/procedures so that creativity or lateral thinking is stifled? • Are structural and professional boundaries mentioned here at all?

INTERVIEW GUIDE FOR SECOND ROUND INTERVIEWS WITH RATIONALE FOR QUESTIONS

PREAMBLE/ INTERVIEW ARRANGEMENTS

Thank you very much for agreeing to take part in this follow up interview. I very much appreciate your support in this research study.

As agreed, this interview will take no more than an hour.

Do you mind if I record the interview?

I'll maintain confidentiality under the consent agreement and if you like I'll send you the transcript to review.

Your participation in this interview is voluntary. You are not obliged to answer any of the questions asked.

Rationale	Questions
Lead in question.	10. To begin with I'd like to ask if you have any questions or observations from our last interview? Probe: • Is there anything that has occurred to you since the interview that you'd like to add?
Lead in question.	11. Have you noticed anything about working with your team since our last interview?
Learning Supports – Different teams/ team composition. To better understand the team each participant is part of.	12. It would be helpful to me to get a better picture of the team that you're part of, could you tell me: • How many of you are there on the team? • Are you all the one profession or multi-disciplinary? • What are the job titles of your team mates? • Are you part of the same team for the whole rotation or do you change? • Do you work with the same people each day, or does it change? • Do you work shifts? • Are you dedicated to this team or split over a number of teams? • If split, do you have a favourite? ○ Why? • If you're on a new team since January, what are the differences between this team and your old team?

Interpreting learning – conduit of communications/ sharing information. To find out whether those who didn't mention social media use it in their team or for their learning.	13. Do you use any social media platform or app as part of being in this team? Probe: • If yes, for what purpose? • What about for your learning? (P4, P5, P11 spoke about this in Interview 1 – so don't intend asking them this question)
Intuitive capacity – time in role/ duration in role. To find out what those who didn't mention rotations think about whether or not they affect their learning.	14. Do you think that rotating to different jobs during your training has an effect on your learning? Probe: • If yes, what effect? (P2 & P11 already spoke about this in interview 1 – so don't intend asking them this question)
This next part is about what you do when you're figuring something out and learning in the team.	
Interpreting learning – figuring out new ideas. Trying to shed more light on processes for figuring out something new, might also be help in teasing out individual to individual depending on responses.	15. In this team when you don't know something what are you expected to do? Probe: • Was this the same in previous teams?
Preliminary CF. Teasing out individual to individual theme to see if I can get more data on it.	16. If you are trying to figure something out or are unsure of how to proceed with something, who do you ask? 17. How do you approach that individual/ those individuals? a. Probe: Example 18. What do you do with the information? 10. Does this help you learn? 11. In instances where you've helped members of your team to learn something, how does that typically happen? Probe: • Can you give me an example?
Experience hierarchy – seniority's impact on learning.	12. Do you learn from peers who are at the same level as you? • Do you have an example? 13. Would you learn from a more junior colleague?

Trying to verify the hierarchy in learning, upward asking themes with the participants and also checking out about learning from those at the same level, or more junior.	• Do you have an example of this? 14. Has a more senior colleague learnt from you? • Can you tell me about that? 15. From the first round of interviews, it's seems that asking a senior colleague what to do is a common strategy for learning amongst NCHDs. • Would you agree with that view in your experience?
Interpreting learning / sense making Ask participants if they use stories as part of sense making.	16. Do you use stories as a means of passing on learning to other colleagues? 17. Have other colleagues used stories as a means of passing on learning to you?
Interpreting learning – informal learning. Informal learning seems to be really important, I'm trying to gauge their thoughts on this.	18. Does learning take place informally? • Can you think of an example? 19. How significant to your learning, if at all, is learning that takes places informally?
Intuitive capacity – instinct as a catalyst for learning. Follow up to gut instinct to see about whether participants feel their training helps them to develop it.	20. Last time, I asked you about using your gut instinct at work. As a follow on to that conversation, what does gut instinct mean to you? 21. Do you feel that your training encourages you to develop your gut instinct? Probe: • In what way?
Intuitive capacity – idea generation. For those with whom the word 'idea' didn't resonate this is to try to tease that out more. Am going to ask all except P11.	22. Last time I asked a number of questions about ideas, and I wonder could you tell me what does the word 'idea' mean to you? Probe: • Use response to ask for an example? (This already came up with P11 – so don't intend asking them this question)
This next part is about working in a team environment.	
Learning supports – social processes Do participants see interpersonal relationships having in	23. Do you enjoy working in a team environment? 24. Can you describe the relationships you have developed in the team? Probe: • Have you an example of this?

