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CONCEPTIONS OF EFFECTIVE
INFORMATION USE AND LEARNING
IN A TELE-HEALTH ORGANIZATION:

A PHENOMENOGRAPHIC STUDY OF
INFORMATION LITERACY AND
KNOWLEDGE MANAGEMENT AT WORK

RUBEN TOLEDANO O'FARRILL

A thesis submitted in partial fulfillment of the requirements of

The Robert Gordon University

for the degree of Doctor of Philosophy

December 2008

VOLUME 1

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VOLUME 2

Abstract

This research study investigates the concept of workplace information literacy (IL) theoretically and empirically, focusing on the connections between information literacy and knowledge management (KM). This dissertation examines the relevance and applicability of current IL frameworks in a workplace environment by means of a review of the literature, a review of NHS Scotland documentation on its KM initiatives, and a phenomenographic study undertaken with frontline staff at NHS24, a nurse-led, 24/7 service of NHS Scotland that provides over-the-phone consultation and health information. For that study, a working definition of IL as 'effective information use' was employed.

The concept of information literacy has been developed mainly within librarianship, researched mainly within educational contexts and focused on individual competence in information use. While its application to workplace environments has been assumed, comparatively little research has been done into workplace situations. On the other hand, the concept of knowledge management is directed at a wider organizational level. However, while there is a clear focus in the KM literature on the value of information and its importance for organizations, little attention has been paid to the theoretical and empirical developments of Library and Information Science (LIS) relative to information behaviour and effective information use.

The findings of this research identified limitations in the current IL frameworks, notably the lack of consideration for people's exchanges of knowledge and information and of the social sense making that influences information interpretation and application. The findings endorse views of learning and information use grounded in socio-constructive perspectives and a consideration of context as situated practice. The conclusions suggest the need for more collaboration between studies of IL and information behaviour, and for LIS research to focus more on workplace studies and knowledge management.

Acknowledgements

Thanks to the Robert Gordon University for granting me a scholarship through the RDI of the Dept. of Information Management.

Thanks to ITESO University in Guadalajara, Mexico, for additional financial support that helped me do this along with my family.

Thanks to Prof. Dorothy Williams for very professional, caring and knowledgeable support in supervising my research from the proposal stage to the submission of this dissertation. Thanks also to Sheila Webber of Sheffield University for agreeing to act as second supervisor.

Thanks to NHS24 frontline staff who participated in the interviews and particularly to Team Leaders Sheila Flaxman of the Aberdeen Centre and Moira McCabe of the Glasgow Centre who gave me invaluable help in arranging the interviews in a very busy environment. Also thanks to Dr. Ian Armstrong, former Director of Research at NHS24, and to Katie McGlew and Gillian Heron of the Knowledge Team at NHS24 for supporting this research.

Thanks to Dr. Peter Reid, Head of the Dept. of Information Management for supporting my participation as ad-hoc lecturer and tutor in several modules, which gave me valuable teaching experience and extra income. Thanks also to: Roddy Smith and Simon Burnett for including me in the Knowledge Management teaching team; Alan Hunt and Laura Muir for including me in the tutoring team for Professional Skills and Business Information Systems; and Sylvie Davies for including me in the MSc Research Methods tutoring team.

Thanks to Linda Toledano who has supported and accompanied me in this adventure, and in many others.

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Abbreviations and acronyms

ALA	American Library Association
ACRL	Association of College and Research Libraries (U.S.A)
ANZIL	Australia and New Zealand Institute for Information Literacy
BMJ	British Medical Journal
CAUL	Council of Australian University Librarians
CILIP	Chartered Institute of Library and Information Professionals
CH	Call Handler (NHS24)
HIA	Health information advisor (NHS24)
IL	Information literacy
IBS	Information behaviour studies
KM	Knowledge management
LIS	Library and information science
NA	Nurse advisor (NHS24)
NES	NHS Education Scotland
NHS	National Health Services
OECD	Organization for Economic Cooperation and Development
PRM	Patient Record Management (Information system)
SCONUL	Society of College, National and University Libraries (UK)
TL	Team Leader (NHS24)

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- Appendix 1. Final clearance for this study from NHS24's Clinical Director
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Chapter 1. Introduction

This research study investigates the concept of workplace information literacy (IL) theoretically and empirically, focusing on the connections between information literacy and knowledge management (KM) and exploring the possible contributions of IL to effective information use for knowledge build up and transference in organizations. An empirical study was undertaken with frontline staff at NHS24, a nurse-led, 24/7 service of NHS Scotland that provides over-the-phone consultation and health information.

The relevance of the problem stems from the fact that effective information use has become important in the contemporary workplace, mainly as a consequence of the rapid development of computers and networks that have made access to enormous amounts of information a matter of everyday life for people in organizations. Also influential have been the changes in the economic and business environment, which has become chronically less stable, more competitive and globalized (Drucker 1993; Castells 2001; OECD 2000). Within this context, business theory has proposed the centrality of developing intellectual capital and capabilities for innovation as the main sources of sustained competitive advantage. The resource-based view of the firm gives rise to the idea of managing the processes of knowledge acquisition, transfer and application in organizations (Nonaka and Takeuchi 1995; Davenport and Prusak 2000; Hislop 2005; McKenzie and Van Winkelen 2004). While the development of the so called 'information society' has affected all aspects of contemporary life, it has presented important challenges to management which include (Drucker 2002; OECD 2005):

- The development of competitive advantages in business based on the use of knowledge and information;
- The creation of new businesses based principally on information;
- An increase in the exchanges of goods and services through virtual stores and outlets (e-business).

- Developing a trained workforce capable of accessing, sharing and applying information in knowledge intensive organizations.

The importance of effective information use in organizations has been recognized (Choo 2005; Kirk 2004; Abell and Oxbrew 2001), and the complex phenomena related to it have been studied from a variety of disciplinary viewpoints and focuses. Within Library and Information Science (LIS), both IL and information behaviour studies (IBS) have made contributions which focus on information awareness, retrieval and evaluation as complex processes involving individuals in specific situations, roles and tasks. In the management literature, however, information use has been approached from two main positions which almost seem to skirt the complexities of information use and application. On one hand, there has been a focus on IT skills development based on training programs such as ECDL (2008). On the other hand, the concept of knowledge management is directed at a wider organizational level. While there is a clear focus in the literature on the value of information and its importance for organizations, little attention has been paid to the theoretical and empirical developments of LIS relative to effective information use and application of information within the knowledge-managed organization.

“The concepts of information sharing, utilization and creation imply a level of information-handling skill that has been taken for granted but not explored in any depth outside of the LIS academic arena, where there is an established interest in information-seeking behaviours” (Abell and Oxbrow 2001, p. 141)

Knowledge management seems to lack a robust understanding of effective information use in the organization at its theoretical basis, as the majority of the literature related to using information in organizations focuses on a limited set of information using skills (Bocij 2006; Effy 2006), which seem to fall short of enabling the individuals and the organizations to achieve the loftier aims of knowledge creation and transference. Even though some of the literature in management explicitly relates information use to more complex tasks such as decision making and planning (Mintzberg 2003), it is

not easy to find a comprehensive and coherent approach linking skills of the individual, information awareness and application of information to tasks and organizational aims. A few authors (Abell and Oxbrow 2001; O'Sullivan 2002, Choo 2005; Cheuk 2000; Thompson 2003; De Saulles 2007; Candy 2000; Mutch 2000) have proposed that IL is an important aspect of developing organizational capabilities in the information-intensive, knowledge-managed workplace and have argued for more research into this area.

The concept of information literacy has been developed fundamentally within librarianship and researched mainly in educational contexts. While its application to workplace environments has been assumed, very little actual research has been done into workplace situations, and this has been pointed at as both a weakness and an opportunity. It is also a contested concept, as some authors have levelled criticism at its lack of definition and all-encompassing nature (Snaveley and Cooper 1997; Bowden 2001; Pawley 2003; Marcum 2002). Finally, the concept is scarcely found in the mainstream management literature but it seems possible to link the concepts of information literacy and KM at several levels, basically related to the application of information to workplace learning, sense making and decision making (Mutch 2000; Cheuk 2000; O'Sullivan 2002; Abell and Oxbrow 2001).

Although there has been some research on IL in workplace settings, with new viewpoints developed mainly around user and practitioner conceptions of IL (Bruce 1997, Cheuk 1998, Kuhlthau and Tama 2001; Limberg 1999; Lupton 2004; Bruce, Edwards and Lupton 2006; Lloyd 2006; Boon, Johnston and Webber 2007), it remains uncertain to what extent the current theoretical assumptions found in the mainstream frameworks (ACRL 2000; SCONUL 1999; Bundy 2004; CILIP 2007), which have been developed mostly for educational purposes, are applicable to workplace situations. For example, the concepts of communities of practice (Wenger 1999), virtual work groups and information sharing in organizations, all of which rely heavily on personal interaction, are challenging to the mainstream understandings of IL which are strongly based in the use of

documental sources of information and their application to scholarly tasks. The concept of situated practice is also challenging as IL has addressed a range of generic abilities and skills that often appear de-contextualized, and has focused on individual and autonomous learning. Frameworks for information literacy seem to have been developed largely based on a belief of high individual agency. The ideal type of information literate person is an autonomous lifelong learner who has developed the necessary scaffolding to find her way through the maze of information sources and learning challenges.

Other perspectives into information literacy have been developed from process-models of effective information use (Kuhlthau 2004; Dervin 1998) which have incorporated research concerns and methodological approaches from information behaviour studies. The links between IBS and IL are explored in this dissertation because of the fundamental relation between them, which is that IL *is about* information behaviour. Both areas offer relevant concepts, models and frameworks for explaining effective information use. However, there are important differences in the respective approaches. Information literacy is derived from the professional knowledge and experience of librarians, closely connected with educational environments and their concerns. IBS are a derivation of the fundamental interest of information science in information retrieval. While these concerns are in fact 'joined at the hip', they have developed into different communities of research and practice. Knowledge management represents a potential opportunity for them coming together.

Discussing information behaviour models within this dissertation is relevant also because research into workplace IL is scarce, while research into information behaviour has produced models applicable to workplace situations. To consider those developments seems necessary for the discussion of workplace IL and also to establish its links with knowledge management. Research into information behaviour has more abundantly addressed workplace information use and has provided important concepts which have been incorporated into IL, such as that of information needs. But the research focus in this field has typically been put on specific aspects

of information retrieval, such as browsing or searching, developing several models of information use (Kuhlthau 2004; Dervin 1998; Sonnenwald 1999; Wilson 1999; Bystrom and Hansen 2005; Widen-Wulff 2007). The sense-making model is reviewed within the discussion of information behaviour models in chapter 2, particularly from the point of view of its connection to decision making, which is a central activity of the frontline staff at NHS24, where the empirical study was conducted. The idea of a state which can be perceived as a gap in knowledge, an information need, or other problematic situation, and the bridging or fulfilment of the gap are a clear metaphor for many decision-making situations (Dervin 1998; Cheuk 1998).

A particularly important, and problematic, concept in both IB research and IL frameworks is that of 'context'. It has received growing consideration in the IBS literature and it is discussed centrally in this dissertation from the theoretically strong concept of 'situated practice', which incorporates a perspective on learning from a socio-constructivist point of view (e.g. activity theory) as well as a consideration of material, discursive and phenomenological aspects of the situation which have support in social theory (Bouveresse 1999) and philosophical critical realism (Archer et al 1998). Discussing context in relation to information behaviour is also important in view of how it has remained under-researched in IL. The problem of context has also been approached by some theorists related to KM (Wenger 1999; Brown and Duguid 2000; Tsoukas 2005; Billet 2004) through the concepts of situated practice, communities of practice and activity theory.

The theory of situated activity integrates mental states, action and cultural-historical elements of the situation where the learning is happening as participation in an ongoing activity (Elkjaer 2003). This view fundamentally shifts the creation of knowledge from a mental cognitive activity to a process of engagement in social interaction, pointing to the concept of *knowledgeability* rather than to the static possession of knowledge. The development of new knowledge, a central premise of knowledge management, is not seen in this theory as simply a cognitive process of acquisition and organization of information, but of development of more

complex knowledge, including bodily skills, within zones of proximal development which are recognized and approached through social sense making, rather than individual critical thinking. Context is not so much some space into which one is placed, but an order of behaviour of which one is part. Practices, and communities of practice, entail the centrality of tacit knowledge and this concept is discussed in this dissertation from the point of view of how it relates to information behaviour and IL.

Information use, learning and collaboration are particularly important activities at NHS24, which involve meaning creation and sense-making. Understanding them using the concept of situated practice is useful, as it involves a theoretically well developed understanding of 'context', which in this view includes not only ancillary elements and external influences to behaviour, but the idea that knowledge itself is embedded in practices. This means it is not only collectively elaborated as cognitive mental models, but that in fact a lot of it is tacit, bodily and affected by the circumstances of the situation in a way that actually makes knowledge to be embedded in, and inseparable from, practices (Blackler 1995; Elkjaer 2003; Tsoukas 2005). Four main aspects of a situation or situated practice are considered in this dissertation:

- Material elements (e.g. people; buildings; documents; information systems, etc.)
- Individual phenomenological level of sense making (experience; perception; conceptions)
- Community level of sense making (dialogue; shared meanings)
- Cultural level of sense-making (discourse; ideology)

This dissertation approaches the study of situated information use by NHS24 frontline staff mainly from the phenomenological angle, through the study of conceptions of effective information use. There is also consideration of some aspects of information behaviour and interactions between participants reported in interviews, as well as of organizational NHS documentation related to its KM initiatives. The discussion of the

findings situates the conceptions as belonging to a particular frame of reference, a context of activity, which is being explored from the institutional documentation and the interview material.

The aim of researching the relationships between workplace IL and KM is a complex endeavour, as neither is a simple concept. One central problem in the discussion of workplace information literacy is the definition of the term. Not only has it been defined in different ways over time, but the words 'information' and 'literacy' on their own are problematic as well:

"It is said that we live in an Age of Information, but it is an open scandal that there is no theory, nor even definition, of information that is both broad and precise enough to make such an assertion meaningful." (Goguen 1997)

This dissertation has employed a working definition of IL as 'effective information use' for the empirical study, and this is discussed in chapter 4. Other definitions found in the literature are discussed in chapter 2. But rather than embracing a particular definition of IL, this dissertation has aimed at exploring what the concept means to the participants in a particular workplace setting.

Definitions of information range from the objective to the subjective or situational (Bates 2006; Hjørland 2007) and epistemological stances are not always clear or disclosed when the term is used in various models and frameworks, even though they have important implications for their understanding and application. The concept has been theorized variously from the points of view of cognitive psychology, philosophical hermeneutics and socio-cultural constructionism, leading to different implications in its interpretation and application. For example, if the meaning of information is understood to emerge from inter-subjective or cultural construction, this has important implications for organizational interaction, such as highlighting the importance of engaging in dialogue rather than just passing on information.

Learning is an important concept in this dissertation as, even from a common sense understanding, information and knowledge have a clear

connection with learning. For example, we ordinarily use books, the Internet and other information resources in school and they are expected to be useful in developing different types of knowledge within our learning processes. However, learning is another theoretically complex concept. Learning theories variously focus on: behavioural change; change in cognitive structures; the social creation of meaning in interaction; and the cultural creation of meaning through language. Moreover, learning theories have not just evolved and superseded earlier ones, but in practice they can be found to co-exist and therefore give rise to models and frameworks that have actually different bases. KM initiatives typically employ several strategies, from intranets and document repositories to personnel training programs to cultivating communities of practice, that can be grounded on different (and sometimes conflicting) implicit theories of knowledge and learning.

Literacy is a concept that is naturally related to learning as a tool and a means of scaffolding (Holme 2004; Barton and Hamilton 2000). Learning to read and write allows the process of learning to open up to new resources and horizons (Graff 1994; Maybin 1994). The concept implies a capacity for de-codification, but also to be able to go further in the exploration of meaning. However, as the information environment has grown in complexity the concept of literacy has been expanded and adapted to include the capability to engage with more varied types of information sources and with new modalities of learning. The concepts of *literacies* or *multiliteracies* have been coined to convey the complexity of the scaffolding needed for learning in today's information environment (Martin and Rader 2003; Martin and Madigan 2006). These developments have shown strong disciplinary biases toward different aspects of information use: computer literacy, media literacy, information literacy, etc. The latter concept has been considered the disciplinary response of librarianship to the challenges of the information society (Kapitzke 2003). All *literacies*, however, are about engagements with information in various modalities, using diverse sources, media and information technologies. And they are all centrally related to sense-making and learning.

An important aim of the discussion of the concepts involved is to connect positions across the literatures of several disciplines and practical fields often quite removed from each other (e.g. librarianship and business management) where different understandings of key concepts are found. It is considered that to research and develop the concept of workplace information literacy an approach is required that purposefully looks at the possibility of cross-feeding between disciplines, as the problem itself straddles more than one field of inquiry. This dissertation has attempted to connect positions in the literature through an extensive and systematic review, and to discuss that review in relation to the findings of the study of NHS24 frontline staff conceptions of effective information use and the examination of NHS Scotland institutional documentation on their KM initiatives.

It is interesting to note that KM has more specifically and clearly addressed the problem of learning than is often found in LIS. In many authors we find a clearer understanding of the social aspects of learning along with a sharper distinction between information use and knowledge development. Some KM theorists have recognized to a greater extent that accessing information is not equal to learning or equal to being able to mobilize knowledge appropriately, and have rightly emphasized the importance of social interaction, information sharing, and dialogue within a more complex understanding of learning and organizational processes (Hislop 2005; Tsoukas 2005; Snowden 2002).

Within KM models, learning and information sharing are considered to be fundamental activities that support business processes such as planning, quality management, decision making, and direct service provision. They are also the basis for growth and the development of new capabilities, knowledge and products. NHS Scotland has, as far as their institutional documents reveal (chapter 6), clearly focused continuous learning and information support as centrepieces of their KM initiatives, along with fostering collaboration and sharing of knowledge and information. The following diagram represents four aspects of the knowledge-managed

workplace which are centrally focused by this dissertation (and are expanded upon in chapters 2 and 3):

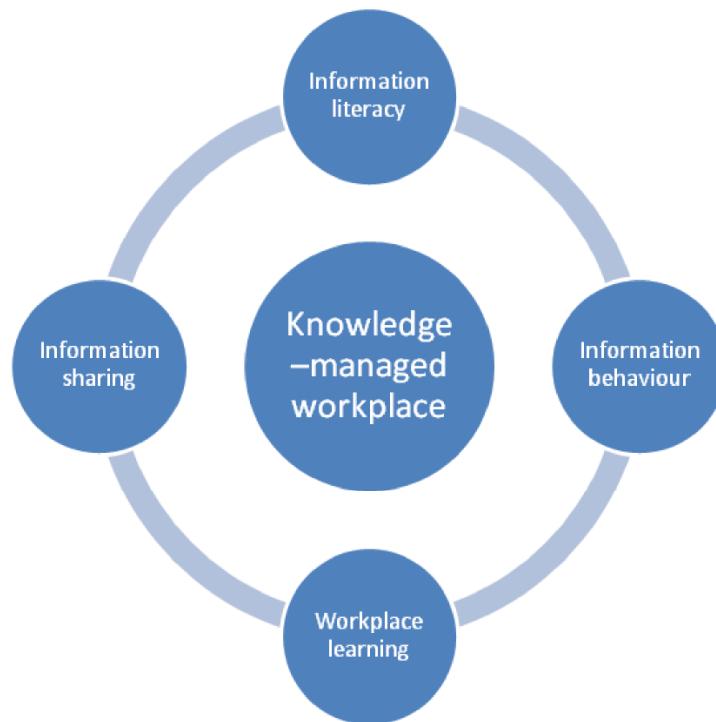


Figure 1. Four main aspects of the knowledge-managed workplace

There are three aims of KM considered central from the point of view of this dissertation, which are developed through KM processes and systems (Jashapara 2004):

- *Knowledge support*, the main part of which is related to information management through the use of documental knowledge bases, but is also based on information exchanges between people.
- *Learning support*, which includes training activities as well as other learning strategies both inside (coaching, mentoring, talks) and outside the organization (degrees, secondments).
- *Development of collaboration and sharing*, which is fostered within the organization by appropriate leadership, culture, communication and incentives.

Holsapple (2002) has proposed the inseparability of KM and information technologies, and this aspect is evident in the importance of information management within KM. However, it is clear from the literature that KM centrally involves human interaction and learning and that these aspects are considered the main basis for further developments (Brown and Duguid 2001; Snowden 2002; Tsoukas 2005; Hislop 2005). The focuses on experiential learning, reflection on practice, and social construction as sources of knowledge and meaning, which have developed with input from many sides (i.e. phenomenological philosophy, socio-constructivist learning theories and social theory), have led to the consideration of social practices as systems of activity.

Thus, the research problem basically consists of investigating the way in which concepts of IL can be linked with KM, and the suitability of current IL frameworks to the knowledge-managed workplace.

1.1 Research aims

As the basic problem was developed into a research proposal, the following research aims were established:

- To investigate the concept of workplace information literacy theoretically and empirically and to discuss the relevance and applicability of current IL frameworks in workplace environments.
- To discuss the connections between information literacy and knowledge management, exploring the possible contributions of IL to effective information use for knowledge build up and transference in organizations.
- To offer conclusions that can provide relevant feedback into frameworks and practices of information literacy and knowledge management.

These aims were pursued by the following strategies:

- a) A review of the relevant literature presented in chapters 2 (Information literacy, information behaviour and learning theories) and 3 (Knowledge management and workplace learning).
- b) The conduct of an empirical study of conceptions of effective information use of frontline staff at NHS24 (Chapters 4 and 5).
- c) The analysis of NHS Scotland institutional documentation related to their KM initiatives, in order to identify the understanding of the concept of KM, and some aspects of its application, within that organization (Chapter 6).
- d) The discussion of the findings of the empirical study and the documentation on NHS Scotland's KM initiatives (Chapter 7).

The following research questions were developed that add specificity to the research aims and particularly to the empirical research study:

- How are NHS24's frontline staff conceptions of effectiveness and effective information use related to NHS Scotland's institutional strategies for knowledge management?
- How are NHS24's frontline staff conceptions of effective information use related to relevant aspects of their workplace practice?
- What is the relevance and applicability of current IL frameworks to the workplace environment of NHS24?

The research questions basically reflect an exploratory approach to the problem that was based on the relative lack of prior research into workplace information literacy. Therefore, no single IL model or framework was used as reference nor was there any intention of assessing or validating any of them.

It should be highlighted that the empirical research aims present two main facets, reflected by the research questions:

- First, there is the aim of researching conceptions of effective information use, which involves a focus on the phenomenological experience of NHS24 frontline staff within their situated practice.
- Second, there is the aim of exploring the relationships between their conceptions and other aspects of their practice, including the knowledge management initiatives of NHS24.

The distinction between the two is relevant in terms of the research methodology, as each requires a different approach. The first one is related to conceptions of a phenomenon which belongs to the direct experience of the participants and was approached using a phenomenographic methodology (see chapter 4), the findings of which are presented in chapter 5. The second is related to organizational strategies, initiatives and processes which are experienced indirectly by participants (i.e. mainly through their effects or consequences) as structural aspects of the situation, and which were researched from institutional documentation (presented in chapter 6). Knowledge management is therefore not being treated in this study as a phenomenon perceived as such by the participants, but as a key aspect of the organizational environment which will be discussed in relation to participants' conceptions of information literacy and their workplace use of information.

1.2 The empirical study

NHS24 was selected to conduct the empirical study because it was considered from the examination of the literature that it would make it more likely to fulfil the research aim of exploring the relationships between

information literacy and knowledge management if the empirical study was carried out in an organization which:

- Employed significant numbers of knowledge workers,
- Made an intensive use of information,
- Had people working together as teams in close proximity and
- Had embraced and applied explicitly the concepts of knowledge management.

The study was carried out with frontline staff at NHS24 as participants. These people are the Call Handlers (CH), Nurse Advisors (NA), Health Information Advisors (HIA) and Team Leaders (TL). The central technique of data collection used in this research was the semi-structured interview. This is the normal source of data for phenomenographic studies. A total of 42 interviews were carried out at the Aberdeen and Glasgow NHS24 Centres.

The methodological approach follows in the line of user-centred studies which have researched conceptions of information literacy by sourcing practitioners' views of the phenomenon. But it is trying to make a difference in broadening the analysis of the phenomenographic study to include some aspects of the practices of the participants, using additional information taken from the interviews, from direct observations of the workplace and from NHS institutional documentation. The aim is to discuss how participants' conceptions relate to aspects of their work practice, including the institutional initiatives for knowledge management. This research seeks to explore the meaning of effective information use, while striving to acknowledge the social context that permits understanding the phenomenon as situated event.

The concept of effective information use was considered a point of connection between information literacy and knowledge management. It has been used before (Bruce 1997) as a proxy for information literacy, and Webber and Johnston's (2004) definition of IL as 'appropriate information behaviour' implies the idea of effectiveness as well. A central premise

behind both information literacy and knowledge management is the idea of higher levels of performance (doing things in 'effective', 'appropriate' or 'successful' ways) in relation to information use. Effectiveness is expected to increase generally with better information management, collaboration, information and knowledge sharing, and is strongly related to learning in the KM perspective. (Nonaka and Takeuchi 1995; Davenport and Prusak 1998; Choo 2005). The concept of effectiveness was therefore central in the empirical study, and was investigated at two levels:

- a) Participants were asked about their conceptions of effectiveness in their jobs, and
- b) About their conceptions of effective information use.

Literacy and effective information use can only be understood in relation to particular contexts of activity, including the purposes of that activity. This is recognized in most models of information behaviour (Wilson 1999) and has been further highlighted by the focus on situated practices. Therefore, the investigation of effectiveness in the job is not ancillary; it is not just a means of getting to the problem of literacy, but is intrinsic to the phenomenon of interest. This research is focusing on effective information use as it is conceived of by the interviewees at NHS24 in relation to their job situations.

The study also enquired about participants' practices of workplace learning. Learning is directly related to using information, both as cause and effect. We seek information when we need to learn about something, and we learn to some degree when we receive information, even by having it pushed at us. Workplace learning at NHS24 is strongly influenced by inter-personal exchanges of information and knowledge, as the interviews showed consistently. Continuous learning is very important at NHS24, as a combined result of the challenging nature of the job, the management initiatives to support quality and safety in the service, and the personal motivation of employees. Several aspects of learning are evidenced in conceptions of effectiveness in the job and effective information use.

Literacy, as many other forms of knowledge, is mainly tacit. This is particularly the case when there is a high degree of development of knowledge and related skills. All the participants interviewed are capable workers, some of them with experience of many years, and are considered knowledgeable and information literate within their work environment. This research has thus not made an attempt at measuring their information literacy, but rather has tried to obtain a picture of how this knowledge is reflected on by the participants as part of their workplace practice.

1.3 Layout of the dissertation

Following this introduction, the literature review is presented in two chapters:

- Chapter 2 introduces the discussion on literacy, information literacy, information behaviour studies and learning theories.
- Chapter 3 focuses on knowledge management, organizational learning, workplace learning and decision making.

Chapter 4 presents the methodological approach, including background concepts and the applied research methodology.

Chapter 5 presents the phenomenographic outcome spaces of effectiveness in the job and effective information use resulting from the analysis of the interviews.

Chapter 6 presents the analysis of NHS Scotland and NHS24 documentation related to their knowledge management initiatives.

Chapter 7 presents the discussion of the findings of the phenomenographic study and the institutional documentation on NHS Scotland's KM initiatives.

Chapter 8 offers some conclusions relative to the aims of this study.

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Chapter 2. Information literacy and information behaviour studies: models and research from school to workplace.

This chapter will review the development of concepts, models and frameworks related to the central concern of this research with workplace information literacy:

- The concepts of literacy and *multi-literacies*
- The institutional information literacy frameworks for education, which show the main aspects of this concept as it has been developed by the large librarianship associations.
- User-centred research into information literacy that moved the focus away from experts' definitions of IL and on to people's experience and conceptions of it.
- Research into workplace information literacy.
- Process-orientated models of information behaviour that have influenced the notions of information literacy and have developed concepts applicable to workplace information use.
- The evolution of the concepts of 'need' and 'context' as central to workplace information behaviour and literacy, and a realist approach to situated learning practices.

The fundamental value of literacy for functioning in society is important as ever (Bawden 2001; Lankshear et al 1997; Levy and Roberts 2005), but its definition has gone from possessing the basic skills for writing and reading to the capability for engagement with multimodal media and sources of information, in a more complex and challenging environment. Several aspects of literacy are variously focused by different disciplines (Martin and Rader 2003; Martin and Madigan 2006), as engagements with media, documentation or computers.

Information literacy has basically developed as a disciplinary contribution of librarianship to the challenges of the information society, which has had a significant influence in educational environments (Rader 2002; Williams 2005) mainly through the frameworks endorsed by the major librarianship associations and professional bodies of the English-speaking countries:

- The American Library Association (ALA)
- The Association of College and Research Libraries (ACRL)
- The Australian and New Zealand Institute for Information Literacy (ANZIL)
- The Council of Australian University Librarians (CAUL)
- The Society of College, National and University Libraries (SCONUL); and
- The Chartered Institute of Library Professionals (CILIP)

Other perspectives into information literacy have been developed from user-centred research into conceptions of IL (Bruce 1997; Limberg 1999; Lupton 2004; Bruce, Edwards and Lupton 2006; Webber, Boon and Johnston 2005) and process-models of effective information use and sense making which have incorporated research concerns and methodological approaches from information behaviour studies (Kuhlthau 2004; Dervin 1998).

Most research into information literacy has remained within educational environments, and IL studies of workplaces are very few (Bruce 1997; Webber, Boon and Johnston 2005; Cheuk 1998; Kuhlthau and Tama 2001).

Information behaviour studies (IBS) have generally influenced information literacy frameworks and research, although this connection has not always been acknowledged. It is particularly important to review some of those models to include them in the discussion of workplace IL, as there has been much more research into workplace uses of information coming from that perspective. Of particular interest is the analysis of the evolution of the concept of 'context' in IBS, as one of the main criticisms levelled at the concept of IL is its lack of contextualization (Kapitzke 2003b; Pawley 2003)

and valuable insights can be gained from how it has been considered as a determinant of information behaviour.

The study of 'context' has been subject to epistemological positions that variously focus: material, phenomenological and socio-cultural elements. The material consideration includes the definition of attributes of an environment and the people in it; the phenomenological perspective concerns experiences and conceptions of reality from an individual psychological perspective; the social-cultural view of context puts the focus on cultural elements such as language, discourse and ideology. The latter perspective is also related to the social construction of meaning through interaction and mediation, leading to the concept of 'situated practices' (Lave and Wenger 1999; Brown and Duguid 1996, 2000; Billet 2004).

2.1. Literacy, *literacies* and multimodality in information use and learning.

The developments of the information society have spawned a multitude of technologies, unfathomable amounts of textual, aural and visual documents, and a cascade of *literacies*: computer literacy, media literacy, visual literacy, information literacy, etc. (Bawden 2001; Cope and Kalantzis 2000; Kress 2003; Snavely and Cooper 1997; Street 2003).

"It would be fair to say that debates on the concept of literacy reflect the need for a much broader conception, one which recognizes that 'literacy' means different things in different contexts" (Mutch 1996 p. 61)

The proliferation of terms, which are offshoots of the concept of literacy, manifest the importance of different abilities for interpretation and expression, based on notions of reading and writing extended beyond basic skills, printed media and a single language. These *literacies* are all mostly the result of discipline-based reactions to the events of the information society. The notion of being "information literate", for example, can be viewed as the library profession's response to technological change and to the proliferation of information (Kapitzke 2003b). This has meant a strong

focus on the use of particular types of documents (e.g. books and journal articles) and specific practices that are traditionally part of educational life, such as essay writing (Elmborg 2006).

One aspect of the discussion on *literacies* regards the proliferation of names for aspects of literacy such as computer literacy, media literacy, digital literacy, and information literacy, and whether these are making any useful distinctions between related concepts or they are rather just generally pointing at the same type of phenomenon under different names (Owusu-Ansah 2005).

“Definitions of these literacies have largely emerged from outwith the information and library professions, yet on the face of it suggest a considerable synergy with information literacy.”
(Williams 2005, p. 56)

Some concepts are evidently more encompassing, while others point at specific engagements with media types or technologies. For example, digital literacy is a broader concept than computer literacy; media literacy seemingly focuses on a class of information resources and the means of access to them; information literacy has been strongly associated with library instruction, etc. Of practical significance for education and training is the issue of how much convergence there exists within these various definitions, whether some of them subsume others, and how they should take priority in the curriculum.

However, a more central issue seems to be the generalized acknowledgement of the importance of the multimodality of information sources, means of access and ways of learning that are available in contemporary society, and which constitute both affordances and challenges. Cope and Kalantzis (2000) highlight the increased “multiplicity and integration of significant modes of meaning-making where the textual is also related to the visual, the audio, the spatial, the behavioural and so on. This is particularly important in the mass media, multimedia, and in electronic hypermedia” (p. 5)

Another important issue is brought up by critical approaches to literacy, which make it a central aspect of the engagement with power and ideology in social life. Literacy is understood to work both from a domination point of view, where it is seen to be the medium for integration and functionality into the mainstream social organization which is largely determined by power holders (Street 2001; Gee and Lankshear 1997), and as a means of liberation from ideology and the possibility of freer choice (Freire 1998).

For Arp (1990) literacy is seen as competence in communication that enables individuals to function within their social environment. Both literacy and the various *literacies* are valued for the way in which they can enhance functionality, and this has changed over time:

"Colonists were literate enough if they could sign their name, or even an X, on deeds. Immigrant children in the 1800's were considered literate when they were able to hold a book and reel off memorized portions of a text. Not until WWI did literacy start to mean the ability to extract the *who, what, where, when, and how* of unfamiliar text. What we now define as 'higher literacy' goes much further and entails the ability to make inferences from material, formulate questions, and develop ideas. (Lichtenstein 2000, p. 48)

Oxenham (1980, p. 6-13) also stresses the functional aspect of literacy stating that the skills of reading and writing are means to various ends. Literacy is *for* something. In this regard, the combined pressures of commerce, technology, government, politics, religion and culture have created needs, rewards and demands for literacy.

The OECD (2005) describes the social purpose of literacy as "using printed and written information to function in society in order to achieve one's own goals, and to develop one's knowledge and potential".

Oxenham goes on to highlight the technological nature of literacy:

"Language is prior to literacy, and while language can be considered part of the natural equipment of human beings, literacy is not. It is an extension of language, but it is an artefact. Even more than that, the skills and conventions of literacy have been deliberately invented to assist memory and

communication. Literacy is therefore a technology.” (Oxenham 1980, p. 41)

However, it also implies a critical awareness of cultural assumptions, ethical norms and the aesthetic value of the printed word.

“The concept of literacy goes beyond simply being able to read; it has always meant the ability to read with meaning, and to understand. It is the fundamental act of cognition” (Gilster 1997)

Clifford (1984) suggests abandoning the dichotomous framework of literate or illiterate, in favour of the conception of literacy as a continuum where “at one end lies some ability to reproduce letter combinations ... at the other end, such language learning behaviours as are called logical thinking, higher order cognitive skills, and reasoning”

Bawden (2001) reviews definitions of literacy that point to a broader understanding of the concept, suited to a more complex informational environment. All imply a focus on skills development, but also the generation of meaning:

- “Literacy, beyond embracing the basic abilities of reading and writing, now embodies the general ability to understand and perform functions successfully.
- Literacy can be defined as having the skills one needs to make the connection to the information necessary to survive in society.
- Literacy involves the integration of listening, speaking, reading, writing, and critical thinking; it incorporates numeracy. It includes a cultural knowledge which enables a speaker, writer or reader to recognize and use language appropriate to different social situations. For an advanced technological society ... the goal is an active literacy which allows people to use language to enhance their capacity to think, create and question, in order to participate effectively in society.
- Literacy is that demonstrated competence in communication skills which enables the individual to function, appropriate to his age, independently in society with a potential for movement in society.” (p . 221)

These categories reflect several key focuses which involve particular abilities and skills, as well as higher order abilities such as critical thinking which is strongly advocated in the IL frameworks. Martin and Rader (2003) also point out some key aspects of multi-literacy, some of which are part of IL:

- Using computers and generally information and communication technologies.
- Accessing and interacting with mass media and communication.
- Interacting with multi-media information resources.
- Accessing and interacting with scholarly communication, documentation and libraries.