influence on their learning.	25. Do these relationships play a role in what you learn? 26. Do these relationships play a role in how you learn? Probe: • Have you an example of this?
Interpreting learning – conduit of communications/ sharing of information. Have asked about social media above – seeing if anything else comes up eg: social processes etc.	27. Is there anything in place in your team that you think helps to improve communication and information sharing? Probe: • In what way does it improve communication and information sharing?
Clarification questions – will vary for each participant. **From looking back over our first interview, there are just a couple of questions I'd like to revisit for clarification – would that be okay?**	
(P1, P3, P7, P8)	28. I asked you about this the last time we spoke, but would like to revisit it if ok with you? Was there a time that you and your team figured out something new together? – could you think of an example of when that happened?
(Looks like I didn't ask P4 this first time round)	29. If more than one idea is put forward, how does the team decide which one to go with? 30. Are the other ideas kept for another occasion?
(P5) First answer was unclear	31. Does the team help you when you're trying to find something out? Probe: • Have you got an example of that? 32. Last time you said that you hadn't used metaphors and imagery to explain an insight to team members at work – is that still your view? 33. I wanted to follow up on using WhatsApp – you mentioned you use it if you have a question or need advice – who answers the queries? Probe: • Are the responses always from your team members? • What would be the job titles of the people who answer the queries?
(P2)	34. Last time when I asked you about a time when one of your team members had an idea about something and it led to the team learning something new, you said that you were not in the team long enough at that stage for

	team members to have ideas that lead to learning something new – I wonder is that still the case, or can you think of an example now?
(P9)	35. Last time when I asked you to describe when you've experienced a shared sense of understanding arising in the team, you mentioned that was difficult because you change teams every day – I wonder is that still the case, or can you think of an example now?
(P10)	36. Could you give me another example of when you've experienced a shared sense of understanding arising in the team?
(P3) Answer was unclear	37. I would like to follow up on the question about using metaphors and imagery from the last time. Can you tell me what the word 'metaphor' means to you? Probe: • Can you tell me what the word 'imagery' means to you? • Can you give me another example of when you've used either to explain an insight to your team members at work?
(P7) Follow up on metaphors and imagery	38. Last time you I asked you about using metaphors and imagery to explain insights to your team at work, and you thought you probably did, but weren't fully sure – could I ask you that question again?
Close the interview	
	39. We're nearly at the end is there anything that you'd like to add? 40. Was there anything that came up that you were surprised at? 41. Was there anything that didn't come up that you thought would? 42. Have you any questions?

I would like to thank you very much for taking part in the study. Any data collected in the study will be securely kept under lock and key. I will use codes/pseudonyms for yourself and your hospital in the study so that identification will be difficult. When the interview is transcribed I will forward you a copy for review.

THANK YOU.