An important feature is that all *literacies* are about engaging with information. Lanham (1995) argues that "literacy, *per se*, in a digital age means ability to understand information however presented".

While the discussion of literacy has been mostly related to education, it has also been considered relevant to work. Street (2001) highlights the emergence of three 'new orders' associated with globalisation, in the realms of work, communication and epistemology that require "radical rethinking of what counts as literacy" (p. 13). The new work order (Gee and Lankshear 1997) is no longer defined along Taylorist and Fordist lines of thinking, but rather geared towards flexibility and adaptation to change, with a much greater emphasis on the importance of the consumer and the nuances of market. Driven by these issues, the focus is now on collaboration, team-working and negotiation and the development of the skills which enable it:

"In order to accomplish this, all members of a team have to be equipped with the discursive skills that such negotiation and development involve, such as ability to present an to hear arguments and to develop material on communicative devices such as overheads, projectors, computer displays and so on" (Street 2001, p. 14)

Kress (2003) suggests that a new communicative order is based on a context in which reading and writing are only a part of what people are

going to need to be literate in the future. They will also need to handle the iconic systems proper to new communicative practices, a wider range of semiotic systems that cut across reading, writing and speech, with much more important visual aspects.

Finally, Barnett (1997) and others (e.g. Lyotard, 1984) highlight the role of postmodernism in changing the epistemological order towards a greater value of the local against the universal, including the critique of modernism and the values of the Enlightenment. The wider commercial distribution and marketing of knowledge outside universities is based on numerous non-academic settings such as corporations and leisure outlets. The monopoly of the university in validating knowledge has been challenged, and this imposes new demands on literacy practices.

A critical literacy (which is not the same as critical thinking skills) involves knowledge about the ways and methods that society uses to construct itself through discourse conveyed in written and visual language and the skills necessary to enable, for example, awareness of discourses and the consequent ideological working of documents (Lankshear et al. 1997). The need for criticality, reflection and acknowledgement of particular standpoints is related to the paradox of increasing local diversity and global connectedness. Mass media deliver a multiplicity of messages every day that imply a complex construction and negotiation of differences (Cope and Kalantzis 2000).

Despite criticism that the concept of literacy belongs to a project of modernity (Holme 2004; Kapitzke 2003a; Graff 1994), it can now also be seen as part of the reaction emerging from movements such as post-modernism and critical discourse analysis against the concepts of functionality, master narratives (Lyotard 1984), the controlling power of texts, and the established authorities behind them (McKenzie 2003). Emancipatory pedagogy (Freire 1998) has shown how individuals and smaller communities can be empowered through literacy by taking control of their own interests, rather than becoming literate to function in a global capitalist economy. Stand-point epistemologies (Trosow 2001) posit a shift

from the pretended neutrality of individuals and institutions toward the recognition of women's, gay's, children's and ethnic minority rights, and generally those of the locality. Literacy takes particular meanings in local communities and should serve to convey particular interests in specific ways.

2.2 Information Literacy: the librarians' response to the Information Society.

The concept of Information Literacy has been developed fundamentally by librarians in close relationship to educational uses of information (academic librarians have played a primary role). IL has evolved mainly as an educational concern (Martin and Rader 2003; Levy and Roberts 2005) stemming from bibliographic instruction (Arp 1990). The few research studies into workplace IL have also often focused professionals in educational environments, with few exceptions (Cheuk 1998; Kuhlthau 1997; Kuhlthau and Tama 2001; Gasteen and O'Sullivan 2000; Lloyd 2006) which are discussed below.

The core issues behind the development of this concept are:

- The recognition within librarianship of the need to develop abilities and skills for effective information use in the context of the *information society* and
- The recognition of the ongoing nature of change in contemporary society and the need to develop abilities for lifelong learning.

First use of the concept of Information Literacy (IL) is credited to Zurkowski in 1974 in a report to the US National Commission on Libraries and Information Science, where he described information literate individuals as "people trained in the application of information resources to their work" (Owushu-Ansah 2005).

Rader (2002) provides a synthetic definition of IL:

- “... information literacy can be defined as a set of abilities to:
- Determine the extent of information needed
 - Locate and evaluate information
 - Incorporate selected information into one’s knowledge base
 - Use information ethically, legally and with an understanding of economic and social issues”

Bruce (1997) states that “the concept of information literacy has been influenced by five other concepts associated with elements of the emerging information society: information technology literacy, computer literacy, library literacy, information skills and learning to learn”. In her view, “these concepts ... all coexist with the idea of information literacy and are themselves subject to ongoing discussion about their meanings” (p. 20).

All the mainstream thinking in IL has advocated the central idea of developing abilities and skills for lifelong learning, clearly in response to the perceived challenges of the ‘information society’. Candy (1991) states that learning to learn involves developing the skills that lay a foundation for self direction and lifelong learning (p. 340). Another consistent element has been the call for critical thinking and generally higher-order intellectual abilities, such as problem solving, reflection, synthesis, etc.

“The library and information profession has consistently argued for its significance in relation to a wide range of learning theories and educational concepts ... independent learning, resource-based learning, problem-based learning, and critical thinking...” (Williams 2005, p. 50)

Critical thinking (CT) is an important aspect of IL which has also been given a lot of attention within general education. CT is deemed a necessary trait of an educated person and can be seen as a rather natural extension or continuation of the concept of literacy. After someone learns how to read at the basic level, other questions begin to arise in relation to texts (and other types of messages or semiotic resources): What is the purpose of this writing? What does its author intend to say? Where is she standing? How is she building up her arguments? How do I stand in relation to these positions? This ‘extended literacy’ is built up on a mixture of skills and an expanding knowledge base. Issues such as knowing what I need (or want)

to know about something, or becoming aware of where to find information needed, are related to CT and have been taken up centrally by the mainstream frameworks for IL.

Hepworth (2000) highlights four areas of development in information literacy:

- Learning how to use and apply information tools, including the use of software and information systems
- Learning the intellectual processes dealing with information management and knowledge creation, including the ability to identify key concepts, the development of search strategies and reflection skills.
- Learning how to communicate, exchanging and sharing information in collaborative work.
- Learning the intellectual norms of the subjects explored, including established theoretical frameworks and methodologies, as well as legal and ethical issues.

The concept of Information Literacy has gained quite a lot of significance and following in educational environments. It was embraced and championed by the American Library Association (ALA) through the 1989 *Final Report to the Presidential Committee on Information Literacy* and this led the way for rapid and widespread acceptance within library communities (particularly academic libraries), mainly in the USA, but also in Canada, Australia, New Zealand and parts of Europe (particularly UK, Finland, Sweden, Netherlands, Spain and Germany), Asia (China) and Africa (particularly South Africa). Some work by librarians and institutions in South America (Argentina, Brazil, Colombia and Mexico) is also going on (Bruce 1997 p. 5; Martin and Rader 2003 p. 35).

In most cases, academic libraries have been responsible for activities related to IL (often limited to user education). But in many cases IL initiatives have also led to the involvement of librarians with teachers and academics, including in distance-learning programs (Newton 2007) which present particular challenges for developing IL, some institutions even

establishing credit-bearing courses to develop IL. Examples of this latter case are many universities in USA, Australia and UK (Rader 2003 p. 42). Rader (2002) highlights some developments within the USA:

“... for example, Colorado, Wisconsin, and Oregon have adopted standards and several initiatives have been developed by state-wide systems of higher education, including SUNY Information Literacy Initiative, the California State University System Information Competence Project, Wisconsin and the University of Massachusetts. Individual colleges and universities have also implemented standards. Some of these are Earlham College, Kings College, University of Louisville, University of Washington, University of Iowa, and Florida International University”

Several definitions of IL have been elaborated over time, with emphasis variously put on:

- The attributes and skills of persons for effective information use mainly defined by organizations of professional librarians (Eisenberg and Berkowitz 1988; Doyle 1992; ACRL 2000; Bundy 2004; SCONUL 1999; CILIP 2007)
- Process models of using information in scholarly learning and workplaces, which show a strong connection to information behaviour studies (Kuhlthau 2004; Cheuk 1998; Dervin 1998; Wilson 1999; Sonnenwald 1999; Bystrom and Hansen 2005)
- User-centred research into the relational experience of using information and conceptions of information literacy (Bruce 1997; Lupton 2004; Kirk 2004; Webber, Boon and Johnston 2005; Williams and Wavell 2006; Bruce, Edwards and Lupton 2006; Lloyd 2006).

Outside of educational environments and the professional discourse of librarians, however, the term 'information literacy' has been sparsely used. Importantly for this study, it clearly doesn't belong to the terminology of business management, where the concepts of 'training' and 'skills

development' for information use are more common than 'literacy'. However, the complexity of the contemporary information environment and the premises of knowledge management (KM) seem to require a correspondingly more complex approach to information use than simple training in ICT, and there are some authors advocating the importance of IL for business (Gasteen and O'Sullivan 2000; Drucker 2002; Abell and Oxbrow 2001).

2.3 Institutional frameworks for IL.

It seems relevant to discuss first of all the institutional frameworks which have been endorsed by the large librarianship professional bodies. These frameworks have become influential in the design of IL support programmes, (including credit-bearing courses) in a large number of academic institutions, and in them we can see some of the most influential interpretations of the concept, which practically constitute the baseline understanding of IL for many schools and colleges. One of their more important claims is that IL is the base for lifelong learning. This has the main implication that developed abilities and skills will transfer to workplace situations.

The Association for College and Research Libraries (a branch of the ALA) offers the following definition (ACRL 2000):

"Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information ... Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning. An information literate individual is able to:

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into one's knowledge base

- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally”

An interesting element in this statement is the way in which IL is understood to encompass all possible contexts of lifelong learning, which in fact makes it lack contextualization. Another important aspect is how ‘mastery’ is focused as a mainly individual endeavor.

ANZIL proposes six standards for information literacy (Bundy 2004). The information literate person:

- Recognizes the need for information and determines the nature and extent of the information needed
- Finds needed information effectively and efficiently
- Critically evaluates information and the information seeking process
- Manages information collected or generated
- Applies prior and new information to construct new concepts or create new understandings
- Uses information with understanding and acknowledges cultural, ethical, economic, legal, and social issues surrounding the use of information

In these statements we can readily see how the concept involves more than proficiency in information technologies (IT). For example, determining information needs requires reflection, while evaluating the quality and suitability of information requires critical thinking. Awareness of information sources may require general or specialist knowledge. In many respects the definitions closely resemble those of the ALA.

SCONUL shies away from using the term ‘literacy’ (Johnson 2003), favouring instead ‘information skills’, and provides a list of “Seven Headline Skills” (also known as Seven Pillars) which strongly resembles other IL frameworks in every respect:

- The ability to recognize a need for information
- The ability to construct strategies for locating information
- The ability to locate and access information

- The ability to compare and evaluate information obtained from different sources
- The ability to organize, apply and communicate information to others in ways appropriate to the situation
- The ability to synthesize and build upon existing information, contributing to the creation of new knowledge

The Chartered Institute of Library Professionals' (CILIP 2007) definition of IL again consistently reflects a similar focus as the others:

"Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner ... This definition implies several skills. We believe that the skills (or competencies) that are required to be information literate require an understanding of:

- a need for information
- the resources available
- how to find information
- the need to evaluate results
- how to work with or exploit results
- ethics and responsibility of use
- how to communicate or share your findings
- how to manage your findings."

They then condense this into an even shorter paragraph:

"Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner" (CILIP 2007)

Adding the comment that: "We have tried to encapsulate the important elements simply, and in plain English, so that the definition can serve as a base-line interpretation of information literacy for all communities in the UK." This comment shows that this organization proposes a uniform understanding of the concept that is simple, helpful and best for all, but this is in fact an aspect of IL frameworks that has been heavily criticized (Bruce 1997; Marcum 2002; Pawley 2003).

One of the latest formulations of the concept by a high-profile group of specialists comes from the 2003 IL Meeting of Experts in Prague:

"Information Literacy encompasses knowledge of one's information concerns and needs, and the ability to identify, locate, evaluate, organize and effectively create, use and communicate information to address issues or problems at hand; it is a prerequisite for participating effectively in the Information Society, and is part of the basic human right of life-long learning." (Thompson 2003)

Sheila Weber and Bill Johnston, recognized experts in IL education and research, provide the following concise definition which introduces the phrase 'appropriate information behaviour', making a key connection with the relevant research on information behaviour done outside of librarianship:

"... information literacy is the adoption of appropriate information behaviour to identify, through whatever channel or medium, information well fitted to information needs, leading to wise and ethical use of information in society." (Webber and Johnston, 2004 p. 13)

It is evident that all these frameworks are addressing basically the same key issues, as has been clarified by Webber and Johnston (2000) who in their comparison of definitions identify common coverage of the stages of:

- Information need recognition
- Search formulation
- Source selection and query
- Information evaluation and
- Information use

Their remarkable consistency is, however, explained by the fact that "they tend to represent one perspective only – that of the information professional" (Williams 2005, p. 58)

Most of the statements about information using abilities and skills sound clear and uncomplicated, even deceptively simple. However, this belies the complexity of the cognitive and behavioural underpinnings that enable

them. Importantly, many of the skills and processes included in these frameworks (e.g. recognizing information needs, finding and evaluating information, etc.) have been researched by information behaviour studies, a connection which is not very visible in the IL literature. In some frameworks, the further development of standards into rubrics for desirable outcomes attempts to provide more precision as to the abilities, behaviours and outcomes expected of the information literate person (most often these refer to a student). For example, Stern (in Martin and Rader 2003, p. 114) identified the use of the following verbs associated with actions of different kinds that the information literate student must perform: use critical thinking, sort, separate, use appropriate technologies, understand, employ, design, apply, synthesize, create, stay current, etc.

Critique of institutional frameworks for information literacy

The general concept of IL and the mainstream institutional frameworks in particular have come under criticism mainly for:

- The lack of clear definitions, and scepticism about the assumed unproblematic transference of abilities and skills to contexts outside education (Bawden 2001; Elmborg 2006; Marcum 2002; Mutch 2000; Snively and Cooper 1997);
- The mainstream adherence to an individualistic cognitive constructivism related to an information-processing paradigm (Bruce 1997; Lloyd 2003; Tuominen, Savolainen, and Talja 2005);
- A modernist ideological position which is seen as un-critical of the larger social issues (Kapitzke 2003b; Pawley 2003).

The institutional frameworks for information literacy (e.g. ACRL, SCOUNL, ANZIL, etc.) have been developed on a view of learning that is rooted in strong individualism. The literate person is seen as one which has become an autonomous learner who can transfer abilities and skills across

situations, with little consideration of specific situational aspects. This has undoubtedly been a factor in the characteristic lack of contextualization in these frameworks, and this stands in stark contrast to how multimodality and complexity in learning are approached by the concept of *multiliteracies*. In contrast to the idea that information literacy can be un-problematically extended to various fields of practice, Candy (2000) points out that IL is inevitably discipline- or field-specific. A person who is very competent in one field may be completely illiterate in another, and literacy is perhaps not so much an enduring , context-free attribute of the person as it is an attribute of a person at a given time and in a particular circumstance or situation (p. 141).

A noteworthy aspect is the general and sometimes sweeping nature of the statements (e.g. 'ability to evaluate information') and the apparent lack of contextualization in the institutional frameworks, which is enhanced by the frequent declaration that these abilities and skills will facilitate or constitute the base for life-long learning. This can be taken to mean that skills for finding or evaluating information can be developed which will then be applied to any situations encountered.

Also, in both information literacy and information behaviour research the views on the relationships between information and knowledge have often remained closely related to an individualistic cognitive viewpoint, where reception of information is equated with knowledge acquisition in a rather un-problematic way. "A pattern of thought that can best be described as 'the information processing paradigm' captures many of the implicit assumptions underlying current descriptions of this Age of Information" (Marcum 2002). Mutch (1996) worries about the alarming focus put on information, rather than on knowledge.

As we try to apply these institutional frameworks to workplace practices, the need arises to question what has been mainly an educational concern with the development of individualistic information using skills (Bawden 2001; Martin and Rader 2003). Workplaces are structured organizational contexts of activity where learning and decision-making are vital processes

involving communities of practice (Wenger 1999), coaching, apprenticeship (Lloyd 2007) and other strategies that rely heavily on interpersonal exchanges of information and social sense-making. In these environments, knowledge development and transfer take on a clearly social and interactive guise and “the crucial roles of human interpretation, communication, and skills in generating effective organizational action” are quite evident (Tsoukas 2005). Therefore, theories of learning and situated practice that account for these dimensions are needed, but this foundation seems to be lacking in the institutional frameworks.

The role of people as information sources in organizations is an important issue. In academic settings they are seldom considered suitable sources (mainly as informants within the context of some research projects), while in workplaces they are ordinarily a key resource, so much so that a lot of the logic of KM is based on that premise, and information behaviour studies in workplaces also confirm this view. Candy (2000), points out that seeking information indeed has social aspects, and these are particularly evident outside educational environments:

“The social distribution of knowledge is one of the hallmarks of the modern environment; indeed it is one of the major differences between information use in a formal educational setting and in a real-life work or community setting” (p. 142)

The much greater diversity of tasks is another particularly important aspect of workplace settings. It can be argued that educational contexts of a particular level (e.g. higher education) exhibit a high degree of uniformity in the general nature of the tasks students engage in (e.g. writing essays and coursework); the type of information sources considered suitable (e.g. text books and peer-reviewed journal articles); and the locations of available resources (e.g. libraries and online databases). With minor differences amongst institutions and disciplines this will probably hold true. Workplaces, on the other hand, have a much wider range of variation in the uses of information (Cheuk 2002; Mutch 2000, Kuhlthau and Tama 2001; Lloyd 2003), not only considering the general nature of the business or organization, but also variations at the level of employees (i.e. professional,

managerial, blue collar, etc.). As a striking example of this diversity, Lloyd's (2006) study of firemen showed the importance of bodily knowledge and information awareness in that group. Therefore, questions can be asked about:

- What does it mean to use information effectively or appropriately, in particular contexts and situations?
- What does it mean to evaluate the quality of information, for particular workplace applications?
- What does it mean to be aware of information sources in particular workplace contexts?
- What does wise and ethical use of information mean in the workplace?

User-centred research has focused these types of questions, and marked a new departure for definitions of IL different from those of the large librarianship professional associations.

2.4 User- and practitioner-centred research into information literacy.

An important departure in the exploration and definition of information literacy was marked by Christine Bruce's (1997) phenomenographic study of conceptions of information literacy. This was the first study which moved the focus of research away from experts' definitions of IL and on to people's experience and conceptions of it. This methodological move was informed by the idea of 'user-centred' studies (pioneered much earlier in information behaviour studies) and the use of an interpretive methodology based on a relational model of information use that rejected both the cognitive view of information transmission and the focus on attributes or skills of individuals as the central elements of learning. Both aspects were considered by Bruce and others, such as Ference Marton (Marton, Hounsell and Entwistle 1984; Marton and Booth 1997), as the basis of an inadequate dualist perspective of learning.

"Although researchers are leaning towards qualitative approaches, and constructivist approaches to teaching and

learning are preferred by educators, the primary picture of information literacy prior to the relational model was painted in terms of attributes of individuals" (Bruce 1997, p. 12)

Another very significant contribution of this landmark research was the quest for variation, rather than consensus, in the understanding of the concept as had been the case in the majority of educational frameworks. Doyle (1992), for example, defined IL using a Delphi technique with a group of experts. Instead of seeking to delimit the extent of the concept from a technical point of view, Bruce sought to explore how it could go beyond the boundaries of expert definitions and become recognisable in the experiences of information users.

Bruce (1997, p. 13) contrasts her approach to Doyle's:

Doyle's (1992) picture of IL	The relational picture of IL
Derived from scholar's views	Derived from user's experiences
Derived from seeking consensus	Derived from seeking variation
Derived using the Delphi technique	Derived using phenomenography
Recommends constructivist approaches to teaching and learning	Recommends relational approaches to teaching and learning
Sees information literacy as measurable	Does not see IL as measurable
Sees information literacy as definable	Sees information literacy as describable
Sees information literacy as quantifiable, asks how much has been learned?	Does not see IL as quantifiable, asks what has been learned?
Portrays information literacy in terms of attributes of persons	Portrays information literacy in terms of conceptions, i.e. subject-object relations
Focuses on personal qualities of the individual apart from the environment	Focuses on personal qualities in relation to the environment

Table 1. Comparison between relational and attribute-based views of IL

Also, Bruce's study was conducted not with students but with academics and other higher education workers, and therefore was one of the pioneering workplace IL studies. Bruce found the following seven conceptions of IL were held among her participants:

- Using information technology for retrieval and communication
- Using sources to find information
- Executing a process
- Controlling information
- Building personal knowledge base in a new area of interest
- Extending the existing knowledge base
- Using information wisely for the benefit of others

Beyond the importance of the specific findings of her study, Christine Bruce pioneered a way of approaching research into IL that influenced other researchers: Limberg (1999); Lupton (2004); Webber and Johnston (2005), Bruce, Edwards and Lupton (2006); Williams and Wavell (2007); etc. Some of this research that relates to workplace IL will be discussed below.

2.5 Process models of information literacy.

Another very significant line of research into information literacy is centred on the study of the process of using information, rather than only on skills or attributes. This research is based on information behaviour studies and models.

Kuhlthau's (2004) process model of using information, which she labelled 'seeking meaning', was developed from about 1991 onwards looking at students' process of using information for school assignments. Her contribution is characterized by a very systematic approach, longitudinal confirmation over time and the development of a model of information behaviour. This is something that is not commonly found in the librarian-originated frameworks. Her central research was done with higher education students, but she also applied her model in some workplace situations on a smaller scale, in a study discussed below (Kuhlthau and Tama 2001). Her model includes seven stages that a student goes through in carrying out a research assignment:

- Task Initiation
- Topic selection
- Pre-focus exploration

- Focus formulation
- Information collection
- Search closure
- Start writing

One aspect that her research particularly explored and highlighted is the role of uncertainty in the process of using information and the affective experience that goes with it. Although the concept of uncertainty had already been established in communication (Shannon and Weaver 1949) and in information science research (Belkin, Oddy and Brooks 1982), it had been studied only from the cognitive point of view. Kuhlthau also explored the feelings of students as they went through various stages in the completion of their assignments. She studied several implications of the phenomenon of uncertainty and ascertained its importance not only in the fact that it is present in several stages of the information using process, but her research shows that the creation of meaning is *necessarily* crossed by uncertainty, as a fundamental aspect and not an ancillary problem.

Uncertainty affects key aspects of the information using process (Kuhlthau 2004, p. 103):

- Aims of the process (Constructing meaning about the expected results)
- Formulation (Forming a focused perspective)
- Redundancy (Encountering the expected and the unexpected)
- Mood (Assuming a stance or attitude)
- Prediction (Making choices based on expectations)
- Interest (Increasing intellectual engagement)

Creation of meaning is understood as a general movement from uncertainty to understanding (p. 105):

	Uncertainty		Understanding
<i>Thoughts</i>	Vague	----->	Clear
<i>Feelings</i>	Anxious	----->	Confident
<i>Actions</i>	Exploring	----->	Documenting

Table 2. Changes in thoughts, feelings and actions while moving from uncertainty to understanding (Adapted from Kuhlthau 2004)

Kuhlthau also identified in her model the key role of mediators and in this regard acknowledged the social construction of meaning to a certain degree. These mediators are for example teachers and librarians which help students understand a task, find information and write assignments. This is of course a role clearly identified in the literature of librarianship and education (though not always practised fully), but in Kuhlthau's model it is acknowledged as a fundamental aspect of the process of meaning creation related to using information. Her consideration of mediation is based on the constructivist perspective of learning, which she traces back to the ideas of John Dewey, George Kelly and Jerome Bruner, and it is something that other frameworks for IL do not explicitly recognize. On the contrary, some frameworks appear to value the complete autonomy of the individual in using information and learning as the ideal to be reached. The importance of mediation in developing IL is discussed by other authors that share an interest in interactive and collaborative modalities of learning (Lave and Wenger 1991; Laurillard 1993; Williams 2005; Williams and Wavell 2006; Newton 2007) which go beyond the focus on skills.

Another relevant example of research into information literacy based on a process model is Cheuk's (1998) study of auditors' use of information. This study is also an example of workplace research:

"This paper develops an information literacy process model (referred to as "information seeking and using process model in the workplace") by:

- (1) Studying how auditors seek and use information to complete their practical audit assignments;
- (2) using information users' perspectives (i.e. auditors as information users); and
- (3) adopting a 'constructivist' approach to study information literacy in the workplace." (1998 p. 377)

Cheuk's study links the idea of IL to an information behaviour process based on the Sense Making Model (Dervin 1998):

"The dynamic information seeking and using process model presented here consists of seven critically different situations that auditors perceived they experienced in seeking and using information:

- (1) task-initiating situation;
- (2) focus-formulating situation;
- (3) idea-assuming situation;
- (4) idea-rejecting situation;
- (5) idea-confirming situation;
- (6) idea-finalising situation;
- (7) passing-on-idea situation.

From the data gathered it could be seen that auditors moved from one situation to another in multidirectional ways. There was no specific sequential order for auditors to move from one situation to another. The reason, as explained by the auditors, 'depended on the situation'; decisions were made on a case-by-case basis." (p. 380)

Cheuk draws on Dervin's (1998) Sense-Making Methodology. This and other models of information use developed by information behaviour researchers have had a strong influence, often unacknowledged, in the definition of IL frameworks. Some aspects of these important developments will be reviewed below, following the discussion of workplace IL research.

2.6 Research into workplace information literacy.

The volume of research and applications of IL in educational settings exceeds, by and large, any research done into workplace situations. Rader (2002), for one, has done a number of very complete reviews of IL research. This review will focus instead on the main issue of workplace IL research.

The rather recent reader on information and IT literacy by Martin and Rader (2003) includes a section entitled 'Research perspectives' with seven contributions. All of them address different aspects of IL within educational settings, with not a single one considering the concept of IL in the workplace in a direct way. None of the words *workplace*, *workers*, *organization*, or *professionals* appears in the thematic index, and cover to cover there's hardly any direct mention of workplace situations. It seems to be constantly assumed that the results of education, being intended as they are for students' futures, automatically apply to workplace situations as a consequence.

Mutch (1999) comments on the paradox that "... the concept is offered as something which higher education needs to develop in order to supply the needs of business, but appears unknown outside higher education." (p. 324)

Carmel O'Sullivan (2002) brings up the disconnection between the literatures and even the language of librarianship and business, and opens up some questions as to the relevance of IL in business settings:

"... if you enter the term "information literacy" into a search engine or article database, and exclude libraries or education from the results, you will end up with very little content ... It is clear that librarians are not using the same dictionary or even the same language as business ... very few board rooms have information literacy on the agenda. For those with interests in the corporate sector, there are several pertinent questions:

- Is information literacy in fact relevant outside libraries?
- What does it mean for organisations?
- Does it already exist under other names or in different forms?
- How does information literacy relate to knowledge management?"

The worrisome lack of workplace IL research has been highlighted by some authors, most recently by a high-profile group at the Prague IL Meeting of Experts which put it into the recommended research agenda (Thompson 2003, p. 19, 27).

O'Sullivan (2002, p. 11) questions whether the concept of IL is understood by any other name in business organizations, concluding that:

"We cannot say with any confidence that information literacy is recognised as a distinct and commercially relevant concept (even under some other name) in the corporate world. There are indicators that information literacy is recognised (though not named) at some levels as an important enabler for knowledge workers, but this has not yet translated to widespread adoption of information literacy as a core competency within organisations. The conclusion is inevitable that most human resource managers and corporate executives simply do not know that information literacy exists as a holistic concept. While some parts of the concept – ability to access

information, team work and knowledge sharing for instance – may be addressed in corporate strategies, role descriptions, and training, this is reasonably ad hoc, and does not resolve the very complex issues employees face in dealing with information in the workplace.”

De Saulles (2007) explored the concept of IL as it is applied in UK small and medium enterprises (SMEs), raising the question of whether their employees have the appropriate skills to make use of the resources of the Internet, now available to at least 61% of SMEs. Among his findings was that the Internet was on the whole the most used resource, followed by colleagues, as a close second. His research did not focus on measuring the actual levels of IL, but reached the conclusion that a lot of man-hours were lost in these companies by employees not finding the information they needed, in spite of a high number of respondents (58%) stating they felt they were confident information searchers who most of the time found the information they wanted.

Peter Drucker (2002) was one of the first high-visibility management authors to endorse the idea that the information society and the knowledge economy required both organizations and individuals to develop capabilities for effective information use as a central aspect of their strategic outlook. However, it would appear from the literature review on knowledge management (presented in chapter 3) that his admonition has been taken up mainly through a strong focus on developing ICT infrastructures and computer skills training.

Some authors however, have advocated the role of IL in the workplace. Abell and Oxbrow (2001) consider information literacy a core competence in organizations, noting that:

“A great deal of attention has been paid to the development of “computer literacy”, and computer literacy is now a core skill for many posts. The focus is on the ability to use computers and standard software applications, but stops short of being able to structure, find, evaluate and use the information to which a computer provides access (p. 131).

And arguing that:

“The ability to create, store, access and use information is essential to everyone working in a knowledge-based environment... from an organizational perspective the core requirement is for staff to be ‘information aware’, to understand the value of information within the context in which they are working”

Cheuk (2002) in her White Paper for the national Forum on Information Literacy highlights the fact that the US Department of Labour has considered information literacy is one of the five essential competencies for solid job performance, and that “... similar initiatives are evident in Europe, Australia, Singapore and South Africa where information literacy is considered economically necessary”. She links IL to knowledge management “with particular emphasis on how critical information literacy is to allow companies to reap actual benefits from promoting company-wide knowledge creation, sharing and using.”

She makes the argument for why information literacy is needed in the current economic environment:

“The need to work differently is the result of change in the global business environment. Workers are increasingly expected to carry out unstructured tasks in an uncertain environment. With the advancement of information technology, employees are required to work in teams, share their knowledge and collaborate in a globalized economy. They are required to be creative and innovative. They are encouraged to make mistakes and to learn from their experience. To meet these expectations, they need to know how to seek, evaluate and use information effectively.” (p. 2)

Cheuk (1998) equates effective information use and IL and endorses its importance in organizations:

“Having the competence to use information effectively (i.e. information literacy) has been suggested by business gurus as essential to increase organisational competitiveness and profitability.” (p. 375)

Two lines of action are proposed by Cheuk (2002) to develop effective information use in the workplace. First, the advocacy of workplace IL by business leaders. Second, conducting research into workplace IL "and the degree to which it enhances workplace productivity." She ends her paper with a reminder of the urgency and inevitability of changes in work life which will make IL, in her view, indispensable:

"Looking into the future, the ability to effectively locate, evaluate, organize, use, package and present information effectively will become a normal part of life at work. Information literacy will eventually become basic literacy skills comparable to language and numerical skills. It is going to be a fundamental lifelong learning skill."

Mutch (1999) also highlights its connection to the contemporary economic and business environment and the way work is changing:

"One should be aware that the development of the notion of information literacy rests on a reading of broader changes in society, a reading which is not without its problems. Specifically, it refers to those changes in working patterns which could broadly be summed up in the phrase 'transition to knowledge work'". (p. 324)

Mutch (2000) concludes that IL is indeed an important aspect of developing learning organizations:

"One task, therefore, in the construction of the 'learning organisation' might be a consideration of how people use information. However, what we need are ways of relating the discussion above to the emerging information policies and ways of embedding the consideration of information in curricula both in higher education and in the burgeoning ranks of in-organisation education."

In the conclusions to her 1998 paper, Cheuk provides an answer to the question: Who is information literate in the workplace?

" Information literate people are those who are able to go through a constructive information seeking and using process in the workplace; they are ultimately able to turn data into useful information to answer queries which arise from their work roles and tasks." (Cheuk 1998, p. 388)

In sum, the review of the literature reveals the very small amount of attention paid to workplace IL research along with the lack of recognition that the concept has had in other disciplines, notably management. At the same time, some voices have raised the importance of IL for organizations and the need to conduct further research in this direction.

Specific studies of workplace IL

There is a reduced number studies carried out specifically on workplace information literacy. There are, however, many studies done into workplace information use which have not been conceptualized as IL. Some have crossed a blurred line between IL and information behaviour studies (IBS), using the concept partially or marginally (e.g. Choo 2005). These connections (or rather, disconnection) between IL and IBS will be further discussed below.

Kuhlthau (2004) studied the information behaviour of a securities analyst and a group of lawyers (Kuhlthau and Tama 2001). The latter study found that:

“...experts did not respond to uncertainty in the same way as the novices in previous studies had. The novices interpreted their sense of uncertainty as indicating that something was going wrong, either with the task or with their ability to proceed effectively with it. But none of these experts expressed the feelings of anxiety and frustration related to uncertainty that the novices experienced. On the contrary, these experts expressed heightened interest and enthusiasm for more complex tasks that required considerable construction and creativity.” (p. 28)

This study followed on Kuhlthau’s development of her ‘seeking meaning’ model, and provided an interesting insight to differences in the perception and effects of uncertainty between experts and novices. In the former uncertainty was part of a motivating challenge, rather than being felt as frustration or anxiety. This finding can be related to some extent to Lloyd’s (2006) study discussed below, since she also focused on the differences in information use between apprentice and expert firemen.

Cheuk's (1998) study of auditors has already been commented above, under process approaches to IL.

Gasteen and O'Sullivan (2000) studied the information literacy strategy of a law firm, which interestingly included a consideration of the strategic outlook that the company used to launch this initiative, the role of organizational learning and the information management infrastructure set in place. These aspects of the study bring it close to being a knowledge-management case study.

As mentioned above, Christine Bruce's (1997) study focused academics' and other higher education employees' conceptions of information literacy and was therefore a workplace study. Her methodology differed from others in that she did not put a focus on actual information behaviour or any aspects of the workplace environment, but rather did a quite 'pure' phenomenographic study.

"The centrepiece of the relational model may be described as a phenomenography of information literacy" (1997, p. 1)

While her study was a milestone in the user-centred approach to IL that influenced following research, her methodological approach (and that of other phenomenographic studies) has been criticized by some who consider it too removed from the actual experience and practices found in the workplace (e.g. Saljo 1997; Richardson 1999). This criticism of phenomenography will be further discussed below and it is also taken up in chapter 4.

Webber, Boon and Johnston (2005) studied conceptions of IL of academics in four disciplines, English and Marketing, Civil Engineering and Chemistry. They compare the differences in the conceptions of IL between two of these groups of participants.

English academics' conceptions of IL:

- Accessing and retrieving textual information
- Using IT to access and retrieve information
- Possessing basic research skills and knowing how and when to use them
- Becoming confident, autonomous learners and critical thinkers

Marketing academics' conceptions of IL:

- Accessing information quickly and easily to be aware of what's going on;
- Using IT to work with information;
- Possessing a set of information skills and applying them to the task in hand;
- Using information literacy to solve real-world problems;
- Becoming a critical thinker;
- Becoming a confident, independent practitioner.

The discussion of their results considers the tasks and problems of the academics' workplace environment to a greater extent than Bruce's (1997) study, and also professional differences in the way academics look for information. English academics tend to be more book-bound than Marketing academics, who tend to use a wider diversity of sources, including statistical and online.