INTERVIEW GUIDE FOR CLARIFICATION INTERVIEWS

No	Theme to clarify	Question	Who to ask
1	Terminology changing	Have you noticed a change in the words or the terms that you use since you started your training? (This question was only asked in 6 of the second round interviews – so could use it again to ask the 4 others)	P1 P2 P5 P9
2	Language	What part does the type of language used by someone play in your understanding of what they're saying? Or Do you feel that you and your colleagues use a common language in terms of terminology, phrases, or are there variations in the language that is used? What impact does this have on shared understanding? Is the language something that new members of the team need to get used to when they join?	All
3	Intuiting to interpreting	What makes you share an idea with your team/colleagues who are present? Can you think of a time that you did that?	All
	2nd time to share an idea	What would you do if you were interrupted when explaining an idea to your team? Can you tell me about a time that this has happened?	All
4	Shared understanding	How can you tell that your team has the same understanding about something? What would have happened to bring that about?	All
5	Keep insight to self	Are there times at work when you would have a thought or an idea about something but would choose to keep it to yourself? What would be your reasons for that? Could you give me an example?	All
6	Teaching style	A number of the respondents mentioned that a senior colleagues/consultants approach to teaching had a potential impact on their learning. What part if any does the teaching style of a senior colleague/consultant play in your learning?	All
7	Taking charge	Are there times when it's your role to make the decision as to what is going to happen with a patient and to give that direction the other colleagues present? Do you have an example of that?	P1 P2 P3 P4 P5 P8 P9 P10

APPENDIX 6 – DOCUMENT PROTOCOL

Document name	
Document owner	
Type of document	
Publication date	
Brief Summary	
Relevance to study: **highly relevant** **somewhat relevant** **not relevant**	
Is learning, training, education in public healthcare organisations mentioned?	
Is learning, training, education of NCHDs mentioned?	
How learning happens in a team context?	
Learning involving mental models, learning as a social process involving others?	
Processes and conditions that facilitate or hinder learning?	
Role of social processes, relationships, social structures?	
Structural and professional boundaries?	

Team composition?
Organisational structure?
Individual team members accessing the learning that exists in team?
Contacts within social groups and closeness of groups and individuals?
Sharing ideas and intuitions and developing them further to form a common understanding?
Taking action as a result of understanding – integrating?
Feeling discouraged from sharing ideas, ideas not worthy, interpreting being derailed, getting sharing an idea back on track?
Defensive routines – not showing lack of understanding to other team members, withholding information, gaining support for ideas before presenting them more widely, sounding more confident in idea or spinning ideas?
Role of language, metaphors, imagery, conversation and dialogue, sense making?
Feedback flow of learning – organisational level to team level to individual level?
Feedback flow - inhibit new learning?

APPENDIX 7 – CASE STUDY DATABASE

No	Item	Location
1	Conceptual paper	..\..\Assignment 4 - Conceptual paper\12th Jan submission\LOUISEDOYLE_12.01.15_FINAL.docx
2	Methodology and research design paper	..\Methodology paper\Methodology_LDoyleFINAL_Jan16.docx
3	Project plan and actual plan	..\Project Plan\Project Plan DBA Data Collection.xlsx
4	Submission to Ethics Committee and Ethical approval	C:\Users\user\Documents\DBA\Ethical Approval
5	Interview Guide for interview 1	..\Interview guide\LDoyle interview template Oct 2015 FINAL.docx
6	Consent form	..\..\Ethical Approval\Revised submission following committee feedback\ldoyle ethics form Oct 2015FINAL.docx
7	Letter of introduction combined with consent form	..\Letter of Introduction\version used\LDoyle Letter of Intro and consent Oct 15 FINAL.docx
8	Introductory email	Intro email no consent form.docx
9	Log of contacts with Training Bodies to seek participants	DBA Research Project - Contacts.docx
10	Contact details for participants	Participant Contact Details.docx
11	Participant Names and Participant Codes	Potential Research Participants file password protected in work office
12	Participant Profile information	..\Transcripts\participant overview information.xlsx
13	Hard copy consent forms	With researchers files at home
14	Hard copy individual participant overview information	With researchers files at home
15	Record of whether participants wanted to see transcripts or not	Circulation of transcripts.docx
16	Cover email to send transcript to participant	cover email for transcript.docx
17	Reminder email when no response receive to transcript	email no response re transcript.docx
18	All transcripts	C:\Users\user\Documents\DBA\Methodology\Transcripts
19	All recordings	C:\Users\user\Documents\DBA\Methodology\Recordings
20	Interview reflections	..\Transcripts\Interview Reflections.docx
21	Record of project meetings with supervisor	..\..\DBA Project Meeting Log\LDoyle_DBA Project Meeting Logs.docx
22	Document protocol	..\Document Protocol\Document protocol final.docx
23	List of documents to review	..\Documentary Review\Documents for the study.docx
24	Hard copy reflective log entries	In researcher's reflective log journal
25	Familarisation with interview one - what struck me from the interviews and initial findings	..\..\Design Implementation & Initial Findings\Initial Findings Jan 2016v2.docx
26	Design Implementation and Initial Findings Paper March 2016	..\..\Design Implementation & Initial Findings\Design Implementation & Initial Findings LDoyleFINAL.docx
27	Design Implementation and Initial Findings Paper May 2016	..\..\Design Implementation & Initial Findings\Paper\Design Implementation & Initial Findings LDoyleFINALMay2016.docx
28	Hard copy version of the code book developed while coding Interview 1	Researchers hard copy files at home
29	Nvivo File	C:\Users\user\Documents\DBA\NVivo
30	Nvivo Backup File	C:\Users\user\Documents\NVivo 11 Recovery
31	QDA Process Audit Trail	..\..\Design Implementation & Initial Findings\QDA Process.docx
32	Development of interview guide for interview 2 with rationale for questions	C:\Users\user\Documents\DBA\Design Implementation & Initial Findings\Interview 2
33	Interview guide for interview 2	..\..\Design Implementation & Initial Findings\Interview 2
34	Email inviting participants to interview 2	Email Participants contacted for the 2nd interview.docx
35	Nvivo Node Strucure Report for Interview 1 08.03.16 edited on 12.03.16	Researchers hard copy files at home
36	Nvivo Coding Summary By Node Report for Interview 1 08.03.16 cut into bundles	Researchers hard copy files at home
37	Memo on review of node summary report 08.03.16	..\..\NVivo\Memo on review of node summary report 08.0316.docx
38	Nvivo Reports 18.03.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 18.03.16
39	Nvivo Reports 19.03.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 19.03.16
40	Memo on the creation of themes from interview 1 codes	..\..\NVivo\Memo on creation of themes from the codes from round 1 interviews 25.03.16.docx
41	Handwritten themes 25.03.16	..\..\Design Implementation & Initial Findings\WP_20160326_001.jpg
42	Documents reviewed using document protocol	C:\Users\user\Documents\DBA\Methodology\Documentary Review\Reviewed with protocol
43	Nvivo Reports 08.03.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 08.03.16
44	Nvivo Reports 26.03.16	..\..\NVivo\NVivo Reports 26.03.16
45	Nvivo Reports 29.03.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 29.03.16
46	Nvivo Reports 24.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 24.05.16
47	Nvivo Reports 25.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 25.05.16
48	Nvivo Reports 29.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 29.05.16
49	Nvivo Reports 30.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 30.05.16
50	Nvivo Reports 31.05.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 31.05.16