"... a variety of sources (e.g. news, market reports, journals, numerical datasets, company websites, organisations and people, including observation of people in real-life situations) is mentioned by all marketing academics in our study. Electronic sources were an accepted part of this mix for marketing academics, whereas, as is evident from the categories described above, a focus on either traditional or electronic sources was a key factor in English academics' conception of information literacy. The English academics' greater emphasis "library skills" or "bibliographic skills" reflects a more frequent engagement with types of information source that are still typically found within a physical library."

Both phenomenographic studies tend to reflect a general use of information strongly related to documental sources and the uses of information typical

of educational environments. In this regard, although they developed the field by exploring user's conceptions of IL, the emerging picture of IL is still bound to the characteristics of the educational workplace.

Another very significant study into workplace IL, which marked important innovations in IL research, has been done by Annemaree Lloyd (2006, 2007). She looked at the learning practices of firemen, a workplace far removed from the more usual educational environments of other studies. An important aspect of her research is how she explores the situated learning practices of firemen, particularly the element of apprenticeship, linking those practices to the use of information and knowledge 'affordances' found in the workplace in a way that links up with the conception of IL as socio-technical practice (Tuominen, Savolainen and Talja 2005) and also relates to some extent to the concepts of knowledge management. Her research proposes:

"... a much broader definition of information literate people and of information literacy that attempts to recast information literacy as a phenomenon more deeply connected with peoples' formal and informal meaning-making activities in all contexts than has been previously articulated. It suggests that information literacy ... should be defined as the ability to know what there is in a landscape and to draw meaning from this through engagement and experience with information. This ability arises from complex contextualized practice, processes and interactions that enable access to social, physical and textual sites of knowledge." (Lloyd 2006 p. 570)

The metaphor of 'landscapes' points to a variety of information and knowledge sources that includes people and also the relationships of apprenticeship as have been described by Lave and Wenger (1991), including the physical experiences of learning.

"In a workplace landscape, affordances relate to a range of opportunities, activities, symbols, artefacts and practices that the workplace as a space, and the people who work in that space, provide to facilitate learning and knowing." (Lloyd 2006, p. 572)

Lloyd's research demonstrates the broad role of information literacy involving awareness of, and access to, codified, embodied and social knowledge.

"...becoming information literate is a holistic process influenced by social, physical and textual relationships with information that requires a range of information practices and acknowledges the complexity and diversity of information sources within a landscape. By developing the textual, physical and affective skills necessary to navigate the sources within the landscape, we come to know and develop "know how". This relationship with information is the essence that lies at the heart of becoming an expert or having expertise in a particular context, or, to put it another way, of being information literate." (Lloyd 2006 p. 571).

Also, her study points to a more socially-constructed understanding of information literacy, since

"The types of skills, practices and affordances that are valued within a landscape will be underpinned by the nature of the discourse which gives character to the landscape and influences the methods used to explore and describe it." (Lloyd 2006, p. 572)

She advocates the conduct of research into a variety of workplace settings, to develop contextualized understandings of effective information use that will allow for specific development of programs to facilitate 'know how' in relation to information access:

"Developing an understanding of information literacy requires us to know more about a range of contexts, the sites of knowledge, what type of information is valued, how it can be located, and what practices occur which afford information and underpin information literacy development." (Lloyd 2006 p. 580)

The present dissertation has been influenced by Lloyd's focus on practice as a consideration of context that helps relate learning, communication and information behaviour within the activity system of a community, although different research methods have been used.

The number of workplace IL studies is evidently scarce and that leaves many questions unanswered. One aspect to look at is variation in the types

of workplace practices. The present study is looking for the first time at an explicitly knowledge-managed workplace. Another important aspect is variation in the research methods. This dissertation is taking phenomenography as a central method but also giving consideration to reports of information behaviour and communication found in the interviews, as well as institutional documentation about KM initiatives at NHS24. By these means this study is expected to provide a picture of conceptions related to relevant characteristics of the practical setting.

2.7 Information behaviour studies (IBS) and their relationships to IL.

Discussing information behaviour models within this dissertation is relevant because research into workplace IL is scarce, while research into information behaviour has produced models applicable to workplace situations. To consider those developments seems necessary for the discussion of workplace IL and also to establish its links with knowledge management. For example, Choo (2005) discusses information use in organizations in a way that seems to imply IL, without using the concept as such. Linking IL and ISB more explicitly seems important to further the development and acceptance of the concept of information literacy, which has suffered from disciplinary isolation within librarianship.

Of particular importance in this section is the discussion of how the conceptualization of 'context' has evolved in LIS. A few relevant models of IB will be discussed with the main aim of discussing how consideration of context has progressed from a central concern with user-system interaction, to the consideration of attributes of the information environment and then on to a consideration of social practices as systems of activity. This parallels the theoretical move in learning theory from individual cognitivism to social constructionism. These movements have also been registered in KM theory and models. By contrast, these important considerations seem to have been left out of the institutional IL frameworks.

Information needs and relevance criteria, for example, are considered by socio-constructivist theories as emerging from professional communities and practices, rather than being solely determined by individuals (Hjorland and Albretchen 1995; Talja, Keso and Pietlainen 1999). The concept of 'situated practice' is suggested as a theoretically stronger conceptualization of context, which can serve as a foundation for understanding IL and information practices in organizations (Lave and Wenger 1991; Brown and Duguid 1989, 1996; Wenger 1999).

Boon, Johnston and Webber (2007) highlight the relationships between IL and information behaviour studies:

"Information-seeking behaviour and information literacy are linked. One step towards becoming information literate is to acquire an appropriate information-seeking behaviour. Within the information literacy frameworks, there is a corpus of common, connected aspects and activities, many of which are also relevant in the area of information-seeking behaviour, defined by Wilson (2000, 49) as: "the purposive seeking for information as a consequence of a need to satisfy some goal." Information literacy, however, is a broader concept, encompassing personal, social and ethical dimensions of interacting with information."

Information behaviour studies are a derivation of information retrieval studies with a strong user-centred focus and have given support to IL frameworks, something which has not been sufficiently recognized. However, there are important differences in the respective approaches.

A way of expressing these differences is that information behaviour studies are focused on the description and measurement of *actual* performance in using information, while information literacy is focused on *potential* performance and the development of related awareness, abilities and skills. Information behaviour studies tend to treat variables specifically and in reduced numbers, for example browsing strategies in relation to particular tasks. Information Literacy models instead tend to address more general factors (e.g. awareness of information sources) that affect potential performance from a developmental point of view. Another key difference is that IL has clearly embraced the concept of learning as an aim of

information use, while IBS have not for the most part. One exceptional IB model, which most clearly provides a link between these two fields, is Carol Kulthau's. Her model considers information behaviour from a developmental point of view and explicitly relates it to learning.

Information literacy is derived from the professional knowledge and experience of librarians, closely connected with educational environments and their concerns. Information behaviour studies (IBS) are a derivation of the fundamental interest of information science in information retrieval. While these concerns are in fact 'joined at the hip', they have developed into quite different communities of research and practice. Knowledge management represents a potential opportunity for them coming together.

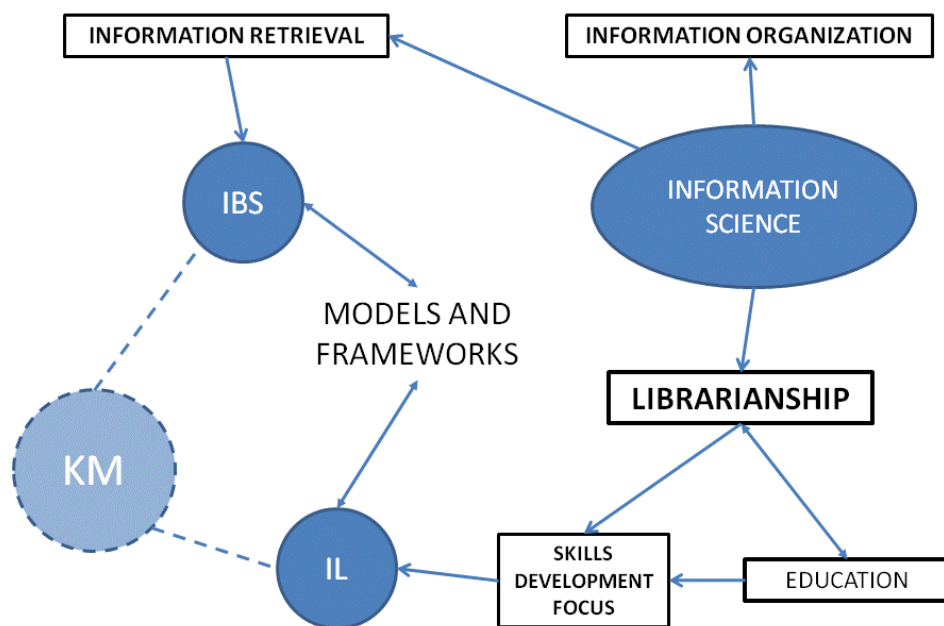


Figure 2. Relationships between IBS, IL, and KM

There exist three main theoretical standpoints in current LIS research which at the same time affect the understanding of information and learning: the cognitive, the phenomenological and the socio-constructivist. These standpoints also affect consideration of 'need' and 'context', two key aspects of information behaviour models.

Information science developed from a 'hard' scientific interest in human cognition and cognitive processes. The cognitive viewpoint of information processing has therefore been very influential in information behaviour research and it means that "any processing of information, whether perceptual or symbolic, is mediated by a system of categories or concepts which, for the information processing device, are a model of its world" (Ingwersen 1992). The cognitive viewpoint displays the following characteristics:

1. "It treats computers and alike processing devices *as if* they were humans, whereby the *limitations* of the former in relation to information processing are estimated;
2. It is an *individual view* in that it regards each processing device as independent, consisting of its own 'system of categories and concepts' – i.e. his/its model of him/itself and his/its world.
3. At the *actual event* of information processing this activity is mediated by the *actual state* of knowledge of the device, i.e. his/its actual knowledge structures, expectations, goals, etc.
4. The system of 'categories and concepts', the world model, is determined by *individual cognition* in a *social context*." (emphasis in the original) (Ingwersen 1992 p. 17)

The cognitive viewpoint has been criticized and even rejected by some authors within LIS as an inadequate theory of learning and meaning creation. The critique has been generated from two sides. On one camp are some authors leaning toward phenomenological-relational epistemologies (Marton and Booth 1997; Bruce 1997; Bruce, Edwards and Lupton 2006) and on another camp are those who lean toward socio-cultural theories of meaning (Brown and Duguid 1996, 2000; Talja, Keso and Pietlainien 1999; Trosow 2001; McKenzie 2004; Tuominen, Savolainen and Talja 2005)

Tuominen and Savolainen (1997) ground the social constructionist critique of the cognitive view point on "the importance of communication and conversation in structuring social reality". This view departs from the basic communication process laid out by Shannon, which has the implication that information or knowledge are pre-constructed and 'travel' in the communication channel, 'carried' by objective language. These authors

contend that interpretation is instead rooted in social interaction, and also that language is not “an abstract system disconnected from concrete talk and writing”. Discursive constructions make sense, to analysts and conversation participants alike, in terms of the social action they are constructed to accomplish.

“The emphasis on the user’s mental-cognitive processes and subjective knowledge structures has some important implications for research. It removes the individual’s subjectivity from collective reality. Theorizing about information processes turns into theorizing about subjectivity ... It is difficult to incorporate the contextual nature of information or the contextual nature of the user into theories that view information as the reduction of uncertainty” (Talja 1997, p. 70 -73)

2.8 Process models of information use and the developing conceptualization of context.

It is characteristic of information behaviour models to consider an *information using process* that describes interactions between the user and the information system:

“In order to carry out a search of any kind of information, it is necessary to progress through a series of steps, typically called the search process. This is the case regardless of whether the information seeker is a novice or has experience, is an information intermediary or an end user, is young or old, a subject expert or a beginner, and so on. It also holds true for any type of computerized information system” (Hartley, Large, Tedd and 1999, p. 31)

Marchionini (1995) points to the following stages in the information seeking process:

- Recognize and accept an information problem
- Define and understand the problem
- Choose a search system
- Formulate a query
- Execute search
- Examine results
- Extract information
- Reflect/iterate/stop

This model is an example of closed-loop user-system information retrieval, giving little attention to the user context. Wilson's (1999) model of information behaviour acknowledged more clearly the concept of context, although with little theoretical elaboration (although in more recent times Wilson has embraced activity theory, e.g. Wilson 2006). His model has the following stages:

- Context of information need (person-in-context)
- Activating mechanism (Stress/coping theory)
- Intervening variables (Psychological, demographic, role-related or interpersonal, environmental, source characteristics)
- Activating mechanism (Risk/reward theory, social learning theory)
- Information-seeking behaviour (Passive attention, passive search, active search, ongoing search)

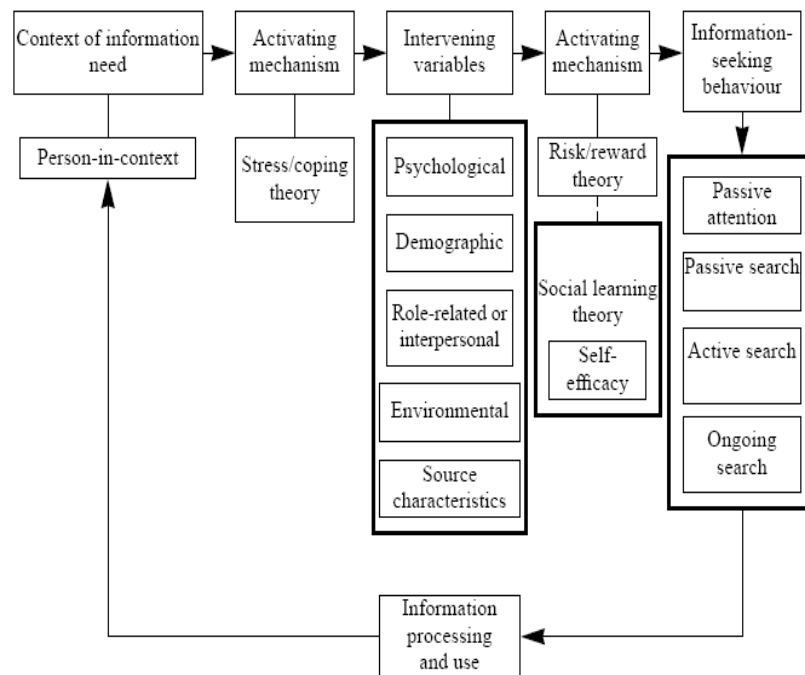


Figure 3. Wilson's 1996 model of information behaviour (Wilson 1999, p. 257). Copyright *Journal of Documentation*, reproduced with permission.

Wilson's model, while intrinsically adhering to the cognitive viewpoint, emphasizes motivational elements (activating mechanisms) that affect the information seeking behaviour and also gave consideration to affective aspects such as stress and coping. He construes the intervening variables (both internal and external) as potential barriers to seeking information and centres his analysis on their effects on the seeker's behaviour.

Ingwersen's model is a prime example of the cognitive viewpoint that also recognizes, in a limited way, aspects in the social and organizational environment affecting information behaviour (Wilson 1999).

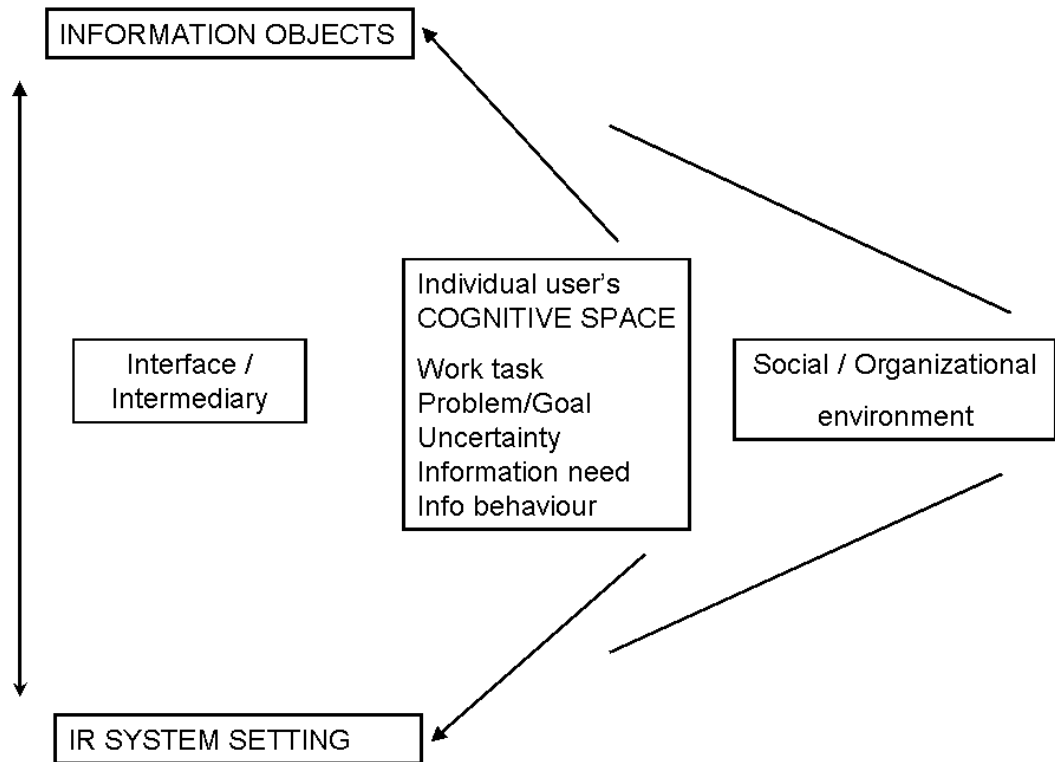


Figure 4. Ingwersen's model of the information retrieval process (adapted from Wilson 1999, p. 259). Copyright *Journal of Documentation*, reproduced with permission.

In this model again context is considered as a sort of 'envelope' where information use occurs, and is addressed as a set of attributes which can become research variables.

Another interesting model is Byström and Järvelin's (1995) 'work chart structure' that considers 'task' as a central category and relates it to information need and subsequently to information channel and source. "In combination, the three classifications suggest a set of hypotheses of the type: 'Tasks of complexity type X require information of type Y that is available from sources of type Z'".(Wilson and Jarvelin 2003)

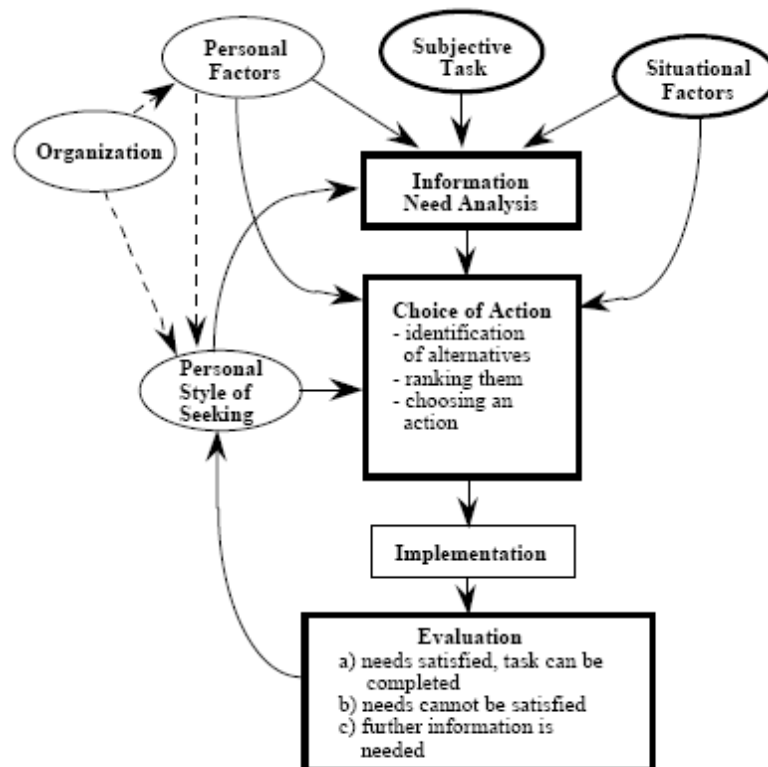


Figure 5. Bystrom and Jarvelin's (1995, p. 9) model of information seeking. Copyright University of Tampere, reproduced with permission of the author.

The categorisation of task types is more related to specific needs, for example in the context of organizational (work) activities. Task can go from trivial and clearly defined needs for factual information that can even be automatized, to complex decision tasks where task structuring is the first concern. In this model the value of information is clearly related to what information is *used for*, being much more pragmatic in that sense than, for example, Belkin or Ingwersen's cognitive epistemology. However, 'context' is addressed still as a limited number of 'situational factors' which affect the choice of action.

Sonnenwald and Iivonen (1999) propose yet another conceptual framework that addresses a wider range of contextual factors in information seeking comprising among other aspects: space as the environment of the action including physical space as well as organizational and socio-political contexts; time as the non-spatial continuum in which actions and events occur; and social networks. (p. 429)

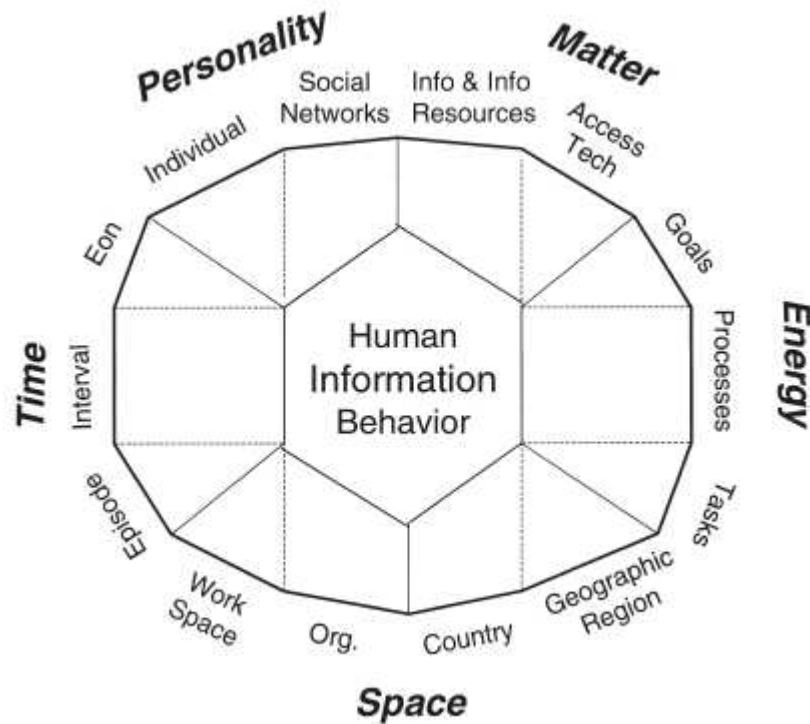


Figure 6. Sonnenwald and Iivonen's (1999, p. 434) conceptual framework of information seeking. Copyright Elsevier Science, reproduced with permission.

2.9 The concepts of 'need' and 'context' in information behaviour studies.

These concepts are some of the most important in information behaviour studies and relevant to IL, and it is necessary to discuss them in more detail as this is important for the discussion of workplace information use. These concepts are important in KM in terms of what information should be available to people and how it will be interpreted and applied. The question of need is related to relevance and ultimately to what information is used for. It is also related to how workplace problems are understood, what questions are asked about them, what are the expected outcomes of work, and also to learning processes. There are some aspects that make 'need' a critical element in all models:

- In terms of process phase the definition of need or problem is evidently a starting point (even though in many cases it's an iterative aspect).

- There are particular cognitive abilities and processes that facilitate the expression of need. In particular, it's related to use the use of language, but also to imagination and creativity. It's formally linked to the asking of questions.
- There are particular internal states, both emotional and attitudinal, which relate to this phase, e.g. the cognitive condition of uncertainty or doubt is frequently related to feelings of anxiety, confusion or frustration (Kuhlthau 2004). Also, the response to the need may be conducive to action or not, according to different explanations of the motivational mechanisms involved, e.g. the theory of stress and coping (Wilson 1997 p. 41) or Maslow's hierarchical needs theory.
- The concept of need is connected in various ways, according to the respective models, to an epistemological understanding of knowledge formation. For example: need as accommodation of cognitive structures; need as making sense of the world; need as emerging from cultural or organizational influences; etc.

In discussing this concept we could go back to the Greek philosophers of antiquity, who already dealt with the issue of the quest for knowledge. The Socratic method of finding the truth, or knowledge, was based on the asking of questions. It was through the questioning process that the person came nearer to the definition of the need or problem that required knowledge. The clarification of those issues was considered knowledge in itself.

From more recent times, it's interesting to mention Taylor's (cited by Ingwersen) proposition of the existence of four levels of question formation:

- Q1. The conscious or unconscious need. Conscious or unconscious need, probably inexpressible in linguistic terms. Not a question yet.

- Q2. The conscious need. A conscious mental description of an ill-defined area of indecision.
- Q3. The formalized need. A qualified and rational statement of the question. Describing an area of doubt in concrete terms.
- Q4. The compromised need. The question is recast in terms of the IR system (Ingwersen 1992 p. 113)

Belkin *et al* (1982) were among the earliest proponents of a model based on the cognitive viewpoint that explained the need for information in terms of a 'gap' in the cognitive structure. They proposed that the seeker of information is experiencing an "anomalous state of knowledge" (ASK), and this is taken as motivation for seeking information (although the motivational intervening variables do not appear clearly in their model, since we often do not act on an ASK). Ingwersen (1992 p. 29) comments that "The anomalous state of knowledge is ... very identical to the 'state of uncertainty' ... 'Uncertainty', 'incompleteness' or 'inadequacy', seem to have more accurate connotations as to the user's situation than the vague term 'anomalous'.

"Belkin, Brooks and Oddy describe a scale of levels in the ability to specify an information need as beginning with a new problem, in a new situation, in which connections can be made with existing knowledge and ending with a defined problem in a well understood situation with an identifiable gap in knowledge. The user's ability to articulate requests to the information system can be expected to change according to his or her level of understanding of the problem" (Kuhlthau 2004, p. 5)

Wilson's model, discussed above, is centred on the relations between needs and actions, pointing specifically at the fact that people do not always react to the uncertainty, gap or 'ASK' in an automatic way, but the response to that state as actual information seeking behaviour is mediated by motivational mechanisms, of which he considers three theories: stress/coping, risk/reward and self-efficacy.

Brenda Dervin's Sense-Making Methodology exemplifies the interpretive and situational consideration of needs, where the understanding of context and meaning has gone beyond the cognitive viewpoint and embraced a more pragmatic approach to the problem of knowledge and information.

"Dervin was particularly influential in focusing attention on user's needs through her model based on people's need to make sense of the world. The model posits that users go through three phases in making sense of the world, that is, by facing and solving their information problems. The first phase establishes the context for the information need, called the situation. People find a gap between what they understand and what they need in order to make sense of the current situation. These gaps are manifested by questions. The answers or hypotheses for these gaps are then used to move to the next situation" (Marchionini 1995 p. 29)

Dervin seems to have taken up Belkin's concept of an anomalous state of knowledge as generator of an information need, but conceptualized the process of information seeking through a more complex mechanism, which involves the ideas of change, bridging, and non-linearity, rather than simply filling a gap with information:

"For Sense Making the answer to attending to people as potentially changeable across time space is to re-conceptualize the unit of attention in research and system design from the person to the person-in-situation. In Sense Making this is called the sense-making instance ... "The central foundational concepts of the Sense-Making Methodology are, thus, time, space, movement, gap, step-taking, situation, bridge, outcome."

"When used to understand users and their needs, the metaphor forms the basis of the interpersonal interface between, for example, the interviewer and the user, the receptionist and a caller; the teacher and a student, one colleague and another ... Sense-Making studies have developed prototypical categories based on the time-space-movement metaphor for situations, gaps (questions), and outcomes (helps and hindrances)." (Dervin 1998 p. 40)

In Dervin's model context is considered in terms of situation, which already shows a more holistic understanding.

Taylor (1991) introduced the idea of “information use environments” with regard to professional groups in which the similarity of the problems faced becomes the focus on which to model information behaviour; therefore, it is the common information behaviour of a group, rather than individual behaviour that is essential to development of information systems. (Bystrom and Hansen 2005, p. 1053)

“Information behaviour is not isolated from the context within which the information seeker works. Major external influences were categorized as Social and Organizational, Time, The Project, Navigation Issues, and Access to Sources.” (Foster 2004)

Sonnenwald discusses in greater detail the concept of ‘situation’:

“Within each context, a flow of situations arise. For example, within the context of academia, teaching a course and attending a committee meeting are two different types of situations. The phrase, “the context of a situation,” helps illustrate the relationship between contexts and situations. A context is somehow larger than a situation and may consist of a variety of situations; different contexts may have different possible types of situations. A situation may be characterized as a set of related activities, or a set of related stories, that occur over time. That is, we can characterize or describe situations by actions or behaviour that occur over time, and which are perceived as being connected by participants and/or outsiders.” (Sonnenwald 1999, p. 3)

Although ‘context’ is used in many ways in LIS research, Dervin (1997) points out some common themes in the analysis of context within LIS research (p. 17) which on the whole reflect the growing importance of interpretive and holistic understandings of it:

- *Context is not usefully conceptualized as independent entity.* Context is sometimes conceptualised as an artificial entity, invariant in time and independent of human interaction, as a surround enclosing people and things
- *Context requires a focus on process.* ...most of those who theorize context mandate attention to process, to change over time, to emergent and fluid patterns. In the terms of Dewey, this is a mandate to focus on “action verbs”, on acting, doing, talking, thinking.

- *Focus must be placed on the dialectical relationships between product and process.* This is a focus on context and action; structure and agency.
- *Focus must be placed on multiple interdependencies.* Some theorists who conceptualize context draw on systems theory for this assumption, while other draw on various forms of dialectical theorizing such as that manifested in the works of Dewey and Marx. In both cases, ideas of linear progressions are either rejected or tempered and patterns are seen as potentially exhibiting themselves in every possible temporal or spatial direction. Further, the idea of the summation of parts, so ever present in causal thinking, is rejected in favor of views that assume either that things will be less or more than the parts, or that this kind of part-whole thinking is alien to the very nature of contextual theorizing.
- *Context is a necessary source of meaning.* For some, context is also sufficient for meaning, but this rigid idea usually comes from those who do not attend to the subtleties of potential dialectical relationships in the analysis of context. An useful treatment of context comes from hermeneutics.

In their critique of the 'objectified' consideration of context, Talja *et al.* (1999) state that:

"... context is usually produced in research by naming the entities (actors, structures and attributes) which affect the research object. Such listings of contextual entities serve many purposes. Firstly, they tell the reader how the phenomenon studied is connected to reality. Secondly, the naming of entities (actors, structures and attributes) which affect the research object helps to bring the multiple aspects of the researched phenomenon into sight. Thirdly, they constrain and reduce the variety of factors relevant to the research object and, in this way, make it possible to detach the phenomenon under study from the cultural flow of everyday life, so that it can be described and analyzed with the help of scientific concepts. Fourthly, they strengthen the reliability of the study and legitimate the connection between the research outcome and reality. Finally, they visualize the perspective of the researcher without the researcher having to explicate his theoretical position or epistemological and ontological assumptions." (p. 753)

"Within an objectified notion of context, it is often considered that the more variables or contextual factors that are taken into consideration, the higher the certainty about the nature of the research object." (p. 755)

Bystrom and Hansen (2005) in their discussion of the centrality of task within information seeking behaviour provide a good example of just this type of consideration of context and situation:

“Typical of *contextual attributes* is that they are stable over longer periods and consequently affect task performance processes profoundly... *Situational attributes* are of a transient nature, creating temporary conditions for task performance processes. They may further be divided into different kinds of situational attributes, such as individual-related attributes (e.g., knowledge levels, experience, and ambition), resource-related attributes (e.g., time and sources available), and source-specific attributes (e.g., IR techniques). Experiences, motivation, and different preferences are examples of *individual attributes*.” (p. 1052)

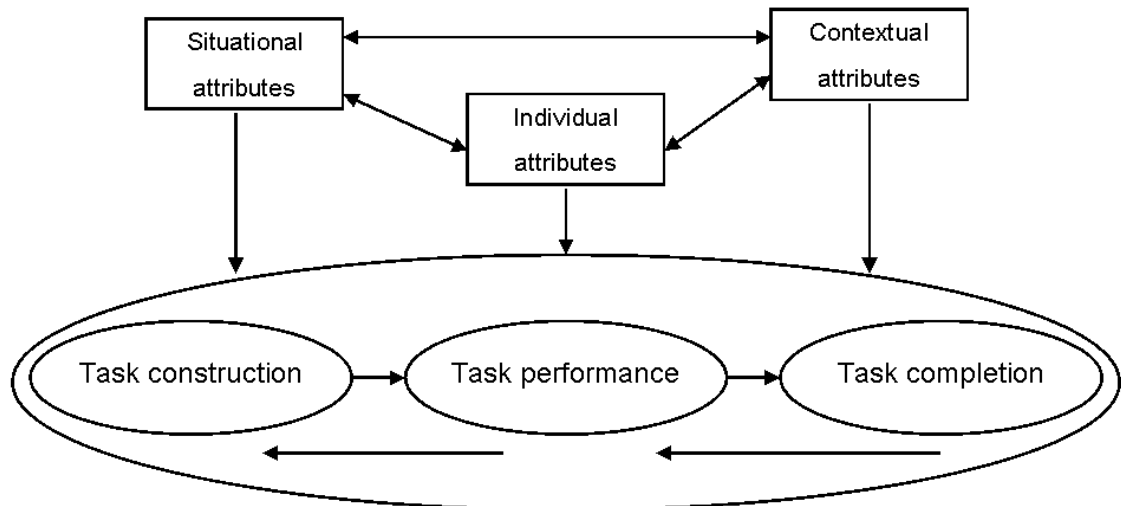


Figure 7. Bystrom and Hansen’s ‘attributes’ of context (Adapted from Bystrom and Hansen 2005, p. 1056) Copyright JASIST. Reprinted with permission of John Wiley & Sons, Inc.

By contrast, the interpretive approach to context takes into consideration some frames of reference which are prior to the construction of attributes as objective entities:

“In the interpretative approach, however, it is precisely such conceptualizations or, to be more precise, frames of reference, that bring particular kinds of entities (actors, structures and attributes) into researchers' sight. These entities do not exist as such, just waiting to be identified and described by the researcher; rather, contextual entities are constituted in

researchers' social activity in the same way as the research object. Particular kinds of conceptualizations make it possible for the researcher to approach information needs, seeking and use from a particular angle and limit other ways in which these phenomena could also be viewed ... " (Talja *et al* 1999).

McKenzie (2004) expounds a social constructionist approach to 'context' that focuses on the cultural creation of 'positions' of actors, which shape their information-seeking behaviour:

"Positioning theory is a constructionist framework that has proven useful for studying the relationships between interactional practices and information seeking. The act of positioning, or the assignment of fluid 'parts' or 'roles' to speakers in the discursive construction of personal stories that make a person's actions intelligible and relatively determinate as social acts, can construct individuals or groups of people in ways that have real effects on information seeking. In a clinical interaction, for example, the right to make a diagnosis or give a directive varies between the professional and the patient. The two participants therefore occupy different discursive positions, and it is necessary to attend to the ways that the speakers position themselves and one another in order to understand the social meaning of what they say." (p. 685)

It is evident in the literature how the study of information behaviour has expanded more and more toward the consideration of the social aspects of information practices (Hjørland and Albrechtsen 1995; Leckie, Pettigrew, and Sylvain 1996; Lloyd 2007; Savolainen 2006; Tuominen, Savolainen, and Talja 2005; Widén-Wulff 2000; Widén-Wulff and Davenport 2007; Landry 2006). Importantly, this has also been the case in mainstream educational (Williams 2005) and organizational (Tsoukas 1994) theory and practice. As information behaviour studies have progressively identified the significance of situational and task-related factors (Bystrom 1999, 2002; Sonnenwald 1999; Wilson 1999; Bystrom and Hansen 2005), the cognitive view-point has given way to a greater consideration of the social dimension.

2.10 A critical realist approach to situated information use and learning practices.

The general importance of context is again reflected in the understanding of learning and the uses of literacy (or *literacies*) in particular situations.

“Practices are shaped by social rules which regulate the use and distribution of texts, prescribing who may produce and have access to them. They straddle the distinction between individual and social worlds, and literacy practices are more usefully understood as existing in the relations between people, within groups and communities, rather than as a set of properties residing in individuals” (Barton and Hamilton 2000, p.8)

In contrast with learning as only implying internalization, learning as participative practice in communities concerns the whole person acting in the world, and implies a relational view of persons, their perceptions, their actions, and the world. Individuals, communities and technologies are players in a broader context of culture and social organization (Brown and Duguid 2000; Choo 2005; Tsoukas 1994, 2005). The dialectical interplay between individuals and the social dimension is mediated by cultural and material structures, and questions arise about how these are constructed, how individuals interact with them, and how we can account for this interaction in research. For example: What elements constitute a context? What aspects of a given context influence our behaviour? To what extent are practices structured externally to participants? How do individuals create or alter structural elements of society, culture or community?

Acknowledging the fact that social structures (e.g. institutions, rules, norms, positions of authority, etc.) and material conditions (e.g. economic constraints, availability of resources, geographic location, etc.) exist implies recognizing the influence they exert and their capacity to provide explanations of social behaviour. “Regardless of the method, the work of theory is to explain the hidden powers – processes or mechanisms – that produce the effects or events that we study” (Wikgren 2005, p.12).

The current interest in the social dimensions of learning needs to account for the material aspects of the historicity and activity-dependence of practice and experience. Culture, discourses and representations are important, but not the only aspects of society. According to critical realism, the very possibility of social theory is based on the existence of real (i.e. material) social structures and systems that are emergent entities which operate independently of our conception of them (Wickgren 2005, p.12).

Basically, critical realism recognizes that social structures, while stemming from human activity, have emergent properties distinct from the individual level and also that social structure is pre-existent for individual agency at any given moment in time. The categorical difference between society and individuals established by critical realism doesn't turn into a dichotomy as their linkage is established by a mediating system that consists of:

“... the *positions* (places, functions, rules, tasks, duties, rights, etc.) occupied (filled, assumed, enacted, etc.) by individuals, and of the *practices* (activities, etc.) in which, in virtue of their occupancy of these positions (and vice versa) they engage” (Archer et al. 1998, p. 410).

The consideration that social structures are not merely discursive does not preclude the constructionist view, but puts a materialistic understanding of structure *before* it: positions are seen as the underlying structural elements that condition the existence of discourses and their power to influence behaviour. Positions are not however fixed, as their creation and destruction is dynamic, but the important aspect is that they are prior to practices at a given point in time (e.g. when I take a new job many things are already established).

Structures are not seen as determinant, but simply as pre-existing and necessarily influent on behaviour. “We can speak of the causal force that people's material circumstances (and not just beliefs or interpretations) exert on their behaviour without making any deterministic claims about the ways in which that behaviour is connected to those circumstances” (Porpora 1998, p. 343). Conversely, structural elaboration (change or

reaffirmation of structures which can be brought through several mechanisms, including cultural activity) *follows* agency in a cyclical way. This idea relates to Bourdieu's theory of practice which emphasizes the relational interdependency of agents, world, meaning, activity, cognition, knowing and learning and tried to bridge the dichotomy between structure and agency in explaining some aspects of behaviour (Bouveresse 1999). More of an structuralist, Bourdieu nevertheless tried to moderate the determinant effect of external rules with our abilities for interpretation, innovation and improvisation which do not render rules ineffective, but actually place them in social practice in terms of the resultant effect of structure and agency in situation.

"Actors frequently respond to their structured interests in creative ways that in principle cannot be predicted in advance ... However they act, individuals affect the structural relationships that bind them in intended and unintended ways. Thus ... there is a dialectical causal path that leads from structure to interests to motives to action and finally back to structure" (Porpora 1998, p. 351)

Bhaskar (1998, p. 415) further introduces an explanation of action, which can be related to the idea of literacy exercised in situation and can also be connected to some models of information behaviour (e.g. Wilson 1999), by situating individual agency in the midst of external opportunities and circumstances and understanding it as enabled by competences and facilities:

"The bases for action may be classified into five broad types: cognitive, conative, affective, dynamic and circumstantial. The *dynamic* bases of action comprise the *powers* necessary to perform an action in appropriate (normal or specified) circumstances. These powers may be subdivided into two general kinds: the *competences*, including practical capacities, skills and abilities of various sorts; and the *facilities*, including political, economic, normative (moral, legal, etc.) resources and more generally possibilities" (Bhaskar 1998, p. 416 emphasis in the original).

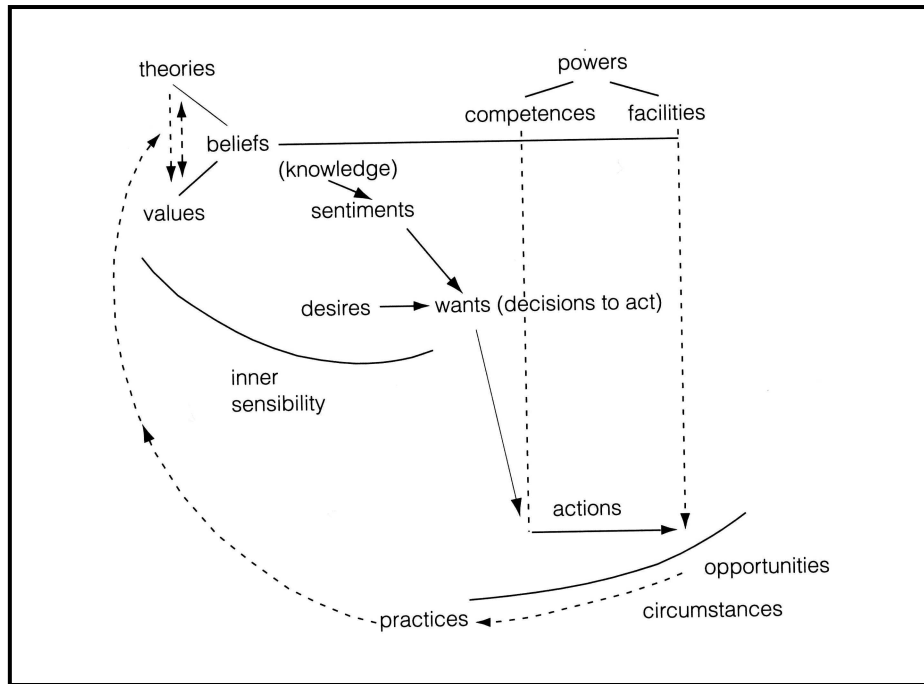


Figure 8. The five bases of action and practices, values and theories (Bhaskar 1998, p. 415). Copyright Taylor & Francis Books, reproduced with permission.

He immediately goes on to explain that: "The circumstantial basis of action is a holdall, which includes structures not directly implicated in the action and the whole welter of material and social conditions and contingencies that comprise an agent's context" (p. 416).

This view has important elements which can be applied to an understanding of literacy as competence that enables learning. Practices are seen to be the meeting point of individual agency (the cognitive, affective and wilful aspects of behaviour) with circumstances and opportunities offered by the environment. Actions are capabilities exerted between these limits.

Lave and Wenger (1991) understand learning as a dimension of social practice, in a way that largely coincides with the views of critical realism. Rather than asking what kinds of cognitive processes and conceptual structures are involved in learning, they ask what kinds of social engagements provide the proper context for learning to take place. The concepts of community and identity are related to meaning construction in a particular practice (Brown, Collins, and Duguid 1989). The learner is not seen as focusing on gaining a discrete body of abstract knowledge, but

rather on learning the skills to engage in the process of belonging in a community and participating of its practices. Learning is a way of being in the world, not just of coming to know about it. This view entails that agent, activity and the world mutually constitute each other and that learning is an aspect of all activity, rather than just one kind of activity.

These views of learning, spanning the individual and social construction of meaning, have important implications for understanding what literacy means and how the concept can be applied in education and workplaces. The inclusion of the social dimension in conceptualising learning and literacy seems absolutely necessary and has been gaining acceptance in LIS, even among those who have traditionally championed individualistic cognitive approaches (Ingwersen and Jarvelin 2005).

Both education and work are highly structured domains of life (Maybin 1994). Organizations such as NHS24 have aims and objectives to accomplish; strategic and operational plans to guide their attainment; personnel policies that include recruitment, training, coaching, and development plans; clinical and information governance structures; etc. Individual action is expected to be proactive (NHS Scotland 2005), but is at the same time constrained and guided by conditions established at institutional levels.

For example, use of information resources is guided by professional conventions that legitimize valid knowledge (e.g. evidence-based practice or randomized trials) and by legal concerns over liability stemming from malpractice or even misguidance (nurse advisors in NHS24 are only allowed to give patients information from approved websites). Individual literacy requirements are defined, to a large extent, by job descriptions and candidate profiles.

These external constraints are experienced and interpreted by individuals in social interaction, who also react to them and may alter or modify them. It is not easy to distinguish to what extent social practice at any given time

and location is the doing of individual agency or is determined by structural conditions that are pre-existing, even if in a dynamic state. This is however, the problem as it is presented to us by sociology and epistemology and there seems to be no possibility of avoiding it in LIS research.

The interaction between the various, and often conflicting, considerations of context as objective attributes, psychological perceptions or conceptions, and socio-cultural influences can be represented (and to some extent reconciled) addressing four main aspects in the following way:

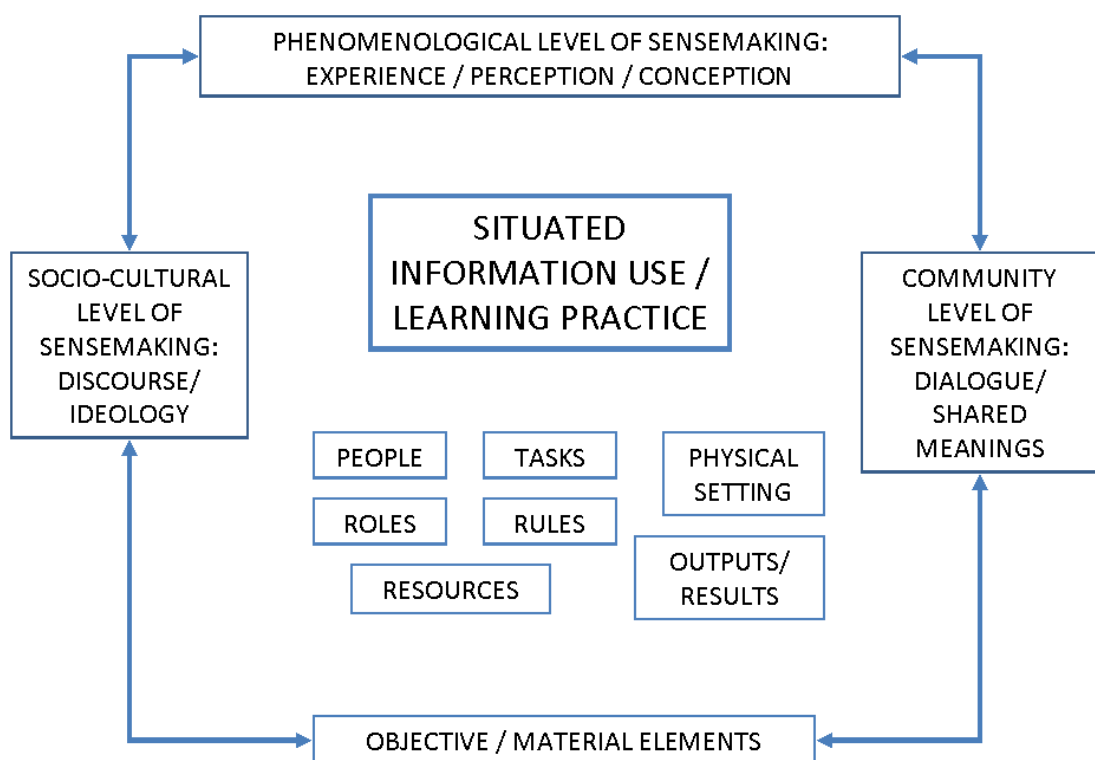


Figure 9. Four main aspects of situated practice

- a) There exist material attributes of a situation, e.g. people, buildings, documents, information systems, etc. Also things like roles and tasks are specified as independent elements, put down on a piece of paper. They provide pre-existent definitions of important aspects of the situation. If I go into a new job a lot of things will already be established about my role, tasks, relevant decision making, expected results, etc.

- b) However, all these elements are individually experienced, perceived, and conceived of in a personal sense-making process, as phenomena. They thus lose the positive character of objectivity, e.g. a task or a role is interpreted and enacted in a subjective way; the use of resources is selective; an information system can be regarded as more or less useful; etc.
- c) The interpretation of meaning is however not exclusively individualistic. There is a level of social interpretation that is generated at the level of the relatively small community (distinct from larger social culture), for example: a particular organization; a professional community; a locality; etc.
- d) The socio-cultural level includes the larger cultural influences, for example capitalist ideology or nationalism, which influence the other perspectives. The general identity of 'workers' (for example, the general subordination of nurses to doctors); the role of government in society (e.g. health care in UK is considered a responsibility of the government); the role of marginalized communities (e.g. immigrants); etc. are negotiated (or dictated) by various processes of ideology, discourse and power relations. Some of these aspects are reflected at the level of the organization.

The consideration of context as situated practice helps link up with developments in KM which also point at learning and information sharing as embedded in organizational practice, and this will be discussed in the following chapter.

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Chapter 3. Knowledge management, workplace learning and information use in the organization.

3.1 Development of capabilities in the knowledge economy

Knowledge management has developed fundamentally from the strategic responses of organizations to changes in the economic and business environment, which started in the early 1970s, involving the explosive increase in the use of information technologies, deregulation of markets, increases in competition, consumer demand for higher quality products and the globalisation of the economy. These phenomena have created a more challenging business environment characterized by instability and constant change (Drucker 1993), and spawned successive waves of management thinking in the search for competitive advantage (Abell and Oxbrow 2001, p. 20):

- Total quality management
- Competitive advantages
- Business process re-engineering
- Intangible assets theory
- Learning organizations
- Knowledge management

The economy has shifted progressively towards being based on services rather than manufacture, allowing for new business practices (such as e-commerce) and altogether introducing a new paradigm for business, based on the consideration that information and knowledge are the sources of the most stable and enduring competitive advantages. This has had many implications for business strategy, organizational structures and human resources development, including new requirements in education and training (Harrison and Kessels 2004). These changes have of course involved an increasingly significant role for information and communications technologies (ICT). OECD (2005, p. 11) affirms that:

“ICT has had, and will continue to have, significant economic implications. Businesses are transforming their supply and demand chains, as well as their internal organization to fully exploit ICT. Governments are restructuring their internal functions and the way they deliver services and generally interact with citizens and businesses. People are modifying

their consumption and spending patterns, as well as their behavior. In the process, nearly every economic variable of interest is affected.”

The new paradigm is being called ‘the knowledge economy’, and it has been defined as one in which (Harrison 2005):

“... the generation and exploitation of knowledge has come to play the predominant part in the creation of wealth” (UK Dept. of Trade and Industry)

“The knowledge economy does not consist only of knowledge intensive-industries, but rather ... is characterised by new factors of production, and new sources of competitive advantage, such as know-how, innovation, design and branding” (UK Chartered Institute of Personnel Development)

Although the extent of these changes is under debate, as well as whether we are indeed in a different or ‘new’ economy (Hislop 2005), there are significant trends that point to fundamental changes that have raised the importance of:

- Virtualisation of business practices and globalisation
- Desegregation and clustering of organisations
- Networking
- Innovation
- Continuous learning

Within the general consideration of the importance of knowledge in the economy, it is apparent that not all organizations are focused on knowledge in the same way. As to what can be defined as knowledge-intensive enterprises:

“... in a knowledge economy, the term ‘knowledge-intensive’ may quickly lose any descriptive value ... In the present analysis, a knowledge-intensive organization is assumed to have the following two features:

- The organization involves intensive use of knowledge (not just information, since knowledge is stock of experience, not flow of information)
- Individual professional members of the organization have high levels of esoteric knowledge that cannot be

widely shared, that is, such members are specialized and cannot be substituted for one another.

Most hospitals, schools and high-tech firms thus qualify as knowledge-intensive organizations" (Hargreaves 2000a p. 57)

The knowledge economy is bringing about changes in the type of skills required and generally raising the level of skill and knowledge required for work, particularly in white-collar occupations:

"The overall pattern is for the 'skill intensity' of employment to increase, especially in managerial, professional and associate professional occupations, with the qualifications held by people in jobs continuing to rise and with most jobs needing more training than previously ... including basic skills, generic skills (including verbal, numerical, planning and communication skills), IT skills and management skills" (Campbell 2001, p.iii)

Business and management theory are already offering various models and strategies that seek to explain why and how information and knowledge are central to future economic and business developments, and what needs to be done within organizations to harness, use, exploit, etc. the power of information and knowledge. There are two main aspects to their discussion, consisting of developments in the economic and management perspectives.

The economic perspective has recognized the value of intellectual assets (Edvinsson and Malone 1997) in the development of competitive advantages from a resource-based view of the firm.

"Knowledge and information appear in economic models in two different contexts. The most fundamental assumption of standard microeconomics is that the economic system is based on *rational choices made by individual agents*. Thus, *how much and what kind of information* agents have about the world in which they operate and how powerful their *ability to process the information* is, are crucial issues...

The other major perspective is one in which knowledge is regarded as an *asset*...the economics of knowledge is to a high degree about specifying the conditions for knowledge to appear as a 'normal commodity'. Innovation theory and competence-based theories of the firm address how knowledge can be produced, mediated and used in market economy". (OECD 2000, p. 13)

The management perspective is responding to these economic considerations by focusing on (Jashapara 2004; Harrison and Kessel 2004; Davenport and Prusak 2000):

- Leveraging the use of information and ICT for knowledge acquisition, storage and transfer.
- Fostering creativity and innovation.
- Developing human capital
- Organizational learning

The value of knowledge for organizations, from an economic point of view, has been closely linked to the development of capabilities. An example of a capability is innovation (Lundvall and Johnson 1994). While innovation has been regarded for a long time as an exogenous process driven by the application of highly technical and scientific codified knowledge, arguments have been made (Nonaka and Takeuchi 1995; Hamel and Prahalad 1994) that innovation is also an endogenous process which can be spurred by the use of information and knowledge available within organizations and generally based on a wider variety of sources and interactions.

“The recent models of innovation emphasize that knowledge production/innovation is an interactive process in which firms interact with customers, suppliers and knowledge institutions. Innovation systems are constituted by ... firms, technological institutes, universities, training systems and venture capital.” (OECD 2000, p. 23)

The basis of knowledge management is the optimization of the processes of information and knowledge conducive to organizational success. This does not relate solely to innovation, but also to other capabilities including: developing effective business partnerships, enhancing customer relationships, and quality assurance.

There exist many definitions of KM that address a number of key ideas:

“KM is the systematic, explicit and deliberate building, renewal and application of knowledge to maximize an enterprise’s knowledge-related effectiveness and its returns from its knowledge assets” (Wiig 1997)

"KM is the formalization of and access to experience, knowledge and expertise that create new capabilities, enable superior performance, encourage innovation and enhance customer value (Beckman 1999)

"Knowledge management describes all methods, instruments and tools that in a holistic approach contribute to the promotion of the core knowledge processes – to generate knowledge, to store knowledge, to distribute knowledge and to apply knowledge supported by the definition of knowledge goals and the identification of knowledge – in all areas and levels of the organization" (Mertins, Heisig and Vorbeck 2001, p. 3)

"Knowledge management means using the ideas and experience of employees, customers and suppliers to improve the organization's performance" (Skapinker 2002)

KM initiatives have two broad aspects:

- One is closely linked with the use of information technologies and information management to store, manipulate, and communicate explicit knowledge, for example: development of intranets, e-libraries, document repositories, directories, etc.
- The second broad aspect relates to developing people's knowledge, attitudes and behaviour, for example: subject matter expertise, communication and collaboration. This basically involves learning and sense-making processes, happening in formal and informal ways.

Some of the main directions and strategies for KM rest on four building blocks (Lank and Windle 2003):

- Making knowledge visible (e.g. intranet, directories, best practice repositories, expert talks, etc.)
- Increasing knowledge intensity (e.g. benchmarking to higher standards)
- Creating a knowledge infrastructure (e.g. organizing workgroups with KM responsibility, fostering communities of practice, developing IT infrastructure)

- Developing a knowledge culture (e.g. thorough leadership, reinforcement, encouragement, narratives, etc.)

Jashapara (2004, p. 135-137) argues that from the business point of view the development of KM initiatives and systems is expected to show return on investment, and in this regard the most important applications of KM are often related to total quality management (TQM), business process reengineering (BPR) and the concept of 'lean production'. Among the most common KM systems supporting these aims are:

- document management systems,
- decision support systems,
- group support systems,
- executive information systems,
- workflow management systems and
- customer relationship management systems.

Among the most common applications of these systems are (Ruggles 1998):

- Creating an intranet
- Creating data warehouses and knowledge repositories
- Implementing decision support tools
- Implementing groupware to support collaboration
- Creating networks of knowledge workers
- Mapping sources of internal expertise

The implementation of management strategies and initiatives for the use of information and knowledge implies having in place, at least to some degree (McKenzie and Van Winkelen 2004; Jashapara 2004):

- A value system that is coherent with KM. This is related to organizational culture.
- Strategic planning that defines clear aims and goals for knowledge use.
- Information systems that provide technological support.
- A knowledge system that takes care of logically organizing explicit knowledge from learning activities, developments, best practices, lessons learnt, people's profiles, etc.

- A quality system that takes care of the basic aspects of quality assurance, many of which are related to information, knowledge and expertise.
- A learning system that organizes and supports learning activities and generally the build up and sharing of knowledge.
- The organizational structure and the general arrangement of business processes have to be aligned to working efficiently with knowledge. This is related to business process reengineering and to the establishment of a 'supply chain' of information and knowledge.

While it is evident from the above mentioned aspects that KM is not related only to information management, Holsapple (2005) emphasizes the inseparability of KM and information technologies:

"... computer-based technology (CBT) is essential to an understanding and application of modern knowledge management. Furthermore ... knowledge management forms the rationale and intellectual basis for studying computer-based technology and systems. That is, KM is the ground on which technological advances grow, giving such advances sustenance, relevance, and a raison d'être." (p. 43)

3.2 Intangible assets and intellectual capital

Business theory has explicitly recognized the value of intangible assets as a significant part of the overall value of many companies (Lundvall 1988; Edvinsson and Malone 1997) and this is one of the foundations of the concept of KM. Intangible assets have formerly been recognized as 'goodwill' value, and this is the difference between the book value and the market value of companies. Intangible assets comprise human, structural and relational capital. The development of human capital is particularly important in the context of this dissertation.

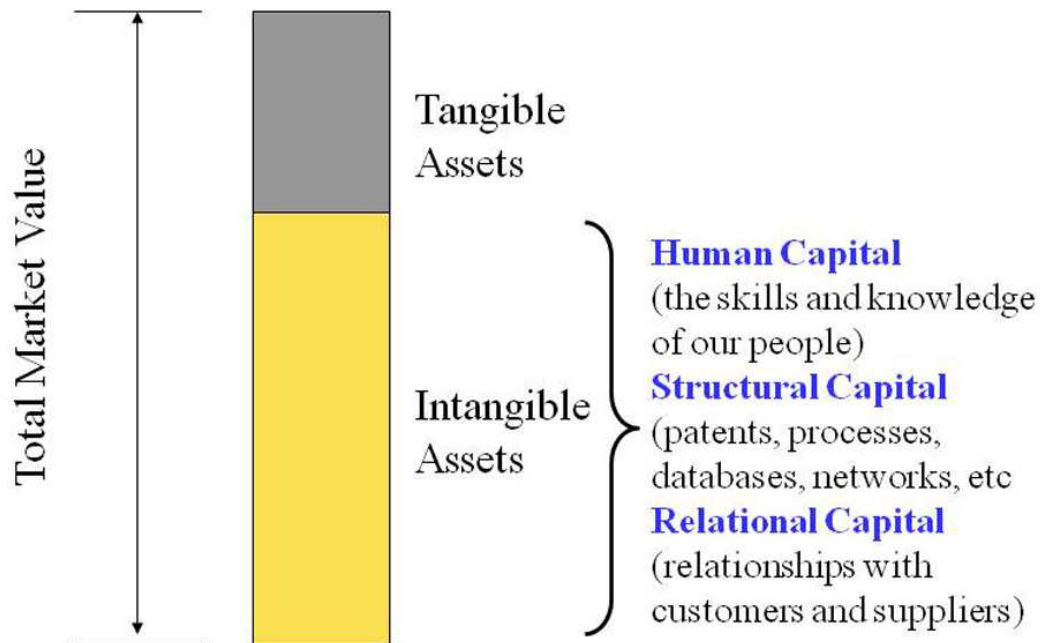


Figure 10. Intellectual capital and total market value (based on Fincham and Roslender 2003)

The foundation of many enterprises on knowledge assets has been recognized for a long time, but it is only relatively recently that this has been incorporated more fully into the theory of the firm and into enterprise-wide management practices.

“In Henkel’s research departments, ‘knowledge management’ has a tradition going back more than 100 years. Sharing knowledge also means publishing and protecting knowledge. Henkel applied for its first patent in 1896 ... the decision to enter a new era of information and knowledge was made at a meeting of top managers in May 1998 ... the intention was to make the knowledge and experience of Henkel’s 56,000 employees world-wide more accessible. It was not just a question of gathering facts and figures, but of making the views and experience of experts available” Dr. Christoph Haxel, Foreword (Mertins, Heisig and Vorbeck 2001)

Human, structural and relational capital can be subdivided into several aspects or components (Fincham and Roslender 2003):

STRUCTURAL			
HUMAN CAPITAL	RELATIONAL CAPITAL	INTELLECTUAL PROPERTY	INFRASTRUCTURE CAPITAL
•Know how	•Brands	•Patents	•Management philosophy
•Education	•Customer information	•Copyrights	•Corporate culture
•Work-related knowledge	•Customer loyalty	•Trade secrets	•Management processes
•Work-related competencies	•Distribution channels	•Trademarks	•Information systems
•Cultural diversity	•Business collaborations	•Service marks	•Networking systems
			•Knowledge bases

Table 3. Components of intellectual capital.

All of these aspects of intellectual assets can be involved in KM initiatives, and it is this potential diversity of applications that makes the concept quite complex. KM initiatives can potentially involve every process and every member of the organization. Of course, in practical applications there should be selectivity and prioritization according to strategic and operational planning, with specific aims for KM initiatives.

Development of human capital

Human capital is the aspect of intellectual capital that is mainly related to the concerns of this dissertation, and in this regard also a particular focus is put on how information literacy is relevant within a knowledge-managed environment as a capability or competency for interacting with information technologies and in a wider sense with knowledge sources and learning affordances in the organization. Human capital is defined as (OECD 2001):

“The knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being” (p. 18)

Value creation of intellectual capital has as one of its foundations the development of human capital through education, training, workplace learning and knowledge sharing. This is also one of the bases of organizational learning (Senge 1990). This development is affected by the presence of information technologies and specific organisational dynamics, i.e. those that foster the development of human capital and the interactions conducive to learning and sharing of knowledge and information.

	Value creation	Value extraction
Purpose	Increase employee knowledge	Leverage company IC and innovations
IC Focus	Human capital	Intellectual assets
Activities	Knowledge creation Knowledge sharing Learning Organisational dynamics Information technology	Definition/measurement Management of the innovation process Generation of Int. assets Competitive assessment Conversion to profits
Conceptual underpinnings	Psychology Education Sociology	Economics Finance Law (Sullivan 2000)

Table 4. Value creation and extraction (adapted from Sullivan 2000).

Harrison (2005) comments on the challenges for human resources development that stem from the knowledge economy: "... to achieve this added value (that of knowledge creation and application) calls not only for the acquisition and development of superior human capital, but also for social capital to be skilfully organised, developed and sustained through time and space" (p. 321)

Social capital

Most people are embedded in different social networks and associations. These networks may be of friends or colleagues. Often people belong to a union or professional association that keeps them in touch with similar

professionals outside of their own work context. People may also play a sport with a particular group or club. In our home life, we are part of a family, a neighbourhood, and probably a religious or ethnic community too. These everyday networks, including many of the social customs and bonds that define them and keep them together, are social capital (Halpern 2005).

The notion of social capital is central to KM as some of its most fundamental premises are that collaboration and sharing of information and knowledge will be the base of competitive advantages.

The existence of this social fabric produces benefits for the individuals and communities related within it, the strength of these relationships being a function of the degree of closeness and trustworthiness among the community. Social capital has been considered from the point of view of its economic importance. Bourdieu noted that economists, whose worldview so dominated much contemporary thinking in both policy and the social sciences, had neglected the importance of huge areas of social and economic life (Bouveresse 1999) and he offered the following definition of social capital:

“Social capital is the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalised relationships of mutual acquaintance and recognition. Acknowledging that capital can take a variety of forms is indispensable to explain the structure and dynamics of differentiated societies. (Bourdieu and Wacquant, 1992, P. 119)

Most forms of social capital, be they kinship, work-based or interest-based, have three basic components: a network; a cluster of norms, values and expectancies that are shared by group members; and sanctions, including punishments and rewards, that help to maintain the norms and network (Halpern 2005). The network identifies who belongs to the community and also the possibilities of mutual access (which are not necessarily evenly distributed). Social norms define the type of accepted behaviours and are often informal or tacit. Sanctions are often also informal, indirect and subtle, such as through gossip and reputation. A sanction can also be positive, such as praise for a helpful act.

One of the most common and important forms of social capital is the firm or company. There are important economic advantages to bringing together a group of individuals with complementary skills into a closely co-ordinated network, with shared understandings and mutual commitments that facilitate co-operative action for productivity.

“The existence of the firm means that the individuals inside it can rely on one another to be there when they need each other, to share information, and to perform tasks without elaborate contracts and bargains having to be negotiated for each separate act” (Halpern 2005)

Organizations develop shared norms and objectives (an agreed understanding of the organization’s purpose, people’s roles, and appropriate behaviour) as well as sanctions to maintain these norms and internal networks (peer and management pressure, economic rewards and advancement, and formal and informal punishments for underperformance or defection).

Social capital is a concept strongly related to that of communities of practice, which are discussed below.

Knowledge workers

The concept of a knowledge-managed workplace implies important challenges for workers related to continuous learning, the development of competences in the use of information, and personal communications skills related to the development of social capital. The first two aspects are particularly important in this dissertation.

“The educational agenda has some common features across countries, including the following:

- Lifelong learning involves people learning in a variety of places – leisure, home, work – not just formal educational organizations, which requires a fundamental shift in how people define education, take personal control over it, and shape it to their own goals and lives.

- Learning how to learn, and developing the meta-cognitive skills or meta-competencies to do so, become an important outcome for educational institutions, and specially for schools ..." (Hargreaves 2000b, p. 67)

It is interesting to highlight how the concept of lifelong learning is used in both IL frameworks and organizational learning, while there is little mutual recognition of both fields. Also, the fact that lifelong learning is not restricted to formal education is clearly acknowledged in the management literature.

The knowledge economy poses important challenges for education, both within the formal school-based and the workplace-organizational settings. While a lot of information has been made available generally to the public through the Internet and in workplaces by means of Intranets, users must develop 'absorptive capacity' to be able to use available information and knowledge resources effectively. The concept of literacy in the information society has been expanded by disciplines such as librarianship and communication studies (see Chapter 2) to include not just the basic reading and writing skills but also skills in the use of ICT, knowledge of information resources, media literacy and critical thinking skills that are deemed necessary to develop the capability for lifelong learning in the information society.

"Preparing students for living and working in an information society is the formidable challenge facing the entire education community from preschool to higher education. The emerging theoretical base for information education – combining learning theory, research in information-seeking behaviour, and a broader view of library and information skills – provides a framework for assessing existing instruction and developing new levels of education..." (Kuhlthau 1993 p. 154)

Carmel O'Sullivan (2002) reports the findings of a survey on the type of skills expected of knowledge workers:

"The knowledge economy requires new skills of workers. *Trans4mation Training* identified ten skills produced by knowledge management:

- Time management skills – to use time and energy effectively to acquire knowledge.

- Mastery of different learning techniques – to absorb key knowledge and learn quickly.
- Skills of advocacy and inquiry – to present knowledge and gather it from others.
- Informal networking skills – to build influence and gain access to people with knowledge.
- Resource investigation skills.
- Effective IT skills – for recording and disseminating information.
- Skills of co-operative problem-solving.
- Open dialogue skills.
- Flexibility and willingness to try new things and take educated risks.
- Ability to actively review risks, opportunities and successes.”

The previous list exemplifies that information behaviour and information literacy as a set of abilities and skills for complex use of information have not been addressed in the KM literature beyond the concept of 'IT skills'. On the other hand, skills related to communication and dialogue are addressed which are often lacking in IL frameworks and in IBS and which could be conceptualized as important aspects of information behaviour in organizations.

Lifelong learning is probably the central challenge of knowledge workers (Harrison and Kessels 2004). However, there are partial and dispersed frameworks and models in the literatures of IL, KM and LIS that address different aspects of developing this capability. This dissertation is concerned with making connections between them more visible and this is attempted through the review of the literature and the findings of the empirical study.

3.3 Knowledge in the organization.

The concepts of information, knowledge and learning are fundamental to the idea of knowledge management. Different basic definitions and

understandings of the relationships between them give rise to diverse conceptions of how (or whether) they can be managed.

As will be further discussed below, understandings of knowledge are basically grouped around three main conceptualizations:

- A cognitive conception, which is related to knowledge as information (encoded) and sees it embrained in the individual mind.
- A conception of knowledge as tacit, which is related to the idea of embodiment.
- A conception of knowledge that locates it as embedded in collective understanding and in social practices.

The concept of knowledge

The concept of knowledge is studied by epistemology. Several formal conceptions of knowledge can be traced through history. The main views on knowledge can be grouped as (Jashapara 2004):

- Knowledge is innate, existing inside the individual from birth, and is revealed through processes of interior awareness.
- Knowledge exists on its own outside the individual, who 'takes it in' somehow from the environment.
- Knowledge is developed as an individual cognitive constructive process of interaction with the environment, made possible by psychological mechanisms (assimilation and accommodation) that develop with maturity in the first years of life.
- Knowledge is developed as a socio-cultural cognitive constructive process; individuals in isolation cannot develop knowledge. Knowledge is not primarily created in the individual mind, but in the socio-cultural milieu.

Defining knowledge is recognized as a complex problem. Mertins, Heisig and Vorbeck (2001, p. 9-10) mention two main aspects associated with knowledge:

- Scientific knowledge that comes from laboratories and universities, tested and validated by a scientific community and described in research papers, reports and books.
- Knowledge that an experienced person possesses.

Hargreaves (2000a) seems to agree with the importance of this broad division, stating that there exist two main modes of knowledge production relevant to business organizations:

“Mode 1 is university based, pure, disciplinary, homogenous, expert-led, supply-driven, hierarchical, peer-reviewed. Out of Mode 1 grows Mode 2 knowledge production, which is applied, problem-focused, trans-disciplinary, heterogeneous, hybrid, demand-driven, entrepreneurial, accountability-tested, embedded in networks” (p. 61)

The first mode is generally related to the documental instruments of knowledge transmission (i.e. books, journal articles, reports, etc.) and the knowledge embodied by experts. The second mode is related in a more general way to the concepts of practice and activity.