51	Nvivo Reports 06.06.16	..\..\NVivo\NVivo Reports 06.06.16
52	Nvivo Reports 08.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 08.06.16
53	Nvivo Reports 11.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 11.06.16
54	Nvivo Reports 18.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 18.06.16
55	Nvivo Reports 19.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 19.06.16
56	Nvivo Reports 22.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 22.06.16
57	Nvivo Reports 25.06.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 25.06.16
58	Nvivo Reports 03.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 03.07.16
59	Nvivo Reports 06.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 06.07.16
60	Nvivo Reports 07.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 07.07.16
61	Nvivo Reports 09.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 09.07.16
62	Nvivo Reports 13.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 13.07.16
63	Nvivo Reports 14.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 14.07.16
64	Nvivo Reports 14.07.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 24.07.16
65	Nvivo Reports 01.08.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 01.08.16
66	Nvivo Reports 07.08.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 07.08.16
67	Nvivo Reports 18.10.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 18.10.16
68	Nvivo Reports 31.10.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 31.10.16
69	Nvivo Reports 12.11.16	C:\Users\user\Documents\DBA\NVivo\NVivo Reports 12.11.16
70	Familarisation with interview two - what struck me from the interviews	..\..\Findings & Analysis\Familiarisation with Second Round Interviews Prior to Coding.docx
71	Document to work through saturation check	..\..\Findings & Analysis\Saturation after round 2 interviews.xlsx
72	Nodes following saturation check 31.05.16	..\..\NVivo\NVivo Reports 31.05.16\Nodes 31.05.16.xlsx
73	Saturation after round 2	..\..\Findings & Analysis\Saturation after round 2 interviews.xlsx
74	Items to be clarified after staturation check	..\..\Findings & Analysis\Items to be clarified after saturation.xlsx
75	Node map in powerpoint comparing coding from round 1 and incorporating 2nd round into hierarchy	..\..\Findings & Analysis\Node map 11.06.16.pptx
76	Round 3 clarification interview questions	..\..\Design Implementation & Initial Findings\Interview 3\Clarification Interview QuestionsFINAL.docx
77	Round 3 clarification interview guide	..\..\Design Implementation & Initial Findings\Interview 3\Clarification Interview QuestionsFINAL.docx
78	Participants contacted for clarification interview	Participant Contacted for clarification interview.docx
79	Email inviting participants to the clarification interview	Email Participants contacted for clarification interview.docx
80	Notes from clarification interviews	Researcher's hard copy files at home
81	Comparison of nodes from interviews and document review	..\..\Findings & Analysis\Document Nodes Compared with Interview Nodes 22.06.16.pptx
82	Node map with codes round 1, round 2, and documentary review	..\..\Findings & Analysis\Node map 11.06.16 - 22.06.16.pptx
83	Node map with codes round 1, round 2, and documentary review and final version	..\..\Findings & Analysis\Node map 11.06.16 - 24.07.16.pptx
84	Document nodes compared with interview nodes	..\..\Findings & Analysis\Document Nodes Compared with Interview Nodes 22.06.16.pptx
85	Findings and Analysis Paper Sept 2016	..\..\Findings & Analysis\Paper\Findings_Analysis L Doyle FINAL.docx
86	Findings and Analysis Paper Dec 2016	..\..\Findings & Analysis\Paper\Final Version\Final Examination Paper 4 Louise Doyle 21st December 2016.docx
87	Thematic map drafts	C:\Users\user\Documents\DBA\Findings & Analysis\Thematic Map
88	Refined learning/conceptual framework	C:\Users\user\Documents\DBA\Findings & Analysis\Refined Con Framework
89	Discussion, Conclusion & Recommendations	C:\Users\user\Documents\DBA\Conclusion
90	Introduction and DBA Research Overview	C:\Users\user\Documents\DBA\Introduction & DBA Research Overview
91	Thesis elements includes prefaces to papers, abstract, reflective log etc	C:\Users\user\Documents\DBA\Thesis
92	Articles	C:\Users\user\Documents\DBA\articles
93	Record of articles read and articles to read	C:\Users\user\Documents\DBA\Tracking lit read
94	DBA Project Meeting Log	C:\Users\user\Documents\DBA\DBA Project Meeting Log

APPENDIX 8 – CONSENT FORM

Researcher's Name(s): Louise Doyle

Project Title: How the Multi-levels of Individual Learning and Team Learning Interact in Public Healthcare Organisations.

INTRODUCTION

This consent may contain words that you do not fully understand. Please ask the researcher to explain any words or information that you do not clearly understand.

You are being asked to participate in a research study as a Non-Consultant Hospital Doctor (NCHD). When you are invited to participate in research, you have the right to be informed about the study procedures so that you can decide whether you are willing to participate.