According to Lundvall and Johnson (1994), there are four main types of knowledge, which are interrelated:

- *Know-what*: mainly refers to “facts”. Knowledge is closer to the general concept of data and information. For example: how many people are estimated to have contracted Malaria in 2003.
- *Know-why*: Knowledge of explanatory nature that has been very important in the general development of science. This type of knowledge is related to theory building. For example: why antibiotics are effective against bacterial disease.
- *Know-how*: this refers to the ability to do something, is more related to performance. It is also called procedural knowledge. For example, how to: manufacture vaccines; carry out a vaccination campaign; carry out a surgical procedure.
- *Know-who*: Involves information about who knows what and who knows what to do. It relates to the need for communication and cooperation between people or organizations. For example: other scientists working on the problem; relevant government officials; related NGO’s; etc. Know-who is not only a type of knowledge, but is an important channel to knowledge.

Krogh et al (2000) defined seven categories of knowledge: tacit, embodied, encoded, embrained, embedded, event and procedural. Blackler (1995) identifies similar meanings of knowledge in the literature:

- *Embodied*. It is action oriented and is likely to be only partly explicit. Such knowledge depends on people's presence, sensory information, physical cues, is acquired by doing and is rooted in specific contexts
- *Embedded*. The notion of embedded knowledge deals with the significance of material resources and relationships analyzable in systemic terms, for example roles, procedures, routines, etc.
- *Embrained*. Knowledge dependent on conceptual skills and cognitive abilities. Argyris double-loop learning and Senge's mastery are examples of theories rooted in this type of knowledge.
- *Encoded*. Knowledge located in icons and symbols that are more and more part of everyday communication.
- *Encultured*. Knowledge located in dialogues and discourses. This is characterized by Schein's conceptualization of organizational culture.

The acknowledgement of different types of knowledge poses challenges for learning theories, education and information literacy. *Knowing-who*, for example points at the importance of social capital and this can be related to LLoyd's (2006) concepts of IL as being aware of what is in an 'information landscape', including the presence of learning affordances. Other conceptions of knowledge point at the importance of non-documental sources of information and to alternative means of access which could nevertheless be considered aspects of workplace literacy. For example, knowledge which is embedded in practices would be accessed through processes of apprenticeship rather than textual sources.

Tacit knowledge

One of the most important and influential insights into the understanding of knowledge was provided by Polanyi (1962, 1966) in his discussion of the importance of tacit knowledge. He argued that a large part of what we know is reflected as unconscious assumptions and automatic performances. Knowing in his view consists of three elements: a focal target, subsidiary

particulars and a person who links the two through experience. This description bears resemblance to phenomenological explanations of experience, but puts an emphasis on how awareness shifts not only at the instance of perception, but over time. The focal target of knowledge is the point where attention is put. In Polanyi's (Tsoukas 2005 p. 148) example of a dentist probing a cavity with a stick, attention is put at the end of the stick. The subsidiary particulars include the feeling of holding the stick with her hand and the jerks felt as the stick moves around. We have a subsidiary awareness of holding a hammer when our attention is put on hitting a nail. As we learn to use a tool, we gradually become more expert and at the same time more unaware of how we use it to achieve results. This is how awareness shifts in time. Polanyi called this 'indwelling', and it leads to the use of the tool as an extension of bodily action.

One aspect of the importance of tacit knowledge lies in how it is related to expert performance. The more experienced and expert we are in some action, the more tacit some aspects of the action become. In relation to information literacy, and generally information behaviour, this has the implication that the skills involved in using information will become part of the subsidiary particulars of a main action performed by the expert, for example making a decision for which information has to be obtained. Another implication is that it may be difficult to provide accounts of aspects of information behaviour which have become quite automatic and unconscious.

According to Polanyi (1966), tacit knowledge forms a triangle, at the corners of which are the subsidiary particulars, the focal target and the knower who links the two. Subsidiary awareness and focal awareness are mutually exclusive:

"For a tool to be unproblematically used it must not be the object of our focal awareness; it rather needs to become an instrument through which we act – of which we are subsidiarily aware – not an object of attention." (Tsoukas 2003, p. 417)

The concept of tacit knowledge therefore does not just mean 'unconscious', but implies personal internalization through experience. This is an important

insight into the fact that we get things done and we achieve competence largely by becoming unaware of how we do so. This conception of knowledge (and its implications for learning processes and performance) has an important bearing on the consideration of information literacy as we are likely to find much of it is tacit and has become for the most part an aspect of the 'subsidiary particulars' (e.g. looking for information) of an action whose focus may be, for example, making a decision on a patient.

Polanyi connects all knowledge, even scientific, to personal experience. This is what in his view renders all knowledge personal, even though knowledge is grounded on social definitions. Even codified knowledge may not have a 'explicit' meaning for someone who is not steeped into a particular understanding, for example of musical notation. All explicit knowledge when it is acquired and used by someone is applied in connection with a larger body of tacit knowledge that gives it meaningfulness and supports it. This idea can be represented by the image of the iceberg, where the part that is visible above water is always a small fraction of the whole.

The concept of tacit knowledge implies that all new information or learning requires a certain amount of prior knowledge (which often has become tacit) in order to be interpreted and accommodated. And as the new information is integrated, in time it also becomes part of the mostly 'submerged' knowledge base.

Knowledge creation and learning theories

The concepts of knowledge creation and learning are central to KM, but these are related to different epistemologies. Although this is something that has also been discussed in relation to information behaviour models, for KM there are additional implications as the role of people is much more centrally focused. However, not all KM models embrace the same theories of learning. Various influential theories related to, or stemming from, cognitive considerations underlie different understandings of what

knowledge is and therefore give rise to various understandings of knowledge management:

- Cognitivism
- Cognitive constructivism
- Social constructivism (collectivism)
- Constructionism

Cognitivism is fundamentally associated with artificial intelligence by drawing straightforward analogies between human information processing and computing. In this view, reception of information is equated with changes in states of knowledge and therefore points to a theory of learning that is based on a 'pipeline' metaphor of information transfer and processing. Ideas are thought to be like objects that can be sent through a distribution channel, a conduit, to a recipient:

"... one entailment of the conduit metaphor is that the meaning, the ideas, can be extracted and can exist independently of people ... when communication occurs, what happens is that somebody extracts the same object, the same idea, from the language that the sender put into it." (Lakoff 1995, p. 116)

Cognitive constructivism sees knowledge production as the individual creation (rather than passive reception) of mental models. This position has been influenced by Piaget's theory of cognitive development proposing that humans cannot be 'given' information which they can immediately understand and use. Instead, humans must construct their own knowledge. Individuals build their knowledge through information and experiences that enable them to build 'mental models' of the world which consist of schemas, scripts and knowledge structures. In infancy, the development of models is associated with stages of mental maturity that bring about the capability to create and use them.

Ingwersen and Jarvelin 2005 (p. 33) expose the cognitive view point on information stating that:

"The concept of information has to satisfy two conditions simultaneously: On one hand information being something which is the *result of a transformation of a generator's knowledge structures* (by intentionality, model of recipient's states of knowledge, and in the form of signs) and on the other hand being something which *when perceived, affects and transforms the recipient's state of knowledge*" (emphasis in the original).

Social constructivism argues that, while the mind constructs reality in its relationship to the world, this mental process is significantly informed by influences received from societal conventions, history and interaction with significant others. Within LIS, one example of this point of view is Kuhlthau's (1993) process of meaning construction which is influenced by a number of mediations. Another example is Dervin's (1998) Sense-Making Methodology, which although is strongly rooted in individual sense-making also recognizes that this process happens in context and interaction.

Finally, in constructionism the primary emphasis is on discourse as the vehicle through which the self and the world are articulated. Knowledge is produced in ongoing conversations, rather than through mental models and structures that reflect a static view of language. Knowledge and identities are constructed in discourses that categorise the world and bring phenomena into sight. (Talja, Tuominen and Savolainen 2005, p. 82)

Important implications of these meta-theories for KM are about the location of knowledge, and as to how the processes of knowledge creation and transfer can occur.

Cognitive theories fundamentally locate knowledge in brains and minds, while the other theories tend to locate it also outside of individuals, as effects of culture, interaction and situations. For example, activity theory suggests that an individual lives within a world that is at once physically, socially and subjectively constructed, and that living and acting in this world constitutes knowledge (Hjørland and Albretsen 1995). Collectivist approaches emphasize that information processes should be seen as embedded in social, organisational and professional contexts. They shift attention from individual knowledge structures to "knowledge-producing,

knowledge-sharing and knowledge-consuming communities” (Jacob and Shaw, 1998, p. 142).

In this view, the way people are informed is mediated by institutions, by documents, by language and by other cultural products, and the factual content of messages and signs cannot be isolated from these cultural mediators (Hjørland 2004, pp.17–19). In the domain-analytic and socio-cognitive view information needs are considered to be caused by socio-cultural factors. Hjørland (2002, p. 263) states that:

“... information needs depend on the problems to be solved, the nature of available knowledge, and the qualifications of the user. Because most information problems are highly complex, the information needs tend to be socialized by various theoretical influences and paradigms”.

A concrete example is given in the understanding of schizophrenia from different theoretical viewpoints. Two doctors might approach the problem, one with the view that it is caused by biochemical factors, the other by family interactions. In each case, the information needs and the information deemed to be relevant will be different, but moreover, they will arise from different *collective* understandings of illness (the respective research communities that study the problem from different angles and assumptions and have influenced the thinking of the doctors).

Also, the more recent developments in hermeneutics have moved the focus from the question of what is information (as an abstract object) to the practices that relate to its use:

“...because the informativeness of a document depends on certain kinds of practices with it, and because information emerges as an effect of such practices, documentary practices are ontologically primary to information. The informativeness of documents therefore refers us to the properties of documentary practices. These fall into four broad categories: their materiality; their institutional sites; the ways in which they are socially disciplined; and their historical contingency” (Frohmann 2004, p. 387).

This conception of information is related to a view on knowledge and information use that is based on situated practices that are influenced by the professional community and, by extension, by the wider cultural and historical movements that in turn affect the development of professions.

Furthering the same position, Tsoukas (2005, p. 121) proposes that the transformation of information into knowledge requires the capacity to make judgements, and this is based on two elements: the ability to draw distinctions and the location of an individual within a collectively generated and sustained domain of action – a 'form of life', a 'practice', a 'horizon of meaning' or a 'consensual domain'. The ability to make distinctions does not in this view arise in isolation, but is always developed within a community of meaning. Knowing how to act within a domain of knowledge is learning to make competent use of categories and distinctions constituting that domain (Wenger 1999).

These developments point to the conclusion that traditional conceptions of knowledge as abstract, disembodied, individual and formal are unrealistic (Blackler 1995). Chaiklin and Lave (1993) review the points of view of anthropologists and activity theorists who agree that knowledge production or transfer cannot be divorced from situation and transmitted as abstract information or universally applicable approaches to problem solving.

Activity theory, based on the cultural constructivism of Vygotsky (1978), attempts to provide a unified account of knowledge and doing, emphasizing its collective, tentative and situated character. The relationships between knowledge development, a community's conceptions of its activities, and the material, cultural and social resources through which it enacts them are often the focus of research (Blackler 1995, p. 1035).

In sum, the evolution of learning theories as they have been considered in KM, and the consideration of different types of knowledge which go beyond individual mental models, parallels the progressive consideration in LIS of a more complex context of information use and at some point they both

converge on a greater consideration of the social construction of knowledge in situated activity.

Knowledge management waves

Following with a certain degree of parallelism the above discussed shifts in the understanding of information and knowledge, Snowden (2002) points to three distinct waves or phases in the development of knowledge management theory and practices:

“The first age, prior to 1995, sees knowledge being managed, but the word itself is not problematic, the focus is on the appropriate structuring and flow of information to decision makers and the computerization of major business applications leading to a technology enabled revolution based on the perceived efficiencies of process reengineering” (p. 100)

This first stage was directly supported by information management principles and the use of information technologies. Liebowitz (1999, p. iv) highlights the mistake of equating information and knowledge management.

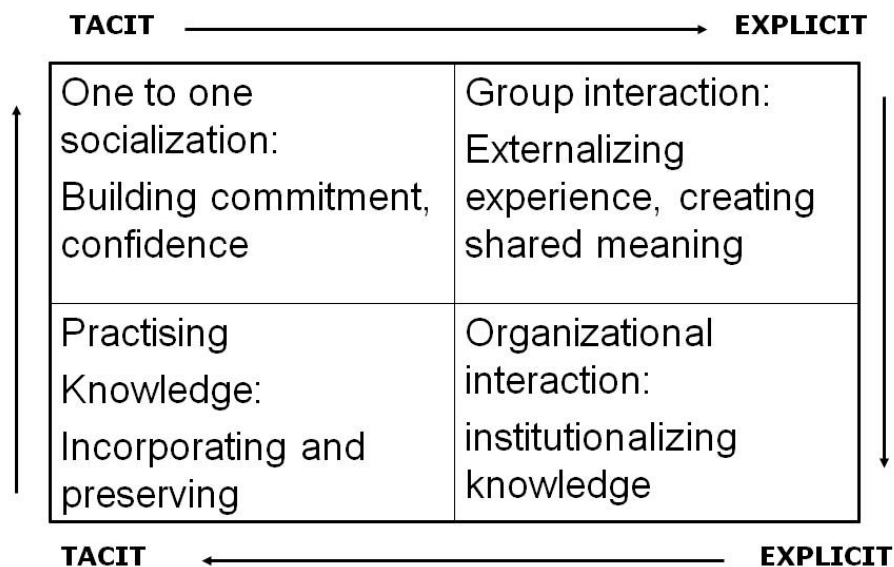
“Many organizations are having their IT directors become Chief Knowledge Officers, as top management often feels they are comparable positions. This is a mistake, because KM draws from many disciplines, including IT, and is broader in scope than the technology functions that an IT director often oversees.”

Tsoukas (2005, p. 15) comments on how the temptation to view all knowledge in terms of information has been enhanced by the impressive development of electronic storage, processing, retrieval and communication of information. The conception of knowledge as mainly consisting of, or being represented by, information also leads to managerial thinking in terms of social engineering and control as the world is thought to be rationally governable primarily through the collection, processing and manipulation of information about it.

The second wave begins with the popularization of Nonaka's SECI model (1994), which following Polanyi (1966) focuses on the importance of tacit knowledge. Nonaka's model developed mainly from research into processes of industrial innovation. As it became a mainstream model, it generated a dualistic understanding of tacit and explicit knowledge which centered on the importance of converting tacit knowledge into an organizational asset.

Nonaka proposes that knowledge and innovation are created out of the interplay between people's tacit and explicit knowledge, and fundamentally from a process of conversion of tacit to explicit knowledge. This concept of knowledge creation is associated with the use of language and communication, making use of metaphors, analogies and models. However, his outlook on knowledge is rather traditional as he conceives of it as basically formed in the minds of individuals, albeit in interaction with others, and distinct from the material technologies and practices around which organizations are structured.

Nonaka's notions of the relationships between tacit and explicit knowledge, and the focus on the process of conversion from one into the other as a source of innovation have been influential in developing a model of organizational learning. The knowledge creating spiral (Nonaka and Takeuchi 1995) evolves through the replication and recombination of current knowledge and organizational routines, encoding inferences and guiding individual and group behaviour through the stages of socialization, externalization, combination and integration. Nonaka and Takeuchi (1995) consider this movement of knowledge to be the foundation of organizational learning and of the development of capabilities for knowledge creation and innovation.



Based on Nonaka and Takeuchi 1995

Table 5. The knowledge creating spiral (SECI model)

This cycle has as one of its foundations the sharing of knowledge, not as simple transmission, but as constructive build-up of understandings at several levels. Externalization basically refers to exchanges at the small-group level, while combination involves a wider organizational integration of new knowledge. Knowledge becomes tacitly incorporated at the organizational level and thus becomes a compelling influence as it is socialized back to the members of the organization as part of the common deposit of knowledge and ordinary sense-making. In an example of the implementation of this methodology by Motorola in the 1990s, engineers were instructed to document steps in the design process of pagers as an incipient way of making knowledge more visible to others. In capturing and storing knowledge in the organization the intention was to harness the potential of knowledge dispersed through the organization. These approaches were later the basis for documenting best practices and 'lessons learnt'. Whereas initially knowledge and technology transfer were seen basically as an information communication problem, new insights into these processes understand them within more complex models of knowledge sharing and re-creation (von Krogh et al 2000) linked with the concept of communities of practice.

In contrast to Nonaka's ideas, Tsoukas (2005, p. 119) disagrees that tacit knowledge is something that can be (or should be), on the main, converted into explicit knowledge to be made useful. Polanyi's insistence on the personal character of knowledge and that knowing is participation through indwelling is not reflected in Nonaka's idea of knowledge conversion, which implies a dualistic conception. Rather than focusing on the importance of 'converting' tacit to explicit knowledge, Tsoukas proposes taking a new view of skilled performance by shifting or developing our attention so that things that have previously escaped it may be brought forward. This point of view implies a better understanding of the integration of tacit knowledge and is more related to mobilization of knowledge, rather than on a process of making it explicit through conversion. Explicit knowledge will always be grounded on personal judgments and personal commitments that are mostly tacit or implicit (Tsoukas 2003, p. 411), so there is no way of obtaining it in 'pure' form. Tsoukas (2005) argues that no amount of explicitation will ever remove the importance of tacit knowledge, because 'knowledge is always personal' and any aspect of explicit knowledge requires the tacit underpinnings that make it usable. We are always coming back to the analogy with the iceberg, where the larger part is sunk. Making knowledge explicit is like pulling an ice cube out of a glass and then returning it to the water in another glass: it will sink again and only show a small part.

The third phase or wave challenges some of the basic underpinnings of KM, as it has developed a more complex and nuanced understanding of the dynamics of knowledge creation and transfer. Some hold the view that knowledge cannot be managed at all. For example, Stacy (2001) states that:

"Knowledge is not a thing, or a system, but an ephemeral, active process of relating. If one takes this view no one, let alone a corporation, can own knowledge. Knowledge cannot be stored, nor can intellectual capital be measured, and certainly neither of them can be managed" (Snowden 2002, p. 101)

This wave moves from managing knowledge as a thing, basically engaging in content management, to managing knowledge as a flow, putting a stronger focus on context and narrative. Rooney and Schneider's (2005, p.

19) review shows that recent theorizing treats organizational knowledge as complex, distributed systems (Brown and Duguid 2001; Snowden 2002; Stacy 2001; Tsoukas 1996), socially distributed activity systems (Blackler 1995; Engestrom, 1993), and shared contextual spaces (von Krogh et al. 2000).

All of these developments point to the importance of understanding learning as occurring in situation, as a result of inter-subjective negotiation and mediation that is affected by the larger cultural environment. Also to a view of knowledge as more complex, chaotic and dealing (as in planning and forecasting) with much that we don't know and may even be unknowable (Snowden and Kurtz 2003). What seems clear is that individual theories of learning provide a fragmentary view at best. In this connection, Hislop (2005) discusses two approaches to knowledge, which he calls 'objectivist' and 'practice-based'. KM in the objectivist view has the following main aims:

- Convert tacit to explicit knowledge
- Codification/capture of relevant knowledge
- Collect knowledge in repositories
- Structure / systematize knowledge
- Technology plays a key role

The 'objectivist' view can be related to the first and second phases, which see knowledge as a business asset and show a strong concern with a technological approach. In fact, this view is reflected heavily in the literature. Scarbrough and Swan (2001) report in their review approximately 68% of articles on KM as related to information technologies. That may of course not only be related to an epistemological outlook on knowledge, but to many practical reasons why IT is useful or essential in many KM applications.

The practice-based view of knowledge, on the other hand, understands it as:

- Embedded in practice and therefore context dependent
- Embodied in people
- Socially constructed
- Subjective (contestable / negotiable)
- Multi-dimensional
- Knowing / doing are inseparable

The practice-based view of knowledge connects to the concept of communities of practice (Wenger 1998) and even further back to the concept of situated learning practice (Lave and Wenger 1991).

“Knowledge often lies not with individuals but is distributed among an ensemble of people working together ... ‘know how’ more often than not reflects an ability to work with people” (Brown and Duguid 2001, p.50)

This view on knowledge implies a particular understanding of organization, not just as a container, but as embodiment of knowledge. Knowledge lies in organizing, and arguably many advances in humanity have not only been technological but also the creation of forms of organizations (Brown and Duguid 2001). However, organizations are not unitary systems of knowledge, but comprise of many sub-units, both formal and informal.

Communities of practice and situated practices.

Communities of practice are groups within organizations that at a smaller level hold specific knowledge. These groups “form around practice and, in the process, develop collective, dispositional knowledge” (Wenger 1999). Communities of practice are closely related to questions of identity within the organization, and they are an important unit of analysis because they create boundaries for knowledge, where it develops and where it tends to ‘stick’.

One of the classic examples of how knowledge can reside in communities of practice is Julian Orr’s research of Xerox technicians (Brown and Duguid 2000). This landmark study highlighted the role of exchanges based on collaboration and social capital whereby the nominally isolated technicians shared information and knowledge about their work, holding a pool of mostly tacit knowledge amongst them. This knowledge became explicit partially as they discussed their problems, shared notes and offered solutions to each others’ problems. Only much later the organization itself supported the conversion of some of this knowledge to information systems accessible company-wide.

These views on the nature of knowledge in organizations are echoed by several authors, providing points of view coming from beyond the management literature. For Bourdieu (1988), knowledge is the emergent outcome of engagement in social practices in workplaces that have three dimensions: role-related normative expectations; personal dispositions and local interactions with particular situations. The organization has control mainly over the role-related normative aspects, but little control over people's dispositions. The outcomes of engagements with situations could be more or less controlled or predictable according to the degree of structuring. Bruner (1990, p. 35) states that abstract and specialist knowledge is reflected through the 'life-world' – the taken for granted assumptions by means of which human beings organize their experiences, knowledge and transactions. Tsoukas (1996) conceives of the organization as a distributed knowledge system that is strongly de-centred; the firm cannot be surveyed as a whole as it is not self-contained; knowledge is indeterminate and continuously reconfiguring. There is no central control or management of knowledge.

Rooney and Schneider (2005) develop an inter-relational theory of knowledge that assumes that "the most promising organizational knowledge theory follows in the tradition of the social constructionist and subjectivist sociology of knowledge". There is an inescapable interrelationship between knowing and doing, and theory and practice. Also, if knowing is a social process, then knowing and sociality are enfolded within each other. Thus, their position acknowledges that knowledge is brought forth in social contexts but they also strive to connect knowing and action to an interdependence between social structure and historically and socially shared mental processes that provide access to a larger and fertile phenomenological background. In this regard they closely follow Bhaskar (1998) and Archer et al's (1998) critical realist perspective, through the identification of social-structural, phenomenological, situational and enactive components as generative mechanisms. This approach highlights the importance of linking the physical, cultural and phenomenological, and the circular reinforcement (occurring through time) between structure, culture, interpretation and action:

"Indeed, all man-made features of our general environment are extensions of the process of thought, for their shapes, forms, and general orders of movement originate basically in thought, and are incorporated within this environment, in the activity of human work, which is guided by such thought. Vice versa, everything in the general environment has, either naturally or through human activity, a shape, form, and mode of movement, the content of which 'flows in' through perception, giving rise to sense impressions which leave memory traces and thus contribute to the basis of further thought." (Bohm 2000, p. 58)

Material, cultural and psychological elements are not unrelated or juxtaposed; they are parts of the same reality. Situations as social and historical places contain objects and people with histories belonging to cultures and locations. These historical experiences carry assumptions, ideologies, stories, and so on that influence what and how we think. Taking into account the model proposed by Rooney and Schneider (2005) and Bhaskar's consideration of the interplay between structure and agency from a critical realist perspective, the following dimensions or aspects related to the production of knowledge in a particular situation can be highlighted:

- *Social-cultural context.*

Bhaskar (1998, pp. 40–41) argues that social structures are continually reproduced or transformed by active human agents who occupy 'positions', and act performing functions and tasks commensurate with those positions in the light of rules and duties, relationally. These positions can be specified in terms of their duties and functions and also the structures (e.g. hierarchies, social networks, families, communities, etc.) they relate to. These structures, relations and positions generally reflect a socio-cultural level.

- *Interpretative-relational context.*

Social interactions involve a phenomenological and a social level of inter-subjectivity and sense-making involving ideas, interpretations, memories and so on that shape and organize the knower's sense-

making frameworks and that allows her to interpret the world around. This aspect of the situation can be understood as distributed cognitions or distributed hermeneutics available to a defined set of interlocutors. It focuses at the level of cognition and awareness, and the relationships between ideas within people and between people. This context therefore can be seen as sense making at the level of the community of practice.

- *The individual knower.*

This element recognizes the importance of the individual as 'knower' and 'doer', as the base component of relationships, as a catalyst for inter-personal relationship formation, and as the possessor of the idiosyncratic mind. This is the phenomenological 'bottom line'. Therefore, 'the *generative* role of agents' skills and wants, and of agents' beliefs and meanings must be recognised' (Bhaskar 1989, p. 98).

- *The objective-material aspects of the situation.*

This aspect comprises of the physical aspects of situations including resources, technologies, buildings, physical artefacts, and the natural environment or geography.

- *Enactment*

It is the process of acting on our knowledge, intuitions, memories and so on. Enactment of the sense made of our experience and position in the world occurs more or less intentionally. The effectiveness of this intentionality depends in part on the knower's conscious, intuitive, reflexive and strategic mental powers. Enactment therefore brings a focus to the contradictions and paradoxes associated with the social and individual application of knowledge. The knower can be seen as strategic because in being broadly intentional she generally enacts

intentions purposively (strategically and politically) to realize her goals and preferences now and in the future.

These considerations of situated practice are important in that they show convergence with those in learning theories and the evolving understanding of context in LIS. It is clear that the more advanced models in each of these disciplines agree on the importance of social interaction in the construction of knowledge, the use and interpretation of information, and its application in organizational context. There is also common acknowledgement (with a lesser degree of agreement) of the importance of several modalities or types of knowledge, such as embodied or embedded. Within the complex social situations in which information is used, and learning occurs, there is recognition of key elements: the role of the individual knower; the role of the community of practice in sense-making; the role of material and structural elements which constitute affordances and limitations influencing behaviour; and the role of wider social and cultural values, discourses and ideologies.

3.4 Learning in the organization

Three related concepts appear in the literature, which refer to learning in the organization:

- Organizational learning (OL)
- The learning organization (LO)
- Workplace learning

The first concept refers to the idea that organizations, as integrated entities, can learn beyond the individual learning of their members. The background for this concept is the challenge of organizations to confront continuous change through the development of stable organizational capabilities for adaptation. In this sense it is a concept that can readily be linked to KM, and has been recognized as an immediate predecessor (Scarbrough and Swan 2003; Abell and Oxbrow 2001).

The second concept refers to the capability actually attained by an organization to continuously learn and adapt. It points to an established way of managing organizational learning and to the development of stable capabilities for adaptation and change. It is not only a characteristic of an organization, but itself a form of organizing.

The third concept refers to the learning processes that occur within workplace settings, which have characteristics that make them different from ordinary educational environments and which are affected to some extent by managerial action. This is the aspect of learning that this dissertation will focus on mainly, as it was explored by means of the empirical study conducted at NHS24. Reflection on practice will be particularly addressed as the aspect of workplace learning that fundamentally unleashes its potential for individual and organizational development (Boud et al 2006).

DiBella (2003) proposes that the 'learning organization' is a form of organization while 'organizational learning' refers to the processes of learning in organizations. Blackler (1995) in his review of the literature distinguishes a shift in focus from accounts of the development of capabilities and the all important emergence of knowledge workers as value-adders in the higher level processes of innovation, to the idea of the learning organization which tries to stabilize a process of longer-term competitive advantage. In this view there is not so much focus on the high-level skills of general professionals, but also on managing the difficulties of knowledge-intensive companies, for example that experts may not be receptive to new ideas.

It has been argued that organisations do not learn (Illeris 2004, p. 435), only individuals do. However, Harrison and Kessels (2004, p. 43) argue that knowledge is held by individuals and is also embedded in the organising principles that bring people together to cooperate in an organisational context. The creation of knowledge depends on existing organisational structures and capabilities and it follows from prior knowledge. The majority of authors on organizational learning agree that both individuals and the

organization learn. The employees learn as agents for the organization but knowledge is stored in the memory of the organization as routines, dialogue or symbols, where knowledge is embedded, encultured or encoded (Huber 1991; Blackler, 1995; Ortenbald 2002). This is consistent with the views on knowledge discussed in the previous section, including the existence of positions within a structured situation: the knower is in the end an individual, but the creation of knowledge is social and is helped and sustained by the values and discourses of the organization, as well as by material elements such as buildings, information and communication systems, established procedures, documental memory, etc.

Blackler (1995) proposes that organizations should value knowing, rather than knowledge, and that this should be conceived of as an active process that is mediated, situational, provisional, pragmatic and contested. In his analysis he invokes that rather than regarding knowledge as something that people *have* (an asset), knowing should be focused as something that they *do*. These two approaches are otherwise addressed as the *content* and the *relational* perspectives (Hayes and Walsham 2003). From the content perspective knowledge can be viewed as an economic asset that can be codified, stored and exchanged between individuals in a firm. The relational perspective suggests that instead of treating knowledge as a largely cerebral and tradable entity, it should be seen as relative, provisional and fundamentally context-bound. The distinction builds upon the separation between the second and third waves of KM.

Organizational learning

The literature on OL appears fragmented (Moingeon and Edmonson 1996 p. 18), with definitions including:

- acquiring knowledge useful to the organization;
- encoding and modifying routines;
- increasing organizational capability;
- interpretation and sense-making;
- detection and correction of error

Scarborough and Swan (2003) recognize common features that link the concepts of knowledge management and organizational learning. The emergence of both can be traced back to "the acceptance of a world-view or ideology that sees knowledge and learning as the defining characteristics of a new epoch" (p. 497). In their analysis, the OL literature explores ways in which knowledge is acquired through developing a learning culture and self-motivated individuals. The KM literature focuses on how knowledge can be captured as a resource for the pursuit of competitive advantage (p. 501). The concept of LO is more broadly based, being primarily concerned with the ways in which organizations design themselves and the development of their people to ensure continuous adaptive transformation. KM, on the other hand, is more narrowly focused on the ways in which firms can mobilize their knowledge base in order to ensure continuous innovation (Scarborough and Swan p. 505).

The concept of OL started with the consideration of the need for organizations to adapt to change, as it became a fixture of the economic environment after the 1970s. Later the concept has been considered an important aspect of the development of intellectual assets within the resource-based view of the firm (Hamel and Prahalad 1994). Both aspects relate to the idea of developing capabilities for competitiveness, and show links to strategic planning, with a shift toward a dynamic rather than static view of strategy. This new emphasis raises the question of how to develop them. Idiosyncratic bundles of knowledge and skill – which provide differentiation and are clearly within the domain of organizational learning – are legitimate firm-specific resources (Moingeon and Edmonson 1996).

The concept of LO is related to the development of consistent capability for adaptation to changing external conditions that allows competitiveness and innovation.

"Organizational learning is the process by which the organization's knowledge and value base changes, leading to improved problem-solving ability and capacity for action" (Probst and Buchel 1997)

Capabilities become sources of competitive advantage as they are bundles of resources – capital assets, human know-how, and routines – combined in

path-dependent ways that make them difficult to separate and therefore to easily copy. A particular combination of organization and knowledge functions as capital in particular contexts in which it is valued; in other contexts the same capability may not be valued and is simply a feature. Pfeffer (1994) argues that effective management of people – including developing and empowering people, sharing information, creating self-managed teams, training and cross-training people – is a more important determinant of competitive advantage than industry analysis and structure. In not-for-profit organizations, such as those in the public sector, these concepts are applied in a different way as sometimes they don't have direct competition. But these organizations are nevertheless accountable to the government and the public, they have aims and objectives to accomplish, and are subject to challenges from the external environment to which they have to adapt.

The concept of OL is a response to the ongoing nature of change in organizations, caused by both external and internal processes, and the fact that many members of the organization can provide inputs into the process of dealing with changes and challenges, which may require development of new knowledge, behaviours, attitudes, values, etc.

“Organizational learning is important because no managerial theory, no matter how comprehensive, is likely to cover the complexity of the context in which the implementation is occurring. There will always be gaps and there will always be gap-filling. Organizational learning is critical to detecting and filling the gaps.” (Moingeon and Edmonson 1996, p.1)

Despite the increased awareness on organizational behaviour issues, OL practices have been criticized for focusing too much on behaviour and being in fact disconnected from substantive issues of business strategy. Resistance to naive prescriptions for openness, participation and teamwork, with a focus on interpersonal behaviour, which have insufficient connection to strategy, customers and tasks as driving forces for change has thwarted many efforts. Others have criticized OL approaches as being too focused on motivation and self-actualization (Moingeon and Edmonson 1996, p. 181-182).

Main themes in organizational learning

The learning perspectives applied to organizations reflect the already discussed cognitive, behavioural and socio-cultural perspectives. Within those general perspectives, the following key ideas in organizational learning have been developed:

- Developing organizational culture
- Developing mental models (individual and shared)
- Developing reflective action
- Interpreting information through shared sense-making

Schein (1993) highlights the importance of organizational culture in learning. In his view organizational culture is a kind of learning, the learned product of group experience:

“Culture is a pattern of shared basic assumptions invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, is to be taught to new members of the group as the correct way to perceive, think and feel in relation to those problems” (1993, p. 247)

He highlights the negative role of the tacit assumptions within an organization’s culture which can preclude organizational learning. Beliefs of founders and leaders are powerful and sometimes carry on for years. Thus a company’s processes and structures reflect and are shaped by cultural assumptions, which must be uncovered, examined and often changed to enable organizational learning. Schein proposes three kinds of learning in organizations: knowledge acquisition, skill learning and emotional conditioning. The emotional component contributes to making cultural assumptions based on past mistakes difficult to unlearn, which is a necessary aspect of organizational learning.

Other theorists portray organizational learning as a phenomenon in which individuals in organizations develop and refine their cognitive maps – that is, their theories-in-use (Schön 1999) or mental models (Senge, 1990) and

thus become more effective decision-makers. Senge explores characteristics of organizations as complex systems, as well as how cognitive features of individuals interact to produce learning dilemmas, emphasizing the awareness of personal causal responsibility in helping to create and sustain systems in which people take part. The concept of mental models links up with that of culture, as some mental models are prevalent in any given culture. Choo (2005, p. 93) states that networks of shared meanings and interpretations found in culture provide social order, continuity and contextual clarity for members of an organization to coordinate and relate their actions. Culture as a cognitive framework provides mental models and criteria for selecting, valuing and processing information. Consensus is seldom absolute, and negotiation of meaning is continually happening.

Within the general concept of OL, some perspectives view organizations as systems of information where the primary focus is to reduce ignorance by means of processes of distribution of information. In these views, the acquisition of knowledge has been addressed as an interpretive process (Weick 1991). Organizational processes are stabilized through interpretive processes of information and operating procedures. Organizations are viewed as shared agreements, with a primary organizational activity being sense-making (Weick 1995).

This may be through information systems or other means, including direct personal communication. Barton and Hamilton (2005, p. 17-19) emphasize the fact that most contemporary interactions are literacy events as they are mediated by many semiotic artefacts, most often texts and images, but also discourse, ways of talking and writing, etc. including specialized vocabularies, all of which constitute multimodal points of semiosis or meaning-making. Particular information landscapes and communities – including workplaces- provide opportunities for things which can be easily done in them. This view is linked to that which views organizations as interpretive systems, since the use of information depends on shared mental models (or sense-making) that allow its interpretation. Choo (2005) describes a *knowing cycle* which advances a cognitive sense making theory of organizational learning:

- Starts with streams of experience related to environmental situations
- Generates questions about: What is going on? And What does it mean?
- Involves the perceptions of problems and issues from a shared context of action
- Causes the need for information or knowledge
- Conduces to a process of decision making as to the viable alternatives and choosing among them

Although workgroups became communities of learning, it is individuals who learn, become insiders, and contribute to differences among groups. These processes are often related to flatter organizational structures which facilitate interpersonal encounters and challenges in less hierarchical structures. Likewise, team based organizations encourage individuals to engage in developing their communication and other interpersonal skills. Weick's (1995) ideas of an interpretive or sense-making organization highlighted another aspect of what companies needed to do in order to navigate change and challenges. In this view, conversations, dialogue and information sharing constitute the basis for developing solutions to problems

In Orr's description of the technical representatives' (reps) practice the categories 'narration', 'collaboration' and 'social construction' can be seen to overlap (Brown and Duguid 2000). Stories and their telling reflect the social web at work and establish relationships between members of the audience and specific events of practice. The stories are often flexible and adaptable to different situations. In the reps' work situation the narratives help diagnose problematic machines and sort out the nature of their faults. Unlike the documentation which just tells them what to do, their talk helps them understand *why* the problems arise. Collaboration between them is evident, but it is striking that in the eyes of the corporation their work is viewed as individual. The third aspect, social construction of meaning, implies that the generation and transference of knowledge between them is a derivation of their talk and collaboration, rather than the sum of individual bits of knowledge.

The consideration of different levels of learning is a central issue in cognitive theories of OL. Argyris (1999) was an important proponent of the idea that there are at least two kinds of learning. Single loop learning occurs when a mismatch is corrected by altering behaviour or actions. Double learning occurs when the underlying values are changed and then new actions follow. Bateson (1972) previously articulated this distinction as learning I and II. In all of these constructs the lower level involves improving existing behaviours and making progress toward stated goals, while the higher level requires questioning the appropriateness of the goals, recognizing the subjective quality of judgements and opening up the consideration of alternative perceptions. However, distinctions between first- and second-order learning are often abstract and difficult to identify in real organizational settings. Critical situations are often the catalyst for reflection on practice, but this form of emergency reactive behaviour is what organizational learning tries to overcome.

Likewise, Moingeon and Edmonson (1996, p. 27-28) propose that organizational learning processes can be characterized as learning how and learning why, a distinction that is similar to those described above. They define "learning *how* as organizational members engaging in processes designed to transfer and/or improve existing skills and routines... learning *why* as organizational members inquiring into causality using diagnostic skills. The objective in learning why is to discern underlying logic or causal factors ... These terms are not meant to suggest mutual exclusivity" (p. 27). They propose that are both important and that each is appropriate in qualitatively different situations.

These mental models give support to applied perspectives of learning such as project-based learning (PBL). Although this approach focuses experience and pragmatic knowledge, the emphasis is on reflective practice based on Argyris' (1999) and Schön's (1999) theory of action. Implied in the moniker is the assumption that knowledge will not remain abstract, but will be used in practice. Reflection implies that assumptions are tested against reality, providing opportunities to update mental models (DeFillippi and Ornstein

2003). These approaches assume that organizations learn as a result of the additive and cumulative effects of individual reflective learning.

Reflective learning at work

For Hoyrup and Elkjaer (2006, p.29) the notion of learning at work, or workplace learning, "is to be understood in terms of *everyday learning processes* (italics in the original) ... In a workplace the most important source of learning are the challenges of work itself, the organization of work, and the social interactions at work". Work-related learning increasingly does not only take place at the workplace alone, but also for example, at courses, in networks and exchange schemes, in contacts with customers, users and suppliers, under trade unions, in industrial organizations and in more private work-related contexts (Illeris 2004).

Reflection on practice is considered the fundamental aspect of workplace learning. (Boud et al 2006; Reynolds and Vince 2004). Reflection is defined by Hoyrup and Elkjaer (2006, p. 29) as "a complex activity aimed at investigating one's own action in a certain situation involving a review of the experience, an analysis of causes and effects, and the drawing of conclusions concerning future action, and which results in a changed conceptual perspective"

For Jasper (2006, p. 40), "... reflective practice is about learning from our experiences and developing our practice as a result. Reflective learning is the process of learning from our experiences, reconsidering and rethinking our previous knowledge and adding this new learning to our knowledge base to inform our practice".

Reflection is related to sense-making, as it is primarily prompted by a complex situation involving uncertainty or ambiguity. For Dewey, which is one of the founders of the concept, reflective thinking is "an active, persistent and careful consideration of any belief or supposed form of knowledge, in the light of the grounds which support it and the further

conclusions to which it attends” (Hoyrup and Elkjaer 2006, p. 30). Dewey proposed three steps involved in the definition of a problem, which is the first stage in tackling uncertainty:

- Formation of guiding concepts or ideas
- Elaboration of the meaning of ideas or concepts in relation to each other
- Testing of the guiding ideas in action

This notion has been taken by others, including Kuhlthau (1993) in her model of seeking meaning. Kolb integrates the notion of reflection in his model of individual experiential learning. In Schön’s (1999) theory of reflection it is professional’s thinking in action along with development of skills and knowledge that is at the core. Professionals actively convert a problematic situation to a defined problem. They also organize the situation and its elements, and also set the boundaries of their attention and impose upon it a frame of reference which dictates the desirable outcomes or solutions. This approach is primarily, although not exclusively, related to individual cognition.

Hoyrup and Elkjaer (2006) argue that for reflection to be a fruitful approach in workplace learning the concept should not be restricted to the individual perspective. They put forward the argument that individual agency is embodied in social structures, and that social structures operate through individuals, a theoretical perspective that endorses social learning (Elkjaer 1993). Reflection is a social process as learners reflect together, helping each other detect biased perceptions and create new and hopefully more useful and accurate perspectives.

Although reflection is about experience, the central element in reflection is distancing from experience. Putting experience at a distance enables us to make sense of it. In Boud’s (2006) notion of reflection, returning to experience after the fact is crucial, with the leisure of not having to act on it in real time. Ellstrom (2006, p. 43) highlights the limits of informal learning, arguing that there is evidence that it is very difficult, even at the level of

simple tasks, to develop explicit knowledge through experience even if people are given massive amounts of practice. Learning from experience presupposes knowledge about the task that can be used to identify and interpret the experiences. Some of this knowledge is not provided by experience itself. Furthermore, experiential learning often has an adaptive and instrumental character that inhibits conscious questioning.

Contrasting first- and second-order experiences is the basis for reflection. First order experiences are the past, 'lived' experiences. Second-order experiences are reflected, and are immediately present. Their purpose is to unlock or clarify some part of the person's first-order experience. They offer a choice of one or more alternative interpretation of the prior experience. They are connected to the first-order experience in a way such that the new perspectives do not create a rupture but rather afford an extension of understanding about the problem or situation. In Cunliffe and Easterby-Smith's (2004) practical reflexivity, it is the questioning of the contextual taken-for-granted that is focused as part of the second-order perspective. For Svensson et al (2004) reflexivity is the distinction between adaptive (reproductive) and developmental (creative) learning.

In the social relations perspective, reflection develops into a social practice which opens up our assumptions to the review of others. The outcome may be validation of knowledge, assumptions or action, along with a development of these through dialogue which implies both individual and organizational learning (Raelin 2001). Reflection as a social practice is an aspect of validating, sharing and creating knowledge.

For Ellstrom (2006, p. 43-44), a key element for organizing reflection as a social process within an organizational environment is how the employers organize the workplace. He argues that learning at work is matter of design, not evolution. That is, it is a matter of organizing the workplace not only for production but also for supporting learning at work. This implies that to benefit from the informal, experiential forms of learning it is necessary to have certain conditions within the workplace as well as employees with sufficient knowledge and skills to identify and make sense of opportunities

for learning contained within the experiences encountered in the work process. Learning in the workplace takes place in the encounter between the learning environments of the workplace and the employees' learning processes (Illeris 2004):

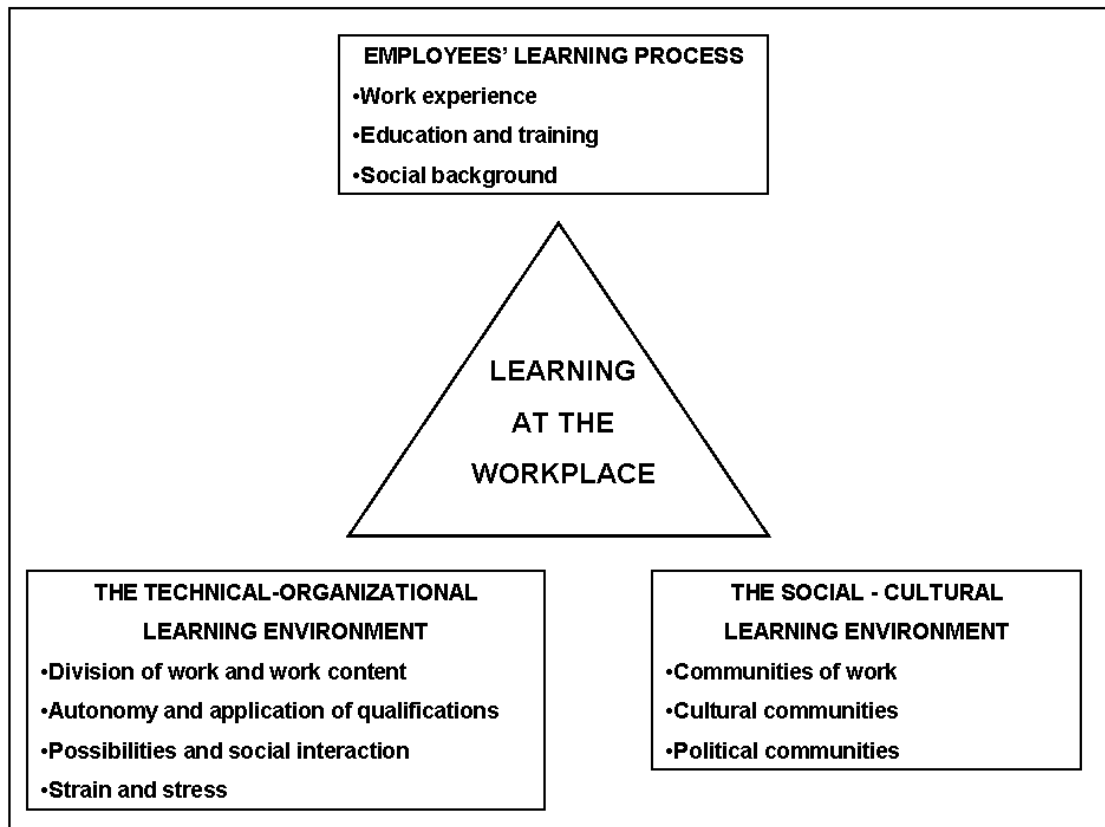


Figure 11. A model for learning in the workplace (Adapted from Illeris 2004, p. 432). Copyright *Journal of Workplace Learning*, reproduced with permission.

In order to be able to identify and use potential opportunities for reflection and learning at work, employees need to have access to a variety of learning resources or affordances, not only space and time for learning, but knowledge and understanding of the task at hand, awareness of learning opportunities, and self-awareness of one's own engagement with those opportunities (Ellmstrom 2006, p. 50). Other factors would include motivation, self-efficacy and occupational identities. This last aspect links up with the collective sense-making found in particular professions or trades. This collection of factors constitutes a 'readiness for learning', which results from prior learning. This is related to the concept of 'learning to learn' which

also involves increasingly taking the initiative and taking charge of the learning process. In opposition to Schön's idea of reflection-in-action, Ellstrom argues that deliberate reflecting activity focusing on the content, the process and the outcomes of actions requires its own time, to observe, to think and to exchange ideas with others (Ellstrom 2006, p. 51).

Illeris (2004) argues for considering the workplace learning situation as the point of contact between the learner and the affordances of the workplace. The learning environment only comprises the framework for learning, while it is in the interaction between the individual employee and the learning environment that learning occurs. It is necessary to take into account the employees' background, experience and future perspectives in order to understand the dynamism in the encounter between learning environment and learning processes. Also, the technical-organizational and the social learning environment at the workplace must be understood in connection with matters extraneous to the individual place of work, e.g. market, political-institutional, social and cultural conditions in society. (Illeris 2004). This view is in keeping with a consideration of situated practice including the elements reviewed in the prior section.

Reflective practice is prominent in nursing training, also associated with critical thinking and evidence-based practice. For Jasper (2006, p. 53) becoming a reflective practitioner involves conscious decision making. In this regard she advocates the importance of making reflection conscious and deliberate.

3.5 Information use in the organization: learning, sense-making and decision making.

The particular interest of this dissertation lies in the relationships between information literacy and knowledge management, and this brings the focus on practices of effective information use in organizations. Of particular interest are the connections to workplace learning, sense-making and decision making. Learning has been covered to some extent in several

sections, so sense making and decision making are overviewed primarily here.

Choo (2005) identifies three interconnected arenas in which the creation and use of information play a strategic role. While Choo discusses them primarily in the context of the organization as a whole, they can also be considered at the individual or small-group level:

- Making sense of changes in the environment and with respect to internal assumptions
- Generation of new knowledge and knowledge development
- Searching for and evaluating information to make decisions (p. 2)

The first area of sense-making relates to processes of inter-subjectivity and meaning creation. For example, at NHS24 an important aspect is the high frequency of changes to processes and guidelines, and often information about them is communicated to the frontline staff (sometimes they have to search for it). But sense-making is not only related to the use of documental information. Changes or contradictions that occur within the activity system of the workplace can sometimes be resolved by accessing documental information but more often than not involve exchanges with peers or team leaders. People are recognized as important information sources in workplaces and they also constitute the interpretive communities that give meaning to the information. Sometimes the meaning of events and information is almost self-evident; at other times there may exist a gap, uncertainty or ambiguity that makes meaning more complex; in other cases information feeds a wider process of knowledge development that spans a long lapse of time as continuous learning.

The second area of sense making has clear connections to continuous learning. At NHS24 the processes of knowledge development are more evident than outright innovation, although at the organizational level there has existed continuous interest in the improvement of the processes of service provision. NHS Scotland has developed clear and comprehensive policies supporting knowledge development at the organizational and individual level (discussed in chapter 6). These consist not only of training

programs, but also more general frameworks such as evidence-based practice, quality assurance, and schemes that link knowledge development with rewards and career progression. Using information to learn is not just an individual process based on critical thinking, but also involves discussion, clarification and reflection in social interaction.

The third area of sense making, decision making, is central to the activity system of frontline staff at NHS24, as they all continuously make decisions at different levels. In distinction to other health care environments, nurses at NHS don't actually engage in the full nursing process of patient care, but a central aspect of their function (which to some extent is shared by call handlers and health information advisors) is to arrive at *care outcome decisions*, which can be broadly divided into the following categories:

- Sending someone to take care of the patient at their home (e.g. an ambulance, a doctor, a district nurse, social workers, etc.)
- Sending the patient to a place where she can be seen (e.g. GP practice, hospital, etc.)
- Giving self-care advice.
- Giving health information to non-symptomatic callers.

Decision making is related to different categories of problems or situations. One important aspect of decisions is the degree of structure of the problem, which can range from unstructured to well defined. The situation therefore can incorporate degrees of uncertainty, ambiguity and equivocality (Choo 2005, p. 108). This aspect can be related to Kuhlthau's (1993) study of uncertainty, emotions and information behaviour. Another aspect is how far-ranging decisions are, at what level they are taken and what possible consequences the decision entails. The specific types of decision making in which NHS24 frontline staff are involved can be generally characterized in the following way:

Non- professionals:

Call handlers: highly structured decision making, as the number of outcomes permitted is reduced and well defined. Their decisions follow clear rules and procedures. However, the reasons why people call can be very varied. The main information sources they use are the caller, from whom they must obtain basic information, and the Patient Record Management system. Occasionally they use information from the intranet and the Knowledge Web.

Health information advisors: structured and semi-structured information problems, similar to those of a reference librarian. Sometimes the callers' information needs are very clear and concrete; at other times they can be obscure or vague. Questioning is often an important skill. The main information sources they use are the health information websites integrated in the Knowledge Web and leaflets.

Nurses:

Nurse advisors: they make decisions on a wide range of illnesses, health care needs and domestic patient situations. Structured questioning and use of algorithms for decision support helps them obtain a picture of the caller's problems. To arrive at a care decision they use information from the caller and primarily their own experience in health care. They often use NHS information websites and seek help from colleagues on areas in which they have little knowledge. They also use expert decision support systems (algorithms).

Team leaders: They make a wide range of decisions related to: managing the service; managing and supporting the team's performance; and decisions related to specific patient's cases. They use information from statistical reports of the service, get information from team members about the problems they encounter and mainly use their personal experience and knowledge. Their decisions affect not only the patient, but also the staff and generally the functioning of the service.

The sense making model

In regard to the application or use of information to decision making, the sense-making 'bridging' metaphor (Dervin 1998) is a particularly well suited model. It consists of three stages, situation, gap and outcome:

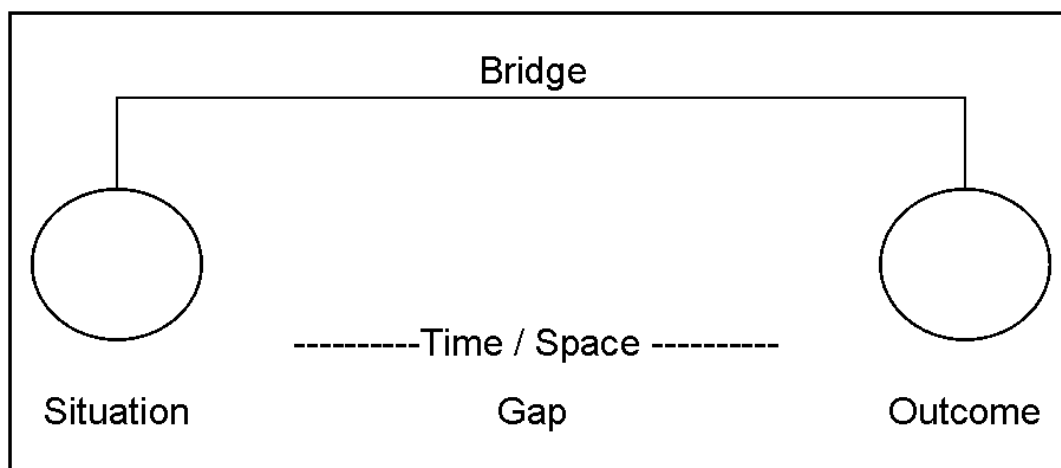


Figure 12. Dervin's Sense Making Model, adapted from Wilson (1999, p. 254). Copyright *Journal of Documentation*, reproduced with permission.

The appearance of a gap in understanding, a void in information, or uncertainty creates an information need when the individual recognizes the gaps in his or her state of knowledge and ability to make sense of an experience. The use of information along with a number of presuppositions, values and other frames of reference about the suitability and relevance of the information required permits the 'bridging' of the gap towards an outcome where uncertainty has been reduced and a decision can be taken.

"Information use occurs when the individual selects and processes information or messages which lead to a change in the individual's capacity to make sense of the experience and to act or respond in the light of the new understanding" (Choo 2005, p. 29)

In the case of frontline staff at NHS24 the whole process of taking care of a caller is a succession of filling knowledge gaps, some related to the obviously unknown circumstances of where a patient is or what happened to him, but also to gaps and information needs related to the knowledge base

that is held by any one of the members of staff: knowledge about new illnesses, new treatments, new NHS24 procedures, new agreements with NHS partners, or who knows about a particular specialty.

Taylor (1991) identified 8 categories of information use or needs which are generally related to the 'bridging' of different kinds of knowledge gaps:

- Enlightenment, to generally acquire more knowledge
- Problem understanding, more specifically related to particular problems
- Instrumental, to learn how to do something
- Factual, to determine the facts of an event
- Confirmational, to confirm another piece of information
- Projective, to help predict or forecast future events or situations
- Motivational, to help initiate or sustain personal movement in a particular direction
- Personal or political, related to development of relationships, social capital, status.

Individual information seeking for decision making is shaped by habits and heuristics that the decision maker has acquired as a result of training, education and experience (Choo 2005, p. 230). At the same time, organizations design and institutionalize rules and routines to structure search behaviours. Information seeking is therefore a function of individual behaviour, institutional values and attributes of the decision making situation. Organizations generally define two types of decision premises (Choo 2005, p. 11):

- Value premises which determine what the decision maker perceives as "good, desirable or valuable" in an alternative.
- Factual premises determine what the decision maker perceives as "factual, relevant" information to a decision situation.

Examples of this at NHS Scotland are evidence-based practice and randomized control trials as criteria for determining the validity of sources of information for health care practice.

From a cognitive point of view, the operations behind sense making involve schemas, which are cognitive resources that help the categorisation and

evaluation of new data and the filling in of missing data or elements via inference (Marshall 1995). Of course, schemas also work negatively to block or filter information that is not in accordance with their logic, or with past experiences. An extension of the concept of schema is that of dominant logic. Organizational attention is focused on events, processes and information that are deemed relevant by that logic (Bettis and Prahalad 1995). This concept is related to that of culture (Schein 1993) as it is embedded in shared mindsets, belief structures and frames of reference which have been developed on the basis of past experience. Examples of this are: IBM, which for some time were entrenched in the belief that their market should be the mainframe computer; and General Motors, which have been entrenched in the belief that cars are bought by clients as status symbols, above other considerations such as fuel economy (Moingeon and Edmonson 1998). These conceptions are related to the cognitive 'mental models' which have been discussed above.

From an information perspective, the environment can provide signals that are weak (difficult to detect), confusing (difficult to analyze) or spurious (not relevant or indicative). This has been considered in relation to the environmental scanning of the organization (Auster and Choo 1993) but it is applicable to information flowing within the organization and the exchanges between people. For example, at NHS24 communication between the caller and the frontline staff is relatively impaired or limited just as a matter of being over the phone instead of face to face and it can be further limited by language problems, anxiety, impatience, etc.

The reliability of information is another important factor in decision making. Reliable and accurate information is desirable in all decision making situations. Often, information will be obtained from a variety of sources and their reliability may vary. At NHS24 the main sources of information used are: the caller herself; the internal information and documentation; and colleagues. The quality of documental information can often be assessed by formal, established methods, and in the case of NHS24 it is filtered upstream by the Knowledge Team, but information exchanges at the interpersonal level can be more difficult to validate.

"Users obtain information over a wide range of formal and informal sources. Informal information sources, including colleagues and personal contacts, are frequently as important and sometimes more important than formal information sources such as library or online databases" (Auster and Choo 1993, p. 284-85)

According to Choo (2005, p. 231) information needs for decision making can be summarized as:

- Determining problem frame and boundaries
- Clarifying preferences and rule appropriateness
- Obtaining information about alternatives, outcomes and preferences.

The assumption of rational choice in decision making implies that faced with a choice between one or more alternatives, human actors will make a "rational" decision based on optimizing outcomes of the decision, such as minimizing pain or maximizing pleasure (Snowden and Kurtz 2003). This involves ordered-systems thinking based on logical-empirical rationality which assumes that general rules or hypotheses can be derived and be empirically verified to create a body of reliable knowledge, which can then be developed and expanded. In contrast to this, the concept of 'Bounded rationality' has been influential in explaining how decisions are taken in ordinary conditions which are always less than ideal. The concept of bounded rationality implies the election of satisfactory, rather than optimal, alternatives. The limitations in this regard are:

- Individual limitations of cognitive and mental capabilities
- The extent of information and knowledge possessed
- Values or conceptions of purpose which may derive from organizational goals (Choo 2005)

Furthermore, the concepts of un-ordered space, chaos and complexity (Snowden and Kurtz 2003) have developed a consideration of effective decision-making that is less based on rational logic and rather tries to manage complexity through the stabilization of desirable patterns and the destabilization of undesirable ones. Rather than establishing all sorts of criteria, measurements, algorithms, etc., this model proposes action on a few key elements which help 'direct the flow' of actions towards a desired

outcome, for example some that would facilitate certain types of outcomes and inhibit others. Snowden and Kurtz (2003) developed the *Cynefin* model which explains decision making as related to four distinct areas:

CYNEFIN MODEL DOMAINS	
<p>COMPLEX</p> <p>Cause and effect are only coherent in retrospect and do not repeat. Pattern management. Perspective filters Complex adaptive filters Probe-Sense-Respond</p>	<p>KNOWABLE</p> <p>Cause and effect separated over time and space. Analytical / Reductionist Scenario planning Systems thinking. Sense-Analyze-Respond</p>
<p>CHAOS</p> <p>No cause and effect relationships perceivable. Stability-focused intervention. Enactment tools. Crisis management. Act-Sense-Respond</p>	<p>KNOWN</p> <p>Cause and effect relations repeatable, perceivable and predictable. Legitimate best practice. Standard operating procedures. Process reengineering. Sense-Categorize-Respond</p>

Figure 13. The CYNEFIN model, adapted from Snowden and Kurtz (2003, p. 470). Copyright IBM Systems Journal, reproduced with permission.

The diagram presents four types of sense-making situations:

“...the corner where everyone knows the right answer, the corner where an expert could be expected to know the right answer, the corner where the situation only becomes clear retrospectively, and the corner in which there is no right answer.” (Snowden and Kurtz 2003, p. 472)

From the interest of this dissertation on information use for decision making it is particularly interesting to pay attention to the right half of the diagram above (what is known and what is knowable). The left side of the diagram has to do with making sense of things which are in a greater state of disorder or are difficult to penetrate. This could relate, for example, to strategic organizational decision making related to the adaptation to complex new conditions, for example new patterns of health-care needs and

the corresponding required changes in health services, or planning for an uncertain future.

Decision making in nursing

Gurbutt (2006) reviews nursing decision making as it has progressed historically from a time in which the nurse's job was to be an assistant to the doctor to the current focus on nursing the patient's needs. These changes have brought parallel developments of conceptual nursing models and structured problem-solving approaches, involving a shift from a doctor-led, task-orientated culture towards care-planning. The Activities of Daily Living nursing model developed by Roper, Logan and Tierney (Gurbutt 2006) implied a decision making process which was based on a core of nursing knowledge supplemented by experience and specialized knowledge to achieve specific care outcomes. The problem-based approach included four stages (Haberman and Uys 2005, p. 3):

- Collecting information and assessing the patient
- Planning for care and defining relevant objectives
- Implementing interventions and
- Evaluating the results.

At times, the terms 'problem solving' and 'decision making' have been used synonymously (Gurbutt 2006, p. 9). Both point to outcomes, in this case related to promoting, maintaining or regaining the patient's health. Within the broader nursing model, decision making is related to the process of diagnostic reasoning, which involves the following four main stages:

- Cue acquisition and data gathering: using clinical history and physical examination.
- Hypothesis generation: alternative problem patterns are generated
- Cue interpretation: data are interpreted in the light of the hypotheses being constructed
- Hypothesis evaluation: data are weighted and aggregated to accept or reject the hypothesis. If rejected, new data will be gathered along with novel hypotheses.

The appropriateness of care outcomes has been characterized by different frameworks, variously based on: the concern with the detection and treatment of illnesses; a health-promoting focus; or even more idiosyncratic definitions of an outcome being 'right for a patient'. Appropriateness can also refer to the decision-making process itself. In this regard two perspectives have dominated decision-making explanations: prescriptive (also termed rational or analytical) and descriptive (also termed intuitive or phenomenological). Both use different methodologies and address different issues, with the analytical models being generally favoured in medicine. Prescriptive models are concerned with how decisions ought to be made and assume rationality in human thinking and behaviour, preceding action. Decision trees and line of reasoning diagrams are examples of this type. In contrast, descriptive approaches are based on action preceding rational thinking, and correspond to a holistic view of nursing practice in which the whole situation is considered instead of reducing it to discrete elements (Gurbutt 2006, p. 10)

Prescriptive aids to decision making include protocols and guidelines, as means of standardising approaches to decision making. Guidelines are systematically developed statements to assist decisions about appropriate health care for specific clinical circumstances. Protocols are explicit frameworks for the process of care, with precise steps of practice. Both are used in structured decision making by nurses.

Descriptive decision-making, such as 'gut-feeling' suggest a different type of link between the nurse, their experience, information and the generation of knowledge about a patient (Gurbutt 2006, p. 11). A 1984 study by Benner (Jasper 2006, p. 45) suggested that expert nursing practitioners operate 'from a deep understanding of the total situation', which many would refer to as professional intuition. Schön (1999) argued that experienced practitioners use a range of strategies almost on-the-fly, which are more intuitive than analytical. This approach has often been denigrated and considered un-scientific. However, the consideration of accumulated experience tested over years of clinical practice becomes a more robust concept if it is accompanied by a process of reflection and openness to

scrutiny (Jasper 2006, p. 45). Titchen and Ersser (2001) develop the metaphor of professional 'craft' knowledge in health suggesting that it is often tacit and unarticulated and sometimes intuitive. The practitioner reacts to the whole situation and makes highly skilled judgments, often without being conscious of a deliberate way of acting.

Nurses' use of information has most often been discussed in the situation of clinical care such as a ward, where patients follow a trajectory of inpatient care and remain for some time in the care of doctors and nurses. Information is gathered from the pre-admission account and follows a cyclic narrative development where nurses give information to other nurses (at shift changes), some information is recorded as an abstract or notes, and information is subsequently added and revised and validated by individual nurses or teams.

Gurbutt (2006, p. 20) highlights three 'conceptual lenses' that nurses may use in collecting and using patient information:

- Nursing: the patient is seen as person to be cared for.
- Management: The patient is seen as an object needing to be managed along a trajectory of care.
- Medical: The patient is seen as a medical case to be treated

Nurses in managing roles, for example ward sisters or the Team Leaders at NHS24, generally take a broader perspective of the management point of view. Care managers, sisters and experienced staff nurses "see themselves as a 'fulcrum' at the interface between managing and delivering patient care. They regard themselves in this role as an information hub..." Gurbutt (2006, p. 26). This includes receiving information brought to them by other nurses and sourcing it to those who seek help or advice.

Using information technologies to support nurses' documentation work and decision making along the nursing process began in the early 60's and brought decreases in charting time, but this was related to the homogeneous treatment of patients by standardized care plans. While the development of documentation systems has generally been well received as advancement, a side effect of better computerized documentation can be

the reduction of more informal oral communication between nurses, something seen as probably undesirable. An insufficient level of equipment in wards has been registered as causing negative attitudes of nurses to information systems, as in effect access to information, which formerly lay at bedside, was reduced. In general, the quality of documentation has been seen to increase with the introduction of computerized systems, but some studies have found de-professionalization, a lesser degree of individualization in care planning and de-skilling of nurses (Ammenwerth 2005, p. 66 - 70). As with deployment of information systems in other environments, there exist periods of adjustment in the transition from feelings of uncertainty and stress to more relaxed acceptance with familiarity.

3.6 Knowledge management processes and systems

The perspective of KM as involving a series of processes has produced a number of models that tend to agree on five areas (Beckman 1999; Jashapara 2004; Hislop 2005) which can be considered substantial to the concept:

- Acquisition/ creation / generation
- Storage / Maintenance
- Dissemination / Transfer
- Utilization / Application / Value realization
- Valuation and measurement

Mertins, Heising and Vorbeck (2001, p. 97) state that the results of their study show that KM is not understood as a technological term nor as an intangible asset, but "as a part of corporate culture and as a corporate approach. It is the sum of the procedures that determine the generation storage, distribution and application of knowledge to achieve organizational aims".

All of these processes in practice involve a number of different approaches and methods which relate to the various conceptions of knowledge and learning found in the three phases in the evolution of KM, as well as emphasizing different aims in the organization. Some approaches are

closely based on information management, others on fostering collaboration and knowledge conversion following the SECI model, and still others on addressing the more complex, practice-based understandings of knowledge development.

Within the scope of the main KM processes, this dissertation is particularly interested in the processes of knowledge acquisition, transfer and application as they pertain to NHS24. The first two are seen from the point of view of learning and knowledge development. The third is seen from the point of view of the processes of service provision and decision making.

Acquisition

Is a process that can imply internal and external sources of knowledge or information:

- Purchasing (e.g. market studies, journals databases)
- Hiring individuals (employees, consultants)
- Converting tacit knowledge to information (codifying expertise, best practices, lessons learnt)
- Capturing process data, warehousing and data mining
- Developing knowledge through learning processes within and without the organization

A particularly relevant concept in this realm is that of 'absorptive capacity', which is generally applied to the capability at organizational level to scan the environment to identify, assimilate and exploit valuable information and knowledge which can be applied to the ends of the enterprise, or simply "the ability to evaluate and utilize outside knowledge" (Cohen and Levinthal 1990, p. 128). Van den Bosch, Van Wijk and Volberda (2003, p. 280) define the construct as "the ability to recognize the value of new external knowledge, assimilate it, and apply it to commercial ends". It is interesting to notice how this closely parallels definitions of information literacy. Although absorptive capacity is a construct often applied at the organizational level, "an organization's absorptive capacity will depend on the absorptive capacity of its members" (Cohen and Levinthal 1990, p. 131), and it is at this level that the connection with learning is most evident.

Cohen and Levithal (1990) suggest that learning and problem solving processes at the individual level develop similarly “from the prior possession of relevant knowledge and skills that give rise to creativity” and further describe prior related knowledge as including knowledge domains, basic skills and problem-solving methods, prior learning experience and learning skills, and a shared language. Van den Bosch et al (2003, p. 282) explain the distinctly organizational aspects of absorptive capacity as involving two central internal mechanisms: structure of communication and character and distribution of expertise and knowledge within the organization.

Storage

Is basically an IT and information management process that involves the creation of data/document repositories and the classification and organization of the information. This aspect is mainly developed through information management. Many organizations have developed infrastructures for storing transactional information, directories, work documents, etc.

This process could be related to the idea of communities of practice as ‘accumulators’ of knowledge, from a practice-based point of view. However, this is one of the areas where the basic assumptions of epistemological approaches differ significantly. One approach focuses on knowledge as information, and therefore susceptible of storage; the other sees knowledge as dynamic, embodied, tacit and ephemeral and therefore not amenable to storage as such.

Dissemination and transfer

Are particularly associated with learning and sharing information and knowledge, with various levels of complexity:

- Person to person
- Communities of practice
- Department to department
- Inter-organization (branches / partnerships)

The means of transfer are many, with processes of communication and learning centrally involved in several of them:

- Information systems
- Training and apprenticeship
- Coaching and mentoring
- Observation
- Technology transfer
- Replicating routines
- Interactions with suppliers and customers
- Personnel transfers
- Publications

At NHS Scotland many strategies for knowledge transfer are in place (discussed in chapter 6). The more traditional are the processes of training and apprenticeship. Among the newer strategies is the development of Managed Knowledge Networks (MKN) which bring together people from a common specialty (e.g. cancer or coronary disease) or which tackle a common problem (e.g. health care in remote rural areas). These networks are supported by portals which allow access to information, for example specialized e-libraries, as well as helping people share practice knowledge.

Knowledge valuation

This has to do with two main aspects: the valuation of the organization's intellectual assets and the measurement of the effectiveness of KM initiatives.

There exist a number of methodologies for the valuation of intellectual capital. Some of them are strictly financial. Others tend to consider a number of different aspects and focus on the dynamics of their development. For example, the Skandia Navigator model identifies five categories which are benchmarked according to levels of investment, activities and outcomes (Fincham and Roslender 2003):

- Financial
- Customer
- Process
- Human
- Renewal and development

With regard to the valuation of KM initiatives there is a literature associated with the consideration of 'success factors'. For example, Beckman (1999, p. 18) compiled the following:

- A knowledge-oriented culture
- Technical and organizational infrastructure
- Senior management support
- A link to economics or industry value
- Degree of process orientation
- Clarity of vision and language
- Nontrivial motivational aids
- Levels of knowledge structure
- Channels for knowledge transfer

Research papers are often published about assessments of specific KM initiatives such as deploying an intranet or an ERP system, using success factor methodologies. However, it is a well-known problem that it is difficult to measure many aspects of the outcomes of KM initiatives (Mertins, Heising and Vorbeck 2001, p. 67).