Your participation is entirely voluntary. You may stop participation at any time up to data merge without penalty or loss of benefits to which you are otherwise entitled.

WHY IS THIS STUDY BEING DONE?

The purpose of this research is to study how the multi-levels of individual and team learning interact in a public healthcare organisation. This study is in partial fulfilment of a Doctorate in Business Administration, which the researcher is undertaking in Waterford Institute of Technology.

The Researcher works in the HSE - National Doctors Training & Planning (NDTP). NDTP are supporting this study given that it has the potential to develop understanding as to how to enhance the effectiveness of learning interactions in medical and other healthcare teams. It aims to increase understanding as to how effective team working can be nurtured so that team members can develop insights and learn together which will equip them to respond to the high levels of change in their organisations. This understanding could then be used to improve the learning experiences of NCHDs and other health professionals in the Irish healthcare system.

HOW MANY PEOPLE WILL BE IN THE STUDY?

Up to 15 NCHDs will take part in this study; each will be employed in the Irish public healthcare system.

WHAT AM I BEING ASKED TO DO?

You are being asked to participate in up to 3 interviews over a nine-month period. You will be asked about what learning means to you and how you learn when you're at work. You will then be asked about learning in a team in general – when you've learnt

something in a team and how you and your team go about problem solving and figuring out new things. You will also be asked to describe in a more detailed way different aspects of the process of learning in a team setting, which includes idea generation, developing an idea with your team, developing shared understanding as a team, the structures that help you learn in a team and how the organisational processes/procedures influence your approach and your team's approach to learning.

HOW LONG WILL I BE IN THE STUDY?

This study will take 9 months to complete. Each interview will take between 30 and 60 minutes to complete. With your permission the interviews will be recorded. The interviews will take place at a location of your choosing (eg: your home, your workplace, a coffee shop, etc.). I realise that you are busy and understand that the interview may be interrupted – the questions have been designed to allow for this likelihood. As such, the time from start to finish of the interview, allowing for disruptions, may vary from interview to interview.

WHAT ARE THE BENEFITS TO ME OF BEING IN THE STUDY?

The benefit of the study is to increase your awareness of aspects of how you learn, both as an individual and also as part of your team. This increased awareness has the potential to enable you to learn more effectively in the workplace.

WHAT ARE THE RISKS OF BEING IN THE STUDY?

The questions relate to your experiences of learning as part of your team and as such do not present a particular risk. However, should any criminal or harmful issues be disclosed to the researcher, it may be necessary for the researcher to report these, following consultation with her research supervisors, Dr. Felicity Kelliher and Prof. Denis Harrington.

CONFIDENTIALITY

For your participation in this study to be anonymous it would mean that your identity would not be known to the researcher. Participants taking part in the study will not be anonymous as they will be known to the researcher and potentially the research supervisors (if required).

Your participation in the study will be treated confidentially. Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study. While confidentiality applies, please be aware that, should any criminal or harmful issues be disclosed to the researcher, it may be necessary for the researcher to report these, following consultation with her research supervisors, Dr. Felicity Kelliher and Prof. Denis Harrington.

For confidentiality purposes you will be assigned an Identification Code and your name or other identifying factors will not appear in the final research documentation or related publications.

Information produced by this study will be stored in the researcher's file and identified by a code number only. The code key connecting your name to specific information about you will be kept in a separate, secure location. Information contained in your records may not be given to anyone unaffiliated with the study in a form that could identify you without your written consent, except as required by law. In addition, if used, you will be given the opportunity to listen to or read the audio transcript before you give your permission for their use if you so request.

WHO DO I CONTACT IF I HAVE QUESTIONS, CONCERNS, OR COMPLAINTS?

You may ask questions, voice concerns or complaints to the researcher (principal investigator), Louise Doyle by email XXX or by telephone XXX.

WHOM DO I CALL IF I HAVE QUESTIONS OR PROBLEMS?