Knowledge application

This KM 'process' has to do with many aims, roles and activities in the organization and is difficult to pin down as a single process. The main idea behind the concept is that knowledge should be applied effectively beyond transfer, leading to value creation of some sort. Whereas Nonaka and Takeuchi (1995) emphasize the creation of new knowledge, Choo (2005) highlights the importance of integrating the knowledge of multiple individuals in the organization. The utilization or application of information

and knowledge can be theoretically considered from the point of view of the main learning theories discussed above as involving: behavioural change, cognitive change, development of mental models, development of skilled performance, etc. Within an organization there are three main aspects of the application of information and knowledge:

- Applying them to the primary business processes: production of goods; provision of services; quality assurance; marketing; financial planning; sourcing materials; etc. This is connected with the ideas of quality management, business process reengineering, lean production, etc.
- Applying them to the development of innovation in various areas: new product development; partnerships and joint ventures; developing the supply chain; developing customer relationships; etc.
- Applying them to the development of the workforce through training, coaching, mentoring, apprenticeship, secondments, etc. This is connected to the idea of organizational learning.

At NHS24 the primary business process for the application of information and knowledge is serving the patient, who is seen as someone with care needs within a managed process of accessing health services. The second most important focus is developing a capable workforce. Innovation and development take a relative background.

Information systems for KM.

A number of information technologies, including specific types of software, are frequently employed as KM tools. Many of these are developments of traditional business information systems. From the KM point of view systems are divided into integrative and interactive applications. The former include mostly content-management systems, while the latter include

communication and groupware technologies. The corporate intranet is the almost universal medium of access (Hayes and Walsham 2003).

a) Document management systems.

Organizations publish or acquire large quantities of documents that they want to make available to large numbers of people. These projects involve the more traditional aspects of information management and documentation, typically consisting of document repositories or e-libraries which are accessed through an intranet. The types of documents may include policy, procedure manuals, quality standards, corporate directories, guidelines, sales and marketing literature, customer data, price lists and press releases (Jashapara 2004). The functionality of these systems may include:

- Insuring only one user modifies a document at a time
- Monitoring changes to a document over time
- Controlling user access to documents
- Organizing documents into related groups and folders
- Facilitating documents retrieval
- Assigning metadata information
- Controlling the flow of documents from one user to another
- Digitalizing documents by scanning

At NHS24 a number of systems of this type are used. The main one is called the e-library, which provides NHS-wide access to journals, reports, etc. Another important system at NHS24 is the intranet, which provides access to internal documents such as guidelines, procedures and advisories. Other web-based NHS document management systems hold public access information on NHS services and general health issues.

b) Decision support systems

Decision support systems perform data analysis and provide sophisticated models to support non-routine decision making. They are particularly useful

in decision making on ill-defined problems that need fast response. They offer an interactive interface and use both internal and external data.

- Support sequential and interdependent decisions
- They can be adaptive and flexible in various degrees
- Are generally user-friendly to facilitate complex operations
- Sometimes include strong graphical capabilities
- Improve accuracy, timeliness and quality of decision making
- Have various degrees of modeling capabilities to allow a variety of strategies under different scenarios.

At NHS24 two important systems are used by the frontline staff. One is DASHBOARD which provides team-leaders and other managers on line statistical information on the performance of the service. The other is the triage support expert system that employs algorithms and is used by the nurses to support clinical decision making.

c) Group support systems

Basic team working processes are supported by group support systems such as *Lotus Notes* and *Microsoft NetMeeting* (Andriessen 2003):

- Communication using technologies such as e-mail, voice-mail and video systems
- Knowledge sharing and learning through message boards and document sharing
- Cooperation in document co-authoring
- Group decision support systems for brainstorming, evaluating ideas and decision making
- Coordination of the work processes of a team using group calendars and workflow tools
- Support of less formal social interaction, e.g. chat

NHS24 uses the intranet and e-mail to provide connectivity amongst frontline staff. In a more specific support role several specialty- or problem-specific portals have been created around Managed Knowledge Networks (MKN), which consist of collaborative groups organized around a specialty or a health issue (stroke, diabetes, cancer, cardiac, etc.) or a geographic location (remote rural areas of Scotland)

d) Workflow management systems

These can be integrated into executive information systems as part of the reports on workflow or they can be independent systems with the capabilities for designing, modifying and modelling workflows. (Laudon and Laudon 2006). At NHS24 this kind of systems are used to manage the call queue, by helping in the analysis of demand and the assignment of resources, eventually routing calls to staff in different places across Scotland or placing them on the call-back queue.

e) Customer relationship management systems (CRM)

CRM systems are very much an aspect of front-office integration and in many organizations revolve principally around sales and marketing. The motivation is often to integrate technology and business processes to meet customer requirements at any given moment. At NHS this takes mainly the aim of managing confidential patient records and the information resulting from the call handling process. The system used by NHS24 at the time of this study was PRM, a Patient Record Management system that is also integrated with the intranet and the knowledge bases such as the e-library.

f) Enterprise resource planning systems (ERP)

ERP systems are a type of encompassing systems that incorporate support for many of the knowledge management processes. Their main strength resides in the integration of databases, consolidation of information in real time and support of business processes with a company-wide consideration of interactions between them. They also incorporate facilities for overall

integrated reporting. These company-wide systems are an alternative to the plurality of 'legacy' systems that many organizations use and that lack that level of integration. The characteristic problems of these systems are lack of data consolidation in real time and the isolation of business processes. ERP systems are nowadays the backbone of business information systems in large and medium-sized companies.

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Chapter 4. Methodology.

The development of a methodological research approach involves a number of decisions and choices that have to be sustained theoretically and justified in terms of their contribution to the overall quality of research. The main issues and decisions involved in the development of the methodology for this study have been:

- The choice of a research approach.
- The choice of a host organisation
- The choice of the data collection methods
- The choice of the direct participants in the study
- The decisions taken in the data analysis process

In this chapter the rationale and the groundings for those decisions are discussed, with particular emphasis on four main aspects:

- The groundings of research methods in the social sciences and the main epistemological and theoretical issues that have shaped their evolution, with a discussion of the divide between positivist and interpretive orientations.
- The choice of phenomenography as a particular interpretive methodology suited to the research problem and questions.
- The design of the study and the practical issues related to its development, from the initial engagement with the host organization, to the inclusion of participants, to the methods of data collection.
- The procedures for data analysis.

Research aims and questions

In order to more clearly see the logic of the methodological decisions taken, the research aims and questions are briefly presented again in this section (they are discussed more fully in the first chapter).

Research aims:

- To investigate the concept of workplace information literacy theoretically and empirically and to discuss the relevance and applicability of current IL frameworks in workplace environments.
- To discuss the connections between information literacy and knowledge management, exploring the possible contributions of IL to effective information use for knowledge build up and transference in organizations.
- To offer conclusions that can provide relevant feedback into frameworks and practices of information literacy and knowledge management.

Research questions:

- How are NHS24's frontline staff conceptions of effectiveness and effective information use related to NHS Scotland's institutional strategies for knowledge management?
- How are NHS24's frontline staff conceptions of effective information use related to relevant aspects of their workplace practice?
- What is the relevance and applicability of current IL frameworks to the workplace environment of NHS24?

It should be highlighted that the empirical research aims present two main facets, reflected by the research questions:

- First, there is the aim of researching conceptions of effective information use, which involves a focus on the phenomenological experience of NHS24 frontline staff within their situated practice.
- Second, there is the aim of exploring the relationships between frontline staff's conceptions and other aspects of

their practice, including the knowledge management initiatives of NHS24.

The distinction between the two is relevant in terms of the research methodology, as each requires a different approach. The first one is related to conceptions of a phenomenon which belongs to the direct experience of the participants, and was approached using a phenomenographic methodology (see chapter 4) which produced two outcome spaces (presented in chapter 5). The second is related to organizational strategies, initiatives and processes which are experienced indirectly by participants (i.e. mainly through their effects or consequences) as structural aspects of the situation, and which were researched from institutional documentation (presented in chapter 6). Knowledge management is therefore not being treated in this study as a phenomenon perceived as such by the participants, but as a key aspect of the organizational environment which will be discussed in relation to participants' conceptions of information literacy and their workplace use of information.

4.1. Foundations of interpretive methodologies and qualitative research.

The choice of methodological approaches within the social sciences implies taking a position in the divide between positivist and interpretive epistemologies. At stake are different, and often contradictory, understandings of what is legitimate scientific production of knowledge in social science. On another level there are practical issues related to what is sought in terms of the research aims and questions: exploration, description or explanation. Although it is possible to use mixed methodologies, there are basic epistemological distinctions between the approaches which should be clearly laid out, as they lead to marked differences in the products of research.

Methodological approaches have their groundings in philosophy and social theory. Research methods can be considered as more than simply

instruments as they operate within given sets of assumptions related to conceptions of the world, knowledge and truth. In the social sciences this is more evident as epistemology is often considered to be prior to empirical enquiry. Research approaches are often implementations of philosophical stances and the criticism of research is frequently directed against the philosophical conceptions underlying it (Hughes and Sharrock 1997).

The social sciences study subjective, inter-subjective and objective aspects of society (including fields of study such as history, sociology, psychology, economics, anthropology, politics, education, communication, linguistics and cultural studies). At the risk of oversimplifying some main trends in what is really a very wide collection of disciplines and research fields, it can be said that methodologies in the social sciences have generally developed along two main lines, generally called quantitative and qualitative approaches, each associated with particular understandings of science and how social life can be approached through scientific enquiry (Denzin and Lincoln 2003).

While the natural sciences distanced themselves from philosophy as their source for problems and questions and as the main method for inquiry, the human sciences have remained linked to philosophical concerns. It is generally recognized that the philosophy of science has played a much more prominent role in social theory than in the natural sciences (Outhwaite 2000). Philosophical issues continually provide fundamental questions that disciplines in the social sciences ask about the nature of their appropriate subject matters, their investigative rationales and the nature of the valid and proper research methods. One aspect of these concerns is about the nature of science and knowledge themselves. Questions such as "What is reality?"; "How can we know about reality?"; "What is true?"; "What is meant by...?" are pervasive and have not been settled. Also, if science is a special and more valid form of knowing, what makes it so? Other related questions are about the nature of evidence, for example: How do we come to know certain things, believe others, and distinguish some things to be true and others false? What inferences can be made from experiences?

“The possibility of empirical knowledge needs to be secured against persistent sceptical doubt... to protect against this scepticism it is argued that the possibility and the actuality of knowledge need to be conclusively demonstrated by identifying sound, unchallengeable means, or methods, of acquiring knowledge” (Hughes and Sharrock 1997, p.4).

The evolution of social theory and methodology in the social sciences has involved four main issues or concerns, the reactions to which have on the main registered a displacement away from positivism and its aim of obtaining objective knowledge in the social sciences, moving instead toward interpretive approaches centred on subjectivism. These four issues are:

- The centrality of meaning in human phenomena.
- The levels of human phenomena, from the individual to the social.
- The role of language in the construction of meaning.
- The critical role of social science.

Meaning in human phenomena.

The first of these concerns relates to the movement away from the consideration of social science as involved with objective facts of nature and the recognition that subjective meaning is an essential characteristic of social phenomena. This difference in the understanding of the general objects of research in the social sciences has a direct incidence on the consideration of the validity or trustworthiness of methods within a scientific research aim. This issue is related to the production of true knowledge, and it implies the consideration of what is real in social terms (ontology) and how we can explore that reality (epistemology). These aspects make the problem a philosophical one but also raise concrete problems as to, for example, what are valid objects (or subjects) of research and what methods can effectively be used to obtain scientific knowledge about them.

The beginnings of social science are associated with the adoption of logical empiricism (later labelled positivism), imported from the natural sciences in the light of their evident success in those fields and under the assumption

that a single scientific method could be used to investigate and explain all worldly phenomena. Social science began to consolidate as a proper field of knowledge in the 19th century in Europe, although there are important precedents to its emergence which date back as far as two centuries earlier through the ideas of people such as Francis Bacon, Rene Descartes, and Thomas Hobbes. The initial tendency was to seek and uncover lawful causal explanations for social phenomena with methods similar to those applied at the time in physics, mathematics and biology which were based on logical empiricism. This led to a quest for cause-effect regularities to be sought in social life that could eventually be characterized as 'laws' and allow the possibility of control over social phenomena. Positivist theory seeks validity in objective knowledge. This objectivity is based not in a true philosophical realism, but rather in the assumption of the possibility of deriving explanations of phenomena which can gain independence from observers and also what is called value-freedom.

Later on, by the early 20th century, interpretive approaches based on different epistemological groundings emerged through the ideas of influential authors such as Husserl (phenomenology), Weber (meaning in social action), Schutz (hermeneutics applied to social theory) and Herbert Mead (symbolic interactionism). Interpretive approaches are generally based on phenomenology, which introduced a focus on experience, and hermeneutics, which focuses on the interpretation of meaning. Interpretive approaches are naturally concerned with subjective knowledge, and strive to obtain scientific knowledge by embracing subjectivity.

This shift was spurred not only by a fundamental disagreement with the scientific basis of positivism and a disillusion with its achievements in developing a true and complete social science, but also by important changes in the ways the nature of social phenomena was understood. Max Weber, in sociology, and Sigmund Freud in psychology are prime examples of the shift toward subjectivity which is associated with the recognition of the importance of meaning in social phenomena. Weber established that an action can be characterized as 'social' by the meaning granted to it by an actor, refuting that any actions could be independently or objectively

considered social without regard to the meaning they had for the involved actors (Hughes and Sharrock 1997). Weber also advanced the notion of *verstehen* scientific research, concerned with the interpretation of meaning, as the main method suited to the understanding of the social.

The levels of human phenomena.

The second concern is about the commensurability and interactions of two distinct levels of human phenomena, that of the individual and of society. For social science, this involved the consideration of which should be the main research object, and also the issue of causality. Is society something more than the collective of individuals? Does society define the lives of individuals, or is it the other way around? In this divide, the pre-eminence of society (and a concern with structure and the large-scale organization of institutions) has been associated with an objectivist position, while the pre-eminence of the individual and the small group has been associated with a subjectivist one (Giddens 1987). Different authors have at various times taken either side strongly. For example, Emile Durkheim considered society a real entity and the true object of social science. Karl Marx also considered social class as an objective entity, whereas Max Weber considered that only individuals exist which form various groupings and he centred his studies on them rather than on a more abstract social level. Others have attempted to reconcile the two extremes and explore their interaction, mainly through a focus on the middle ground of human experience in context, using concepts such as: 'contextualized action' (Giddens 1987, 1993); the 'lifeworld' of Gadamer (1979), Schutz and Habermas (Outhwaite 1975; Turner 2000; Malpas 2001; Finlayson 2005); and the 'habitus' of Bourdieu (Jenkins 1992; Bouveresse 1999).

Social theory and research have shifted their focus of attention (the central phenomenon under study) alternatively between society as the prioritized object and the individual as its main concern. There are some who have considered that 'society' and 'social institutions' have structural properties that extend beyond the activities and even the comprehension of individual

actors (e.g. Emile Durkheim) and this has been seen as offering the possibility of finding the elusive law-like regularities that the study of individual behaviour seldom offers. Others have seen individuals as capable of understanding and steering their own actions with reasoned intentionality (e.g. Herbert Mead). Each of these positions has of course made valid points. Attempting a resolution of this dualism between what can be called 'macro' and 'micro' levels, Giddens (1987) proposes the consideration that subjects are first and foremost 'agents' and the middle ground is understood through the concepts of 'practical consciousness' and the 'contextuality of action'.

"Contexts form settings of action, the qualities of which agents routinely draw upon in the course of orienting what they do and what they say to one another. Common awareness of these settings of action forms an anchoring element in the 'mutual knowledge' whereby agents make sense of what other say and do" (Giddens 1987, p. 99)

This is to some extent also a view contained in critical realism, from a more philosophical perspective (Bhaskar 1998; Archer et al 1998; Hjørland 2004; Mutch 1999), and the general idea is also used by Bourdieu from an ethnological point of view (Crossley 2005).

The role of language in the construction of meaning.

The third concern is about the role of language in the construction of meaning, ensuing from the realization that in social life language is not only a means of communication, but is central to the way in which social phenomena are created or constructed (e.g. social classes, power relations, agreements, common sense, etc.). Emphasis on the importance of language is derived from the fact that actions can only be identified through actor's own concepts, which in turn have developed in social interaction. Language is culturally created and therefore prior to individual experience, and by implication experience itself, inasmuch as it is conceptualized and communicated through language, is affected or even to a certain extent created by language as we learn it and use it.

The consideration of the role of language as conveyor of meaning has registered a general move towards relativism, as language is now understood not to offer the firm ground that was once expected (i.e. provide objective references to the world). This theoretical development has been associated with the rejection of 'foundationalism' in science, which is the need for bed-rock certainties based on axiomatic logic on which to build the edifice of science, and generally with the acceptance of more relativist conceptions of knowledge. This understanding of language has undermined positivist views of science, but also has important implications for interpretive approaches. It denies the possibility of direct and unmediated access to consciousness through, for example, interviews.

"Whether or not we can know anything becomes, in prominent part, a question as to whether the expressions in our language (in which our thought, theories and beliefs are expressed) can possibly capture the intrinsic nature of reality." (Hughes and Sharrock 1997, p. 144)

Saussure (a structuralist) proposed that language is a system of signs, constituted by differences, with an arbitrary relation to objects where meaning is established solely as difference between words. This represented a first move toward the separation of language from intrinsic meaning. The word 'I', for example, is constituted as a sign in virtue of its being different to other words such as 'you', 'us', 'they', but it makes no intrinsic reference to the states of consciousness of the subject uttering the word (the essence of the self). This consideration of language led to the 'decentering of the subject', the supremacy of the text over its author and the 'retreat to the code' (Outhwaite 2000). Basically, language is not a conveyor of intentionality or an expression of self, but has independent existence from the author, and to an extent also from the reader, having a cultural rather than a psychological nature.

Wittgenstein (Cheal 2005) questioned the assumption that the role of language was to provide a connection between a word and an external non-linguistic reality, a means of making factual or empirical statements about the world. He questioned that words have 'meaning' given by the nature of the external realities to which they refer, but proposed that words get their

meaning from language itself (the 'autonomy of grammar'). This position is different to Saussure's, as Wittgenstein and later Winch proposed that the meaning of a word is given by its position within human activities and the part it can play in combination with others in social contexts. Wittgenstein proposed that the capacity to connect language with the world presupposes social relations between people, not just in the sense that someone teaches another the usage of a name for calling a thing, but that the use of language is developed from the roles of words in people's activities and that acquire their meaning because of the way in which they fit into activities. Wittgenstein therefore put an emphasis on its role in carrying on social relations and activities. As language is a prominent medium in the conduct of social life, so the study of social life becomes to a large extent the study of language use.

"Meaning is not constructed by the play of signifiers, but by the intersection of the production of signifiers with objects and events in the real world, focused and organized via the acting individual" (Giddens 1987, p. 91).

The emphasis put on the various roles of language, as opposed to the single one of conveying objective messages, places sense or meaning before truth. This has the implication for social science that its role should be more related to communication than to the finding of causality.

"In asking for explanations of what others are doing, most of the time what is needed is to find out what it is we don't know but of which they are perfectly aware" (Hughes and Sharrock 1997, p. 163).

This trend toward the view of language as constitutive of the social world, as having a super-structural cultural role, is specially marked in the idea of social constructionism (Saljo 1997). A number of other interpretive research traditions recognize the fundamental role of discourse in human affairs, such as analysis of discourse, conversation analysis, and discursive psychology. These approaches have introduced a view on meaning which is more related to cultural construction than to psychological subjectivism.

The critical role of social science.

The fourth concern has been with the 'critical' role of social theory (and by extension of social research), an element which was initiated by Marxism, and to a certain extent also by psychoanalysis, and which was taken up in more recent times by the Frankfurt School, which in the mid 1930s had developed a powerful critique of positivist naturalism and asked how it could be possible to unmask and overcome the effects of power and ideology. Max Horkheimer contrasted Cartesian and Marxist forms of knowledge, proposing that "critical theory, following Marx, is not just some research hypothesis which shows its usefulness in the ongoing business; it is an indissoluble element in the historical attempt to create a world which satisfies the needs and powers of human beings" (Outhwaite 2000, p. 58).

This development of social theory has risen against the ideas of value-freedom in science and the purported neutrality of positivism, which has instead been interpreted as an aspect of the dominant ideology in Western society (i.e. capitalism), as science has for the most part aligned itself with it and its social endeavours such as the development of technologies for commercial profit, military uses, control of ideology through mass communication, etc. The issue of power in the production and distribution of knowledge is seen to be intrinsic to social relations, as it is often a means of control and of reproducing social structures and relationships. Knowledge and science are seen therefore as value-laden and as instruments which are often held by specific power groups, such as governments, academic institutions, men as gender, etc. Therefore, they should be subject to scrutiny, rather than assuming their neutrality.

Generally, this concern has focused on issues of power creation through ideology and in some ways it has also embraced the analysis of the use of language and discourse in its construction. Feminist theory is an offspring of this concern, as it centres round a critique of ideology, exposing the neglect of women and the prevalence of male points of view, for example in social science (Crossley 2005). The interest in cultural studies is another avenue to pursue the study of power relations and the creation of knowledge

outside the traditionally legitimized realms of academic knowledge and its research interests.

Other standpoint epistemologies have been developed which have the same finality of shifting the ideological centre of power from traditional knowledge forms and uses to the concerns and interests of minorities, fringe communities and generally the dispossessed. An example of this is the 'pedagogy of the oppressed' developed by Paulo Freire (1998), which questions the uses of literacy as an established mechanism of insertion into capitalist economic life, and instead advocates its use as a tool of liberation from the system.

Conclusion

For this research, the four concerns previously discussed have the following general implications:

- Meaning and interpretation are considered central to all uses of information, including decision making and learning which are characteristic of a knowledge-managed workplace such as NHS24.
- One aim of this study is to explore the relationships between ways of understanding effective information use and the characteristics of the work environment, for example how the organization fosters certain behaviours and values. In this way, the study strives to connect the individual and organizational levels. This relates to the second concern, which focuses on the interaction between individual and collective levels of human phenomena.
- The concern with the role of language is important in the way the phenomenographic study of conceptions is analyzed and discussed. It is clear that interviews are accounts rooted in experience, but cannot be considered to be unmediated 'windows' into experience. The view of

language taken in this research is one that tries to reconcile individual subjectivism (i.e. people's verbal accounts to a certain extent actually represent their experience and personal beliefs) with the view that what people say is influenced by their cultural (and in this case organizational) environment. It is recognized, for example, that in nursing there are professional and organizational discourses which will transpire in the individual accounts of experience.

- The critical role of social science is not focused very strongly in this research, which has primarily descriptive aims. There is however a degree to which a critical position is adopted in the discussion of the social role of the concepts of information literacy and knowledge management. It is recognized that these concepts are value-laden and linked to ideological positions, for example how literacy is related to functionality and personal and organizational advancement within a capitalist society.

4.2. Positivism

Positivism arose in the eighteenth century as an ambitious programme that attempted to achieve a drastic transformation and development of social science by bringing it nearer to the assumptions and foundations of natural science, mainly through a focus on empiricism and logic.

The main tenets of positivism are (Hughes and Sharrock 1997; Denzin and Lincoln 2003; Miles and Huberman 1994):

- A focus on empirical knowledge, mainly through observation, experimentation and induction.
- A concern with axiomatization and a focus on analytical and synthetic logic. Complex phenomena are reduced to variables which are supposed to account for key aspects of

the phenomena under study. Quantification is desirable as it facilitates the use of mathematical logic.

- Observation is expected to be theory-neutral and objective. This implies the separation of observer and that which is observed, observation methods that guarantee objectivity and a language capable of conveying objective statements.
- The belief that research should be directed at identifying lawful regularities in phenomena.
- The belief that research should be directed at uncovering the causes of phenomena.
- The belief that knowledge on all aspects of life can be built up into an integrated edifice of science by applying research traditions and methods that are largely commensurable, based on a common foundation (the 'scientific method').

Francis Bacon and Rene Descartes were two important figures who as far back as the 17th century provided the arguments for what was to develop into modern positivist scientific thought. Bacon was a strong proponent of the empiricist philosophy initiated by Aristotle that stressed experience, observation and induction as the main ways to knowledge. Knowledge of the world was mainly acquired by the senses (or by extensions provided to them by instruments). Descartes stressed the importance of rational logic and the derivation of conclusions from self-evident, or factual, premises as the means of generating new knowledge. Thus, two main forms of knowledge were proposed, the empirical and the logical. The first was represented ideally by natural science and the latter by logic and mathematics.

Descartes and then Locke proposed a form of philosophy which was in a way an attempt to get rid of pestering epistemological scepticism. They proposed that the natural world is stable, fixed and separate from the knowing mind, which is the source of reason, and that the ideal or true knowledge could be provided by mathematics. The measure in which this approach proved successful in the natural sciences made it assume a position as the authoritative version of the world.

“It directed scientists’ and philosophers’ attention to the structure of the material universe, to its quantification and measurement and to its description in terms of rational theoretical principles” (Hughes and Sharrock 1997, p.9).

Descartes and Locke advocated the testing of suppositions against the evidence provided by nature and the accumulation of factual knowledge consistent with the explanatory theories. They bequeathed the idea that the success of scientific knowledge lies in the ‘method’, which if applied correctly would surely produce valid and cumulative knowledge of the world.

It was later Auguste Comte who extended Bacon’s ideas into the realm of sociology and who actually coined the term “positivist philosophy”. Comte advocated the unity of science under one system of precise and certain method based on sound empirical observation. Sociology was to follow the progressive development of the natural sciences in finding invariant laws governing the world and would become the ‘queen of sciences’. The success in the natural sciences in the 19th century and particularly Darwin’s publication of *The Origin of Species* gave credence to the idea that humanity was part of nature in a way that warranted the study of its processes in the same way as other natural phenomena. It was derived that the human and the natural sciences share common logical and methodological principles (Seidman 2004).

Positivism strives to attain particular forms of observation that are ideally neutral and objective, for example the experiment. This theoretical neutrality of the observation methods means that facts can be stated in terms which do not depend on a particular position or point of view. Positivism claims that objective knowledge can be had about the world that is not dependent on any act of subjective interpretation. This consideration creates the dialectic distinction between the knower and the knowable as inherently separate, since the reality of phenomena outside cannot be dependent on the act of observation.

Emile Durkheim advanced the establishment of sociology as an autonomous discipline that used characteristically positivist methods and was generally

influential within the social sciences as the model to follow. Durkheim advanced the notion that social 'facts' belonged to a more abstract level that could not readily be experienced completely or correctly by those who live in society, and that they can only be accessed by their systematic examination under the proper methods of science, signalling a move away from consideration of the life-world of people as a central focus of social research.

Another important trend in positivist social science is represented by functionalism and systems theory, developed in the 1920s and 1930s by Bronislaw Malinowski and A. Radcliffe-Brown and extended to sociology by Talcott Parsons and Robert Merton. Functionalism exhibited very clearly the influence from biological thinking, and was particularly related to the idea that events or structures have a role that can be explained by its consequences in relation to a broader system considered as a whole (Hughes, Sharrock and Martin 2003b; Giddens 1993).

The positivist approach to science naturally favours the use of quantitative measures which can be manipulated logically and mathematically, and there is a strong affinity with statistical methods, which are the basis for considerations of reliability in data and for the possibility of establishing correlations between variables, as well as causality through the weighting of factors in those relations. The questionnaire and the survey, based on statistical samples of populations, are the main methods associated with this research tradition.

The notion of variable in social science research, particularly developed by Lazarsfeld as the method of variable analysis, shows a markedly positivist influence (Hughes and Sharrock 1997). While variable analysis acknowledged that important concepts of research interest are qualitative in nature, it proposed that they should be amenable to some extent of measurement. This implies translating objects of research into empirical properties of phenomena which can take different values and which are subject to observation, measurement and recording in some objective way. Some constructs can be reflected by several indicators, and mathematical

analysis used to establish correlation and causality. Variables are linked as to produce a testable hypothesis, for example that there is a link between racism and education, so that lower levels of education are associated with higher levels of racism. These constructs or variables can then be measured according to respondents' indications on psychological tests or attitude surveys.

Experimental designs complete the picture of positivist research. Randomized Control Trials in medical research are a prime example of this type of approach. In psychology, the behaviourism of Watson and Skinner clearly advocated the positivist position, with a strong inclination toward the isolation of observable variables (e.g. stimulus and response).

Critique of positivist approaches in social science.

The positivist view in the social sciences bloomed from the end of World War II until the mid sixties, when the questioning of its claims to be the uniquely valid research method reached its peak. On the whole, there was a perception of the failure of positivism in the social sciences, as no consistent logical structure or general theory had been developed to explain the range of social phenomena. The neglect of historical study, the emphasis on explanation instead of understanding, and the perception that positivism brought with it an unwarranted sense of certainty about the aims and achievements of science forced epistemological concerns back to the table, while ushering a greater sense of relativism as to the nature of social science and its aims.

The critique then extended to the challenging of science in general as the only valid way of investigating and representing reality. Although for some people the quest for a true science is still valid, only to be pursued by other means, for others the question has been about the privileged position of science proposed in the first place by positivism. This has been most notably the argument of post-modernist philosophers.

“The idea that science provides a universal standard for all people and does so on the basis of a definitive grasp of the nature of reality, has become a particularly obnoxious feature for many.” (Hughes and Sharrock 1997, p.21).

The centrality of the positivist scientific method in the creation of science has been questioned, notably by Karl Popper and Thomas Kuhn. Popper advanced the importance of falsification as the proper test for any theory, regardless of the method of its development, and Kuhn established that the development of science did not show a continuous progression based on method, but rather proceeded in stages marked by changes in scientific ‘paradigms’.

Herbert Blumer’s criticism of the use of variables in social research (Hughes, Sharrock and Martin 2003b) brought up the questions of whether the indicators actually reflect the construct they intend to portray (validity), but also of whether stripping down phenomena to the bare bones of a few indicators which are taken to represent a complex reality is a useful way of understanding it. He also criticized the fact that social scientists seem to create variables out of virtually anything without giving attention to variables which can consistently be researched on a common basis by larger groups of researchers. Finally, another point is that in defining the indicators, the key elements assumed to define a phenomenon are often decided upon by the researchers, leaving out the view points of actors or participants.

The detachment and objectivity of observers is difficult to establish and even considered undesirable, as the intrinsic importance of subjectivity has been acknowledged. While in the investigation of the natural world there appears to exist a natural separation between the observer and that which is observed, in the case of human phenomena this separation is much less clear (Outhwaite 2000, p. 54).

The pretended freedom from values in research has been attacked as untenable by many, including prominently Thomas Kuhn and Max Weber, as it has been argued that the search for knowledge is itself value-laden. There is not a proper recognition in positivism that facts do not just appear but

are discovered, assembled and made informative through a process which is always related to some theoretical conceptualisation and interpretation. The critical sociology of the Frankfurt School also played a role in debunking the myth of the neutrality of science, which they argued was practiced in the capitalist world not as a form of neutral and objective inquiry, but compromised with the ruling powers to dominate knowledge that could be used for the practical management of society, consolidating the current social order and the benefits of power holders (Hughes, Sharrock and Martin 2003a, p. 141). In relation to social inquiry freedom from values is also undesirable, as knowledge is often sought about aspects of reality which involve evaluations.

In spite of the strong critique of positivism in social theory there is however no such thing as a complete abandonment of its tenets in many realms, most notably economics but also in sociology and psychology where the survey, the experiment and statistical models are still very much used.

4.3. The interpretive alternative: phenomenology and hermeneutics.

“Qualitative inquiry is the name for a reformist movement that began in the early 1970s in the academy. The movement encompassed multiple epistemological, methodological, political and ethical criticisms of social scientific research in fields and disciplines that favoured experimental, quasi-experimental, correlational and survey research strategies.” (Schwandt 2003, p. 293)

The disenchantment with positivism and its perceived limitations led to the development of alternative approaches to social science that are philosophically rooted in phenomenology and hermeneutics. The first put at the forefront the idea that human experience should be a basis for knowledge. The second provided grounds for tackling the basic problem of meaning, which is interpretation.

An initial point of departure from positivism was the recognition of the differences between natural and human phenomena. Wilhelm Dilthey, for example, advanced the study of history as the understanding of 'historical

reasons' from a hermeneutical tradition, rather than as the identification of factual knowledge, and stressed that natural and historical phenomena are of a different nature. Heinrich Rickert later advanced another conception of this difference, based on methodological interest rather than ontology, stating that what made these phenomena different was our *interest* in each of them, i.e. what we seek to know about each: in nature we should seek explanation of regularities; in culture we are interested in individual phenomena (Giddens 1987).

Interpretive approaches share the following features (Schwandt 2003, p. 298):

- a) They view human action as meaningful;
- b) They evince an ethical commitment in the form of respect for and fidelity to the life-world; and
- c) From the epistemological point of view they share the neo-Kantian desire to emphasize the contribution of human subjectivity (i.e. intention) to knowledge without thereby sacrificing the objectivity of knowledge. In other words, interpretivists argue that it is possible to understand the subjective meaning of action (grasping the actor's beliefs, desires and so on) yet do so in an objective way"

The emphasis on a subjective perspective was bolstered by the writings of Kant and Husserl. Kant proposed that both rationalism and empiricism were valid but also that neither could be taken to an extreme. He advanced the idea, against positivism, that we cannot know ultimate reality and formed the basis for arguing the inherent limitations in all scientific endeavours, both natural and socio-cultural. Kant also argued for a separation of the realms of natural phenomena and the human mind, which is the realm of ideas, beliefs and reason. Phenomenology proposed that humans could have no knowledge of the world independent of what was in their minds. They could only know things as they appear as phenomena, never as things as such.

Max Weber was the first sociologist to advance the interpretive paradigm into mainstream social research. He took up some of Kant's basic premises related to the different nature of the human mind and the natural world (without conceding a complete separation) and the limitations of inquiry. More specifically, he argued that while the natural sciences sought causal

explanations, social investigation pursued 'understanding' in trying to grasp the ways in which ideas, beliefs and values guided people's actions (Hughes, Sharrock and Martin 2003a p. 123). His definition was that action is social when a social actor assigns a certain meaning to his or her conduct and the action, by this meaning, is related to the behaviour of other people. Actions are oriented because actors interpret and give meaning both to their own and to others' behaviour (Cheal 2005).

"One predominant way of characterizing the task of the social scientist is to see it as attempting to provide a theoretical account of social life. This requires empirical research in order to bring data to bear on the theory. This data must derive in some way from the lives of the social actors being studied, but unlike physical phenomena, social actors give meaning to themselves, to others and to the environment in which they live. They can describe what they do, explain and justify it, give reasons, declare their motives, decide upon appropriate course of action, try to fit means to ends and so on" (Hughes and Sharrock 1997, p. 104)

The recognition of subjectivity as a valid research focus and of the 'mental reality' which underlies much of social life and history required a different method to that of natural science, but one which could also be philosophically justified:

"The method had to recognize the actions, events and artefacts from within human life in the terms in which they were experienced and known by those living among and through them and not through the observation of them as though they were some distantly perceived external reality. Knowledge of persons could only be gained through an interpretative procedure grounded in the imaginative recreation of the experiences of others to grasp the meaning which things in their world have for them" (Hughes and Sharrock 1997, p. 98)

The general notion that social science has to begin with the world as understood by the members of society is central to the interpretive approaches. This concept was developed progressively as the original concepts of Kant, Husserl and Weber were later developed by other philosophers and social scientists (e.g. Gurwitsch, Schutz, Habermas, etc.) following the phenomenological and hermeneutic traditions (Cheal 2005).

Phenomenology

Phenomenology provided an important philosophical base for interpretive approaches. There is not a single agreed definition of phenomenology, which basically means "the study of phenomena", the appearing, that which presents itself as both meaningful sense and knowledge (Vaitkus 2000). To Hegel, phenomenology represented the changing appearances apparent to human consciousness. For Lyotard (Malpas 2001) the term signifies a study of that which is "given" and it seeks to explore the perceived given of which one thinks and speaks.