If you have any questions regarding your rights as a participant in this research and/or concerns about the study, or if you feel under any pressure to enrol or to continue to participate in this study, you may contact my research tutor, Dr. Felicity Kelliher by email XXX or by telephone XXX.

A copy of this Informed Consent form will be given to you before you participate in the research.

SIGNATURE

I have read this consent form and my questions have been answered. My signature below means that I do want to be in the study. I know that I can remove myself from the study at any time up to data merge without any problems.

_____ _____

Signature Date

Print Name: _____

REQUEST FOR OVERVIEW INFORMATION

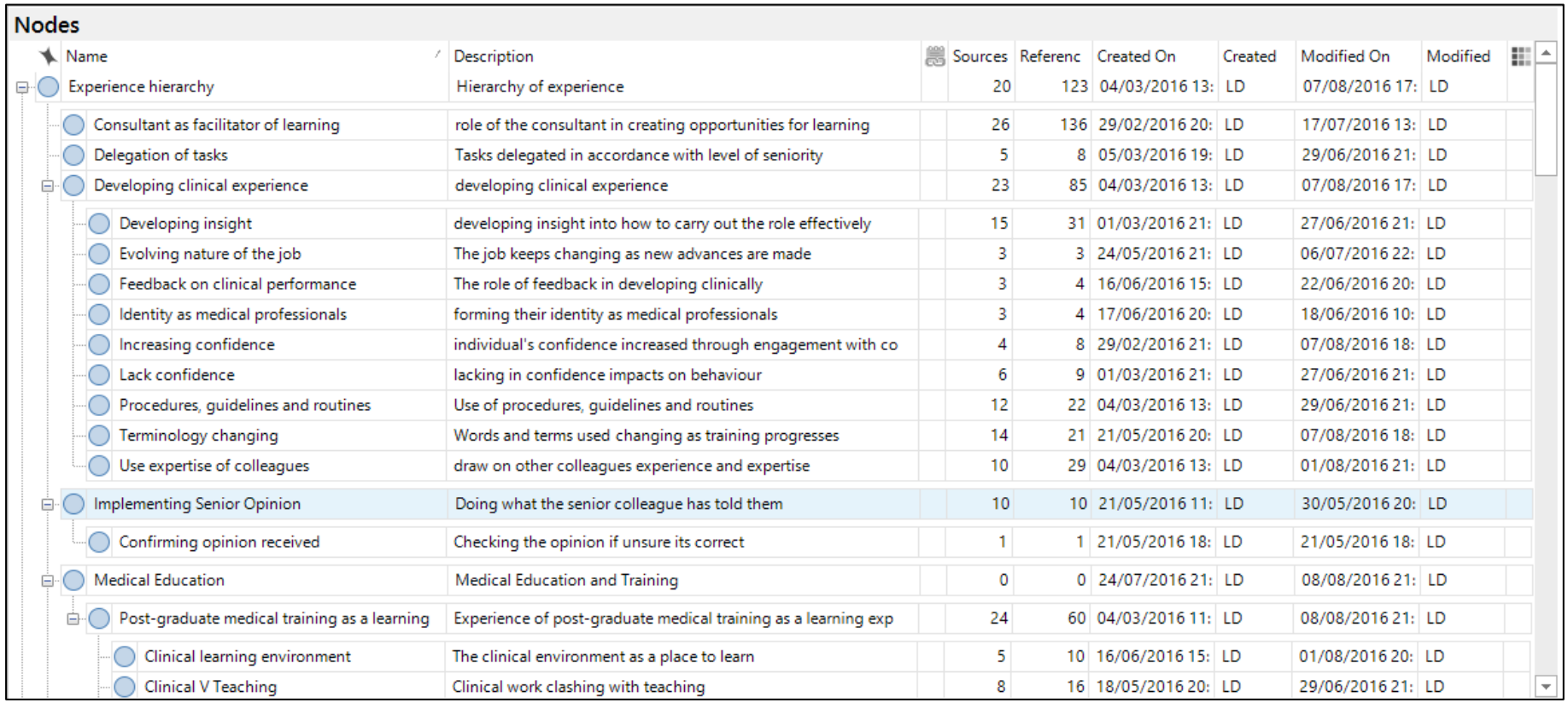
Thank you for agreeing to participate in this research study. Your time is greatly appreciated.

I would appreciate if you would answer the questions below prior to commencing the interview process:

1. What year of your NCHD training programme are you in?	
2. Are you in basic specialty training (BST), higher specialty training (HST) or streamlined training (ST)? BST ☐ HST ☐ ST ☐	
3. What is your job title? Intern ☐ Senior House Officer ☐ Specialist Registrar ☐ Senior Registrar ☐ Streamlined Training ☐ Year _____ Other (please specify) _____	
4. What is your specialty?	
5. What hospital are you currently working in?	
6. What date did you start working in this hospital?	
7. What date are you due to rotate from this hospital?	
8. What team(s) are you part of in this hospital?	
9. Are you: Male ☐ Female ☐	
10. What is your age bracket? 20 – 25 ☐ 26 – 30 ☐ 31 - 35 ☐ 36 – 40 ☐ 41 – 45 ☐ 46 – 50 ☐	

Participant No: _____

APPENDIX 9 – EXAMPLE OF A NODE FROM NVIVO



Nodes

Name	Description	Sources	Referenc	Created On	Created	Modified On	Modified
Experience hierarchy	Hierarchy of experience	20	123	04/03/2016 13:	LD	07/08/2016 17:	LD
Consultant as facilitator of learning	role of the consultant in creating opportunities for learning	26	136	29/02/2016 20:	LD	17/07/2016 13:	LD
Delegation of tasks	Tasks delegated in accordance with level of seniority	5	8	05/03/2016 19:	LD	29/06/2016 21:	LD
Developing clinical experience	developing clinical experience	23	85	04/03/2016 13:	LD	07/08/2016 17:	LD
Developing insight	developing insight into how to carry out the role effectively	15	31	01/03/2016 21:	LD	27/06/2016 21:	LD
Evolving nature of the job	The job keeps changing as new advances are made	3	3	24/05/2016 21:	LD	06/07/2016 22:	LD
Feedback on clinical performance	The role of feedback in developing clinically	3	4	16/06/2016 15:	LD	22/06/2016 20:	LD
Identity as medical professionals	forming their identity as medical professionals	3	4	17/06/2016 20:	LD	18/06/2016 10:	LD
Increasing confidence	individual's confidence increased through engagement with co	4	8	29/02/2016 21:	LD	07/08/2016 18:	LD
Lack confidence	lacking in confidence impacts on behaviour	6	9	01/03/2016 21:	LD	27/06/2016 21:	LD
Procedures, guidelines and routines	Use of procedures, guidelines and routines	12	22	04/03/2016 13:	LD	29/06/2016 21:	LD
Terminology changing	Words and terms used changing as training progresses	14	21	21/05/2016 20:	LD	07/08/2016 18:	LD
Use expertise of colleagues	draw on other colleagues experience and expertise	10	29	04/03/2016 13:	LD	01/08/2016 21:	LD
Implementing Senior Opinion	Doing what the senior colleague has told them	10	10	21/05/2016 11:	LD	30/05/2016 20:	LD
Confirming opinion received	Checking the opinion if unsure its correct	1	1	21/05/2016 18:	LD	21/05/2016 18:	LD
Medical Education	Medical Education and Training	0	0	24/07/2016 21:	LD	08/08/2016 21:	LD
Post-graduate medical training as a learning	Experience of post-graduate medical training as a learning exp	24	60	04/03/2016 11:	LD	08/08/2016 21:	LD
Clinical learning environment	The clinical environment as a place to learn	5	10	16/06/2016 15:	LD	01/08/2016 20:	LD
Clinical V Teaching	Clinical work clashing with teaching	8	16	18/05/2016 20:	LD	29/06/2016 21:	LD