Although the term was used by others before him (most notably Hegel), it was Edmund Husserl who established phenomenology in its most generally known sense. He emphasized that traditional philosophy's search for all-encompassing, absolutely valid and intellectually justifiable knowledge "was lost in beginning with presuppositions of a positivist kind" (Husserl 2001). The phenomenological approach implied that theoretical reflection need not be limited to a philosophy of social science as a logical ordering of social theories and the verification of hypothetic-deductive models. Phenomenology constituted a 'bypass' for accessing phenomena in a more direct way, rejecting a growing intellectualism in science and getting involved in the investigation of the life-world.

"In phenomenology one no longer deduces, in the mathematical or logical sense of the word. Moreover, the facts which the phenomenological reduction opens up are not there to suggest or to confirm hypotheses. There is neither deduction nor induction. The facts of consciousness do not lead to any principle that explains them. The 'because's' that appear in the texts merely establish the primacy of one fact over another; they never rise above the phenomena. 'Because' the synthesis of sensible perception is never completed, the existence of the exterior world is relative and uncertain. But the relativity and uncertainty of the exterior world signify nothing other than the incomplete character of the synthesis or perception of the sensible." (Levinas 2003, p. 131)

His call for original self-activity in philosophy directed theorists to go back to "the things themselves" (Husserl 2001), which was not a simple return to the empirical but a description of the given phenomena of consciousness by

means of a direct awareness (Vaitkus 2000, p. 273). Phenomenology is not a methodology in itself but a way of doing philosophy or theorizing, which stands as an alternative to analytical philosophy and that in a fundamental way embraces and justifies subjectivity:

“Phenomenological description seeks the significance of the finite within the finite itself: hence the particular style of the description. Whenever a philosopher of the classical type insists on the imperfection of a phenomenon of knowledge, phenomenology, not content with the negation included in this imperfection, posits instead this negation as constitutive of the phenomenon. If feeling is an obscure fact of psychological life, phenomenological description will take this obscurity as a positive characteristic of feeling, and not conceive of it as clarity simply diminished. If a remembering is always modified by the present wherein it returns, phenomenology will not speak of a falsified remembrance, but will make of this alteration the essential nature of remembering” (Levinas 2003, p. 132)

For Husserl, the “world” means a world experienced and made meaningful by acts of consciousness. Knowledge is an act of consciousness, and basically to be conscious of *something*. This implies the concept of *intentionality* (Hughes and Sharrock 1997, p. 136). The word is to be taken in the sense that consciousness is directed; it has a purpose that creates a focus on knowledge, on reducing the distance between the act of perception and what is perceived. (Budd 2005, p. 45). The concept of intentionality is related to those of ‘theme’ and ‘horizon’. The first refers to those subjectively appraised elements of a situation or action relevant to a particular issue which is at the time the actor’s concern, while the horizon refers to aspects of the situation which are considered peripheral and secondary.

The prime task of phenomenology is to describe the experience of the world given in immediate experience and prior to any scientific or other interpretation. Husserl distinguished the interrelated “intending” or conceiving (noetic correlate) and *that* which is intended as conception (noematic correlate) as a relational approach to experience and awareness of phenomena. A conception of a given thematic phenomenon is constituted

by a way of focusing on some aspect of reality which leads to a particular meaning being conferred upon it.

Hermeneutics

Traditionally, hermeneutics is taken to have its origins in problems of biblical exegesis and in the development of a theoretical framework to carry out such practice. Later, in the 18th century, hermeneutics was developed into a more encompassing theory of textual interpretation in general, a set of rules that provide the basis for good interpretive practice no matter what the subject matter. Wilhelm Dilthey broadened hermeneutics still further, taking it as the methodology for the recovery of meaning that is essential to understanding within the 'human' or 'historical' sciences. For Dilthey and others, the basic problem of hermeneutics was methodological: how to found the human sciences, and so how to found the science of interpretation, in a way that would make them properly scientific (Outhwaite 2000).

Heidegger later presented hermeneutics as the means for the investigation of the basic structures of factual existence - not as a 'theory' of textual interpretation nor a method of 'scientific' understanding, but rather as that which allows the self-disclosure of the structure of understanding as such.

"... if we are to understand anything at all, we must already find ourselves 'in' the world 'along with' that which is to be understood. All understanding that is directed at the grasp of some particular subject matter is thus based in a prior 'ontological' understanding -- an hermeneutical situated-ness. On this basis, hermeneutics can be understood as the attempt to 'make explicit' the structure of such situated-ness, of exhibiting or laying bare a structure with which we are already familiar (the structure that is present in every event of understanding), and, in this respect, hermeneutics becomes one with phenomenology, itself understood in Heidegger's thinking as just such a 'laying bare'." (Vattimo 1997)

Hermeneutics is not a methodology for exploring understanding but inherently considers understanding as interpretation.

"... We are always taking something *as* something." (Gadamer 1979, p. 87).

Therefore, the socio-historically inherited bias or prejudice of the interpreter is not something to get rid of or manage in order to obtain a 'clear' understanding. These are the baggage with which we also make our way in understanding what we engage with. The point is not to free ourselves of this baggage but rather to reflexively examine it. Understanding is participative, conversational and dialogic. Meaning in this view is created through dialogue and is temporal (Gadamer 1979, p. 419). This conception differs from that which would grant inherent meaning to action which can be discovered or determined by an external interpreter.

Hermeneutics is a method for understanding which is much more suitable to the communicative nature of social exchanges. In order to understand the part (the specific sentence, utterance or act), the inquirer must grasp the whole (the complex of intentions, beliefs, desires or the institutional context, form of life, language game, etc.). The interpretive method attempts to relate the local detail with the global structure of context so as to bring both into view. Hermeneutic interpretation is a circular process of hypothesis and revision as understanding develops, rather than the grasping of absolute truth.

For hermeneutics, the historicity of human life is an ontological condition of understanding (Gadamer 1979). Our historical and social position is constitutive of our understanding of experience; it is a "given" which shapes our experience and our understanding of it. Hermeneutic interpretation is a circular process of hypothesis and revision as understanding develops, rather than the grasping of absolute truth. The interpretive focus of Weber recognized the partiality of scientific accounts, and the hermeneutics of Gadamer their inevitability.

Applications of phenomenology and hermeneutics to social research

"The 'sociological' direction of modern philosophy involves a recovery of the everyday or the mundane" (Giddens 1987, p. 65)

While Husserl proposed a transcendental philosophy that seeks to discover essences, even doing away with the materiality of the world as such, most of his followers became interested in human experience in the 'lived-in world', a movement from essence to existence. A critique of Husserlian phenomenology was based mainly on the charge of solipsism, which implies the abstraction of individual's experiences from the world in general and, importantly in social terms, from the experience of others.

The work of Gurwitsch and Schutz evolved ways of applying the basic approach of phenomenology to the problems of sociology. Among the most important contributions of these authors were the analysis of social meaning as inter-subjectivity and the social construction of the world in terms of considering our acts and actions as 'living in the world', as opposed to theories that attempted to explain them through higher-order social theoretical categorizations. Both Schutz and Gurwitsch start on Weber's analysis of social action, but inter-subjectivity was established by them to be a mundane phenomenon of the everyday world, rather than a transcendental constitutive element of society.

In the work of Alfred Schutz, phenomenological analysis is principally concerned with understanding how the everyday, inter-subjective life-world (the *Lebenswelt*) is constituted. The aim is to grasp how we come to interpret our own and others' action as meaningful and to "reconstruct the genesis of the objective meanings of action in the inter-subjective communication of individuals in the social life-world" (Outhwaite 1975, p.91).

Schutz proposed that the meaningfulness of the 'life world' is taken for granted most of the time. While the world is meaningful because of the intentionality of consciousness, this meaning is self-evident for people: going to work, going to school, paying taxes, etc. are experienced as sensible and meaningful actions without much theorizing. Meaning is created by inter-subjectivity, and actors generally live in limited provinces of meaning (i.e. job, home, neighbourhood, dreams, etc.) with a particular structure of relevances and knowledge that bestow 'factuality' in different

ways. Schutz proposes that while the subjective experiences of social actors constitute the basic material, they need to be treated under a theoretic attitude in order to "bring them up" to a scientific level.

Gurwitsch went on to take up the more general context of what he calls the "milieu-world". The context of a milieu-world is essentially the world of everyday life, which has three primary qualities (Vaitkus 2000, p. 281):

- "What is encountered in the milieu is neither physical qualities nor objects independent from me, but rather 'stuff' which makes up an intricate contexture of gear or paraphernalia that involves an interrelated 'being-together' with certain others.
- I am neither an isolated ego nor someone standing over and against the world in the milieu, but rather gear into it, so as to obtain the 'circumspection' by which I can determine how to comport myself in attaining any goals.
- There are no transcendent objects in the milieu, as the 'stuff' encountered there attains its living sense only in relation to the milieu"

Further, a milieu contains implicit knowledge of horizontal references to other milieus which reach finally to an outer, extended social world. A pragmatic knowledge of others and of social conventions is put in place through the core social relation of the directly experienced other, the 'we-relationship'. Rather than a psychological theory of how this operates, the focus in phenomenology is related to how actors' perceptions and consciousness are shifted as they go from one to another. The stocks of knowledge which are used to make sense of others operate within finite provinces of meaning, for example the utilitarian world of work, the realm of religion, or the realm of play. This is also closely related to the concept of 'habitus' in Bourdieu (Crossley 2005, p. 104).

Other important philosophers in the phenomenological tradition also contributed to contemporary understandings of the social. With Heidegger, the focus is put more on being and the possibility of inquiry as an avenue for transforming being, not only in how we come to know but also on the consequences of knowing. With Merleau-Ponty and Levinas there is an important contribution in the recognition of knowing as being-with-others

which leads to an understanding of communication and ethics. The perception of the "other" leads to a dialogic relationship. One aspect of this is the need for shared meaning which can be constructed through discursive practice, reflexive praxis and perception. "It is the sharing of meaning that is, perhaps, the integral dialogic imperative that is necessary for genuine informing" (Budd 2005, p. 46). Paul Ricoeur emphasizes interpretation in phenomenology while recognizing the role of hermeneutics as applied interpretation. The meaning of any symbolism belongs to a context or a framework. He also focuses on the fact that perception is comprehended through linguistic translation of the experience of perceiving. The life-world is apprehended linguistically and semiotically. This 'interpretive turn' in phenomenology distances itself from Husserl's idealistic attempt to derive the foundation of being and recognizes a praxis-orientated pragmatics of meaning (Burnett 2002).

Pragmatism and symbolic interactionism

Another important movement influenced by phenomenology and hermeneutics, as well as pragmatism, is *symbolic interactionism*. This was a predominantly American sociological movement based at the University of Chicago between the 1940s and 1960s which challenged Talcott Parsons' functionalism, and was eventually developed into a coherent intellectual perspective by George Herbert Mead. The word 'interactionism' appears to suggest a focus on the 'micro', small scale, face to face encounters, and although this does not mean a narrow concern with only this level of social life, indeed the interactionists argued that all patterns of social organization depend on the interactions of real individuals. Herbert Blumer synthesized the premises on which symbolic interactionism rests:

- Human beings act toward things on the basis of the meanings which things have for them.
- Things derive their meaning from social interaction.
- Meanings are handled in, and modified through, an interpretive process used by the person in dealing with the

things he encounters. (Hughes, Sharrock and Martin 2003b, p. 166-167)

The interactionists criticized the functionalist 'grand theorists' for not only being abstract in their categorizations, but because their concepts were created *a priori* through theoretical speculation and postulated, as did Durkheim, the existence of large-scale social forces and processes with a separate existence from the activities of real people in everyday life. For the interactionists, social theory could only be developed on the basis of a more direct contact with social life. Interactionists developed field studies of 'everyday' situations and attempted to understand large-scale processes from the point of view of those situations (Hughes, Sharrock and Martin 2003b)

Interactionism inherited from the pragmatism of John Dewey, C.S. Peirce and William James. These philosophers provided an important foundation for the development of sociological thinking which rejected abstract theory and advocated the significance of the interaction of people in social organization. From their perspective, the meaning of a concept or the significance of a belief lay in the ways it affected their actions, rather than on some other external and abstract criteria. Knowledge was more a matter of what worked for some particular purpose rather than some other standard of truth. Human activity was seen by them as conscious and purposive, with feelings and emotions, and this helped place the social actor at the centre of sociological theory.

William James, and later Mead, took up phenomenology's focus on consciousness but added a shift, in a sense away from mere subjectivity, whereby consciousness is exercised in alignment with an existing social framework, coming up against the interests of others through conventions and relationships. Mead's early interest in the physiological basis of psychology made him regard humans as basically animals with the capacity to engage in symbolic communication. Symbolic content has to be interpreted and meaning is not inherent in gestures themselves, but we make sense of them within particular social contexts. A sufficient level of

consensus or shared understanding of symbols and conventions is necessary for communication. The capacity to engage in symbolic communication is realised through our use of language. An implication of this is that the human 'self' cannot be understood in purely individualistic terms. In this sense, for Mead, society was prior to the individual. Socialisation and the process of internalisation makes conventions, values, beliefs, etc, be adopted by individuals, although not in a passive way. This conceptualization of the interactions between structure and agency shares with the philosophical realism of Bhaskar and Archer (Wikgren 2005). While the interactionists opposed structural functionalism, they did not deny the existence or the importance of social structures, but basically rejected the idea that they are entities which exist separate from actual human beings and their activities.

W.I. Thomas and F. Znaniecki of the Chicago School further developed the notion of the 'definition of the situation' as a key to understanding the social actor's point of view. This approach was specifically intended to overcome the substitution of the views of the actor for those of the external observer, with the resulting distortion or neglect of the former. Again it was proposed that any adequate explanation of human action requires an understanding of the subjective factors which motivate it or which lend meaning to its interpretation. Two implications of the views on human action that gradually emerged from the Chicago studies are that the beliefs and ideas which generally motivate human conduct are not the properties of isolated individuals, but are derived by them from the shared and collective understandings of group cultures. From this follows that the interactionists' focus on the individual did not mean a primary concern with individuals' subjective consciousness, but rather with the ways in which people fit their conduct together in patterns of organisation. (Hughes, Sharrock and Martin 2003b)

Critique of interpretive approaches.

Even though the choice within this research of an interpretive approach implies agreement with its basic tenets, some of its general limitations should also be pointed out.

The main shortcomings of phenomenology are the difficulty in accounting for the experience of others, inter-subjectivity and shared meaning. A pure subjectivism can be charged with solipsism, which is the denial of any reality outside of how 'I' create reality subjectively. However, Husserl's transcendent phenomenology has been largely abandoned by all of his followers involved in the social applications of his ideas.

Developments in the theory of social constructivism and particularly the 'linguistic turn' of social constructionism argue strongly against the idea of psychological subjectivism as the origin of meaning which is at the core of some interpretive methods. The discursive account of experience is necessarily mediated by the mechanism of language which is a social construction. This means that "the meanings of words and of actions do not originate solely in the differences created by sign codes, or more generally by language" (Giddens 1987, p. 63). This type of argument, taken to the extreme, removes meaning from the realm of individual subjectivity and places it in that of social construction but in a rather abstract way.

However, we find we are able to ascertain meaning as much as we are ordinarily able to carry on day-to-day life in spite of the fact that human communication is indeed a very complex phenomenon. Most of the words and phrases used in ordinary exchanges do not have precise lexical meanings, but ordinary language is not necessarily vague or indefinite. Rather, its precision is derived from its use in context. "Meaning and reference are ordinarily closely combined in talk ... because it is carried on and organized within practical contexts of action" (Giddens 1987, p 104)

Arguments can be levelled against both subjectivism and social constructionism when they are taken to extreme positions, and perhaps

part of the answer to this problem is to address the anti-realism which can exist in both positions and which on that level equates them with positivism. It is interesting to note that these three positions (positivism, subjectivism and social constructionism), which are based on very different assumptions and offer quite distinct accounts of reality, can nevertheless all be considered anti-realist, at least when they are taken to their respective extremes (Hjorland 2005): Positivism retreats to the logical elaboration of concepts and laws removed from the reality which it seeks to explain; subjectivism retreats to a position where the independent reality of an outside world is negated; and social constructionism retreats to discourse, also denying real aspects of the social world, particularly the material aspects of social structures and meaning ensuing from individual subjectivity.

The concepts of inter-subjectivity and situated action help us come to terms with the possibility of interpreting meaning if we include some analysis of the structural and material conditions which affect the conduct of social interactions. Giddens makes an important point of what he calls 'practical consciousness', a way of organizing 'knowledgably' how we go about the world using our unconscious implicit knowledge (this is also highlighted by Bourdieu) by using 'procedures' (e.g. conventional traditions, customs, uses, rites of passage, etc.) to reach interpretation of what goes on around us (Crossley 2005; Bouveresse 1999). It is temporally and spatially situated conversation which is most essential to explaining language and meaning.

"The origins of meaning are not to be traced to the referent, or to the system of differences which constitutes language as a semiotic system, but to a 'methodological apparatus' embedded in the practical consciousness of the routines of day-to-day life" (Giddens 1987, p. 64).

Within Library and Information Science, a call for realism has come from Mutch (1999), Hjorland (2004, 2005), and Wikgren (2005). Critical realism is a theory about the world, human agency and their interaction developed from hermeneutics, neo-Kantianism and pragmatism. It is critical of both positivism and post-modernism on account of their anti-realism. It postulates the recognition of material aspects of the world as a necessary

step in understanding the mechanisms thorough which they work in the formation of events and discourses (Wikgren 2005, p.14). The stratified understanding of society (i.e. individuals and society constitute distinct ontological levels) is not essentially dualist, but seeks to explore the way one influences the other through human agency, which is subject to the influence of pre-existing social structures (including language). It is the analysis of positions in time (structure precedes agency; agency modifies structure) that permits a way out of the chicken-and-egg circle (Archer 1998).

4.4. The choice of an interpretive approach: phenomenography.

From the preceding discussion it has been shown that the philosophical and methodological developments of interpretive approaches have provided justification for the scientific investigation of social phenomena through three focuses:

- The focus on subjective and inter-subjective experience
- The focus on meaning and interpretation
- The focus on situation and historicity

This research has opted for an interpretive (qualitative) research approach based on the following assumptions:

- Effective information use is considered a complex and subjective phenomenon with different meanings for different people and therefore inherently containing variation.
- The understanding of the phenomenon needs to be defined by the people who experience it in a particular setting, rather than bringing in an aprioristic theoretical approach which may not be appropriate. This is especially relevant when there is not much prior research, as is the case of workplace information literacy.

- Participants' experiences and conceptions of effective information use and learning are situated in a particular work environment and are contextualized by a combination of external structural conditions of that environment as well as by internal understandings, expectations and perceptions that to some extent constitute responses or reactions to the conditions of the environment. Many of these responses are mediated by sense making processes within communities of practice. These concepts lead to the understanding of context as situated practice.

This research seeks to put experience of the phenomenon of effective information use at the forefront, while striving to acknowledge to some extent the social context that permits understanding the phenomenon as situated event.

Phenomenography is a specific method of inquiry which started as a pragmatic and empirical endeavour and later developed an epistemological grounding derived from phenomenology, and methods of data analysis that incorporate some aspects of hermeneutics. It has been used primarily in educational research, although it is being used more and more in other research areas (including health and information science). In information science the approach has been used notably by Bruce (1997); Limberg (1997); Lupton (2004); Webber, Boon and Johnston (2005); Edwards and Bruce (2006); and Williams and Wavell (2006).

The original development of the method is generally credited to Ference Marton, who began using it for educational research in Sweden in the early 1970s. Phenomenography departs from Husserlian phenomenology in that its aim is not to capture the 'essence' of phenomena, but focuses instead on the various ways in which the phenomenon is experienced by people. It does not view the reality of the phenomenon as *the* experience of it (in the singular), but rather the complex of the different ways in which it *can* be experienced (within a particular group of people).

“Phenomenography is a research method adapted for mapping the qualitatively different ways in which people experience, conceptualise, perceive and understand various aspects of, and phenomena in, the world around them (Marton 1986, p. 31)

The various ways of understanding or conceiving a particular phenomenon are collected and analyzed jointly as an ‘outcome space’ which is the main product of phenomenographic research.

Phenomena, situations and the structure of awareness.

A phenomenon is something perceived by someone in a particular way. In a general sense, all that we experience are phenomena. However, in practical terms our consciousness and our attention are constantly selective. Phenomena are focused and thematized as a result of intentionality (the direction of consciousness) through a process which is based on our structure of awareness.

To make sense of what is going on in that environment a first step in experiencing something is to discern it from its context (external horizon). Also, becoming aware of something implies recognizing its internal structure, the way it is organized from the point of view of our perception of it *as something* (internal horizon). To see something *as something* presupposes meaning, and meaning presupposes a structure where it is inserted; both are intertwined and feed back on each other.

“A way of experiencing something can thus be described in terms of the structure or organization of awareness at a particular moment or moments ... the whole, the parts, and the relationships between them are discerned in various aspects ... such aspects represent dimensions of explicit or implicit variation in awareness” (Marton and Booth 1997, p. 100)

The phenomenon of interest for research is initially focused through a pre-understanding of a problem or concept that ‘appears’ as relevant in some ways to the researchers (e.g. through personal experience, literature reviews, etc.). As the phenomenographic study develops, the phenomenon

is constituted by the participants' perceptions and understanding of it obtained through interviews (as the most common means of data collection). The interview structure guides their attention to particular aspects of their experience of it. Their accounts of perceptions or understandings of the phenomenon are analyzed and represented by the researcher as a limited number of distinctive conceptions emerging from the collective analysis of the interviews.

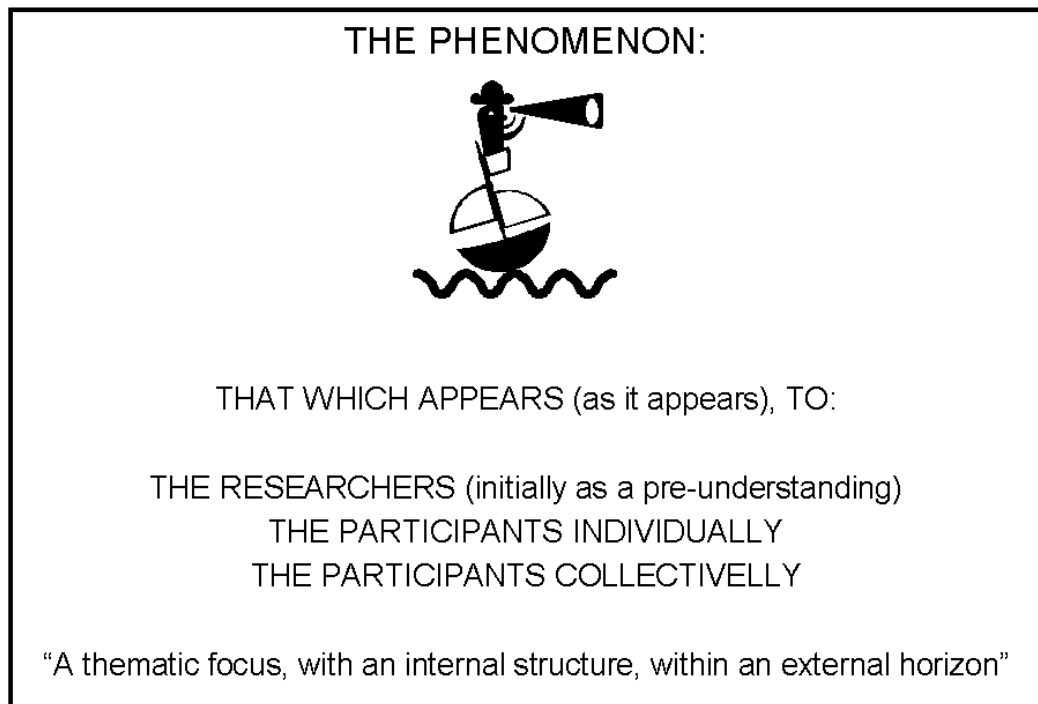


Figure 14. The phenomenon

Conceptions

The definition of what a conception is, although quite fundamental to the idea of phenomenography, proves somewhat elusive from the available literature. Following are various definitions which present slightly different angles:

“The experienced meaning of a phenomenon” (Svensson 1989)
in Bruce (1997, p.85)

"The basic meaning structure of individuals' experiences of a specific aspect of their reality" (Sandberg 1994, p. 52) in Bruce (1997, p. 85)

"A way of focusing on some aspect of reality (noetic correlate) which leads to a particular meaning being conferred upon it (the noematic correlate)" (Bruce 1997, p. 85)

"The relation between human beings and the world around them" (Marton 1988, p. 181) (quoted in Bruce 1997, p. 85)

"... the categories of outcome arrived at can be considered as representing qualitatively distinct conceptions of the phenomenon. In other words, each constitutes a particular way of viewing and thinking about an aspect of the surrounding world" (Dahlgren 1997, p. 33)

Marton (1986, p. 37) states that a conception "... often denotes the implicit (tacit) - that which does not need to be expressed or cannot be expressed because it has never been the object of reflection"

In Marton and Booth (1997 pp. 123-125) we find most often the mention of 'categories of description' for what may be understood as conceptions or ways of experiencing the phenomenon:

"As phenomenography is a fundamentally empirical undertaking, we should be able - with a reasonable degree of precision - to make explicit what we are trying to uncover in our research. In other words, we should be able to articulate what the categories of description are descriptive of".

The above statements imply that the naming of the conceptions is for the researcher to do. Some authors resort to metaphorical naming. For example, Edwards and Bruce (2006) labelled student conceptions of searching for information as: "Looking for a needle in a haystack", "Finding a way through a maze" and "Panning for gold".

An important point to keep in mind is that conceptions in phenomenography, as they are eventually consigned in the outcome space as categories of description, do not belong to specific individuals but to a group (Marton and Booth 1997, p. 124).

“Phenomenographic research seeks to describe the major features of the different ways a group of people relate to a phenomenon ... a particular category of description is always developed through its relation to a number of people’s categories of description” (Bowden 2000, p.15).

Although categories tend to abstract meaning to a more general level, they attempt at the same time to more faithfully reflect the nature of the underlying conception. Rather than asserting possession of knowledge about individuals’ conceptions of the phenomenon under study, researchers want to be able to say that, within a given research problem, the analysis of the interviews has enabled them to differentiate between ways of seeing the phenomenon that are apparent in that kind of ‘conversation’ or situation (Bowden 2000, p. 16).

The outcome space... “is derived from the researcher(s) analysis and interpretation of the collective experience amongst a sample group ... this is regarded as a ‘space of variation’, ideally representing the full range of possible ways of experiencing the phenomenon in question, at this particular point in time, for the population represented by the sample group. It constitutes a description of the phenomenon, as experienced.” (Akerlind 2002, p. 2).

Marton and Booth (1997, p. 125-126) state three criteria to evaluate the quality of a phenomenographic outcome space:

- Each category should reveal a distinctive aspect of the way the phenomenon is understood;
- Categories should be logically related, typically as a hierarchy of inclusive relationships;
- That the categories are parsimonious, the smallest number of critical and distinct categories possible describing the variation in experience.

Phenomenographic data collection and analysis

The method most often used in phenomenographic data collection is the interview. Phenomenographic interviews are generally semi-structured, with a clear line of open-ended questioning laid out in advance about the main

areas of interest, but also allowing for a degree of natural conversation to develop.

“The phenomenographic interview has a focus - the way in which the interviewees understand the chosen concept - and this focus is maintained throughout the interview. Interviewees are encouraged to express their qualitative understanding of the phenomenon under investigation. The researcher may ask interviewees to clarify what they have said, and ask them to explain their meaning further...” (Bowden 2000, p. 9)

The procedures of data collection in this study are further discussed below.

Critique of phenomenography

Phenomenography is a comparatively little used method and there is not a lot of theoretical material on its groundings or procedures. In many phenomenographic studies there seems to be a lot of uncritical repetition of the fundamental propositions made by Marton originally in the early 1980s and later re-elaborated by Marton and Booth (1997), as the writings of these authors have defined the key traits of the method.

Phenomenography's relation to phenomenology is uneasy. On one hand it sought from it a theoretical grounding for what originated largely as a very pragmatic research approach. On the other it has rejected attempts to equate the two, leaving important gaps that do not seem to have been covered well by anyone affiliated to the method. Richardson (1999) criticizes the loose and equivocal groundings that phenomenography sought, *post-hoc*, in phenomenology to provide a stronger theoretical grounding to its method. Hasselgren and Beach (1997, p. 192) reiterate that “indeed, it is only recently that phenomenographers have sought the philosophical foundation in phenomenology and this has occurred in response to criticism from outside the Gothenburg bastion”

Richardson (1999 p. 73) also questions the claim that phenomenography deals with how people *experience* the world, when in reality there is no direct access to this experience. Hasselgren and Beach (1997, p. 193) and Saljo (1997) also criticize what they see as the naive and almost objectivist

claim that the outcomes of phenomenographic research reflect participants' experiences of the phenomenon, something that they doubt on account of both the double filter of participants' and researchers' layers of description over pre-reflective experience. They argue that it would seem more accurate to say that phenomenographic studies are about ways of conceptualizing phenomena, ways of understanding them or even just of talking about of them, and that in any case little in explanatory power is gained by calling it 'experience'.

Saljo (1997) also raises the point that many phenomenographic studies seem to leave experience behind rather quickly in favour of more abstract conceptualizations (the 'outcome space'), and he laments that in the end we are left with a sense that "the research object becomes somewhat ephemeral".

In conclusion, it is considered in this research that phenomenography is based on discursive accounts which do not offer the researcher immediate access to experience. Some discursive approaches would treat these accounts as completely autonomous units or texts. This research is instead treating the interview material as subjective accounts definitely related to real people who authored them and which make them meaningful, even if they are not to be taken as unmediated 'windows' to experience. At the same time it is taking into consideration key aspects of the situation in which these accounts were given: the insertion of the interviewees within the particular work environment; the aims of their jobs; and the influence of professional and organizational discourses, such as those of knowledge management.

The requirement for the categories of description to conform *a priori* to a hierarchical or inclusive arrangement seems unwarranted, as there does not seem to be any way in which this can be a pre-condition for all studies, and may well induce the researcher to try to produce, rather artificially, this result. It seems logical, though, to look for some form of structure in the descriptions of experience, although not necessarily a hierarchical one. It can be questioned whether the hierarchy of conceptions is intrinsic to

phenomenography or rather is the effect of certain ways of analyzing data influenced by the research interests of some studies (e.g. how learning achievements are understood in academic settings) where the idea of different levels of attainment or performance constitute an assumption of the study.

4.5. Research design and development of the research proposal.

The research design involves several aspects:

- The determination of the research units
- The selection of a host organization
- The selection of participants
- The methods of data collection
- The methods of data analysis and reporting
- Ethical issues

4.5.1. Research units

Verschuren (2003, p. 125) points out the importance, within the research design, of identifying:

- Research units, which are "... an object about which the researcher wants to produce knowledge";
- Observation units, which are "... subunits, i.e. parts, aspects, building stones, elementary particles, of the research unit, that the researcher observes in order to produce knowledge about the research units(s) of which the observation units are a part"; and
- Analytical units, which are "... the units on the basis of which the research material, once gathered or generated, is analysed and transformed into conclusions"

Research units: The primary research unit was the phenomenon of 'effective information use', investigated through conceptions of participants at NHS24. A secondary research unit was the knowledge management activities of the organization, researched through institutional documentation about the KM initiatives within NHS Scotland and NHS24.

Observation units: In this study two main observation units were considered:

- The participants' different conceptions of effective information use and the different aspects focused on by them (structure of awareness) in their perception of this phenomenon. Chapter 5 presents the findings obtained in relation to this focus.
- NHS Scotland's and NHS24's KM initiatives, which were investigated through institutional documentation. Chapter 6 presents the findings obtained in relation to this focus.

Aspects of information behaviour and interactions with peers evidenced in the interview material as well as through direct observations of the work environment by the researcher were focused in a secondary way, and chapter 7 integrates them with the discussion of the main findings.

Analytical units: There exist three main analytical units in this research. The first is the way in which information literacy is evidenced in the workplace situation of the frontline staff at NHS24. The second analytical unit is the way in which frontline staff's conceptions of IL at NHS24 are related to the institutional initiatives for KM and to relevant aspects of their workplace practice. The third analytical unit is the way in which current institutional frameworks for IL, as well as other IL research, fit with the picture of IL at NHS24.

4.5.2. Selection of the host organization and development of the research proposal

It was considered from the examination of the literature that it would make it more likely to fulfil the research aim of exploring the relationships between information literacy and knowledge management if the empirical study was carried out in an organization which:

- Employed significant numbers of knowledge workers,
- Made an intensive use of information,
- Had people working together as teams in close proximity and
- Had embraced and applied to some extent the principles of knowledge management.

It was also established on practical grounds to look for such an organisation within Scotland.

Health services organizations are fundamentally knowledge based (Hargreaves 2000), and NHS Scotland is an organization that has explicitly launched KM initiatives (see chapter 6 for a full discussion of these). It is a large organization of national scope. One initial problem was the identification of a suitable sub-unit or section for research. The existence of some contacts already established by prior research studies done by the principal supervisor facilitated approaching some of its managers in order to explore possibilities for conducting research within this organization.

In March 2006 contact was made with the head of NHS Education for Scotland (NES). From that conversation, Managed Clinical Networks (MCN's) were focused as possible research units. These networks were developed by NHS Scotland to foster communication and collaboration within communities of practice of specialists in several of the main health concern areas: stroke, diabetes, cancer, coronary heart disease, etc.

Further documental information about MCNs in Scotland was sought, and one of them was approached more closely (*Photonet*, a dermatology work group). However, interaction amongst the members of the MCN proved to be relatively infrequent and they did not normally work together. They only met a few times a year and maintained sporadic exchanges in the forms of seminars, newsletters and email, with little collaboration or close contact among themselves. Also, people were located in different places and this presented practical difficulties for research. This seemed to be the case for other MCNs as well.

After looking at MCNs, the focus was shifted to other areas within NHS Scotland where people worked in closer physical proximity. This was considered important in order to raise the probabilities of identifying instances of collaboration and information sharing, as well as to facilitate the collection of data. Contexts such as GP practices and hospital-based environments were considered, but although these settings presented groups of people working together there were a number of practical problems which complicated research. Hospitals are very busy and access is limited, and in GP practices there was no evidence of knowledge management initiatives clearly in place.

After some months (around May 2006), attention was turned to NHS24 and a meeting was held with its then Director of Research who became quite interested in the research initiative. NHS24 worked in a way that seemed to afford the opportunity to research people working closely together within an information intensive environment where knowledge management initiatives were explicitly in place. It also seemed interesting because of the innovative character of the tele-health services, launched only four years earlier in 2002.

Overview of NHS24

NHS24 was designed as an out-of-hours service to provide comprehensive up-to-date health information and self care advice for people in Scotland and also to help people get services provided by other NHS partners, for example the Scottish Ambulance Service. Following is a description of the rollout of the service (NHS24 Independent Review Team 2005, p. 3-4):

“In March 1999 the Secretary of State for Scotland announced a £2.5 million investment in primary care to pilot the expansion of existing GP out-of-hours services to include 24-hour access for patients to health advice from nurses. NHS Direct Scotland (as it was described at that time) would be designed to:

- Offer reassuring health advice to, for example, parents of young children or the elderly living alone who have worries about their health which may not be serious enough for a GP contact;

- Build better links among GP OOH services, out-of-hours social work services, and other secondary care services; and
- Provide a better, more appropriate response to 999 callers who do not require the immediate dispatch of an ambulance”

On 6 April 2001, NHS24 was established as a Special Health Board and adopted the design plan which was termed the 'blueprint'. The Project Board became the Management Board of NHS 24 under the Chairmanship of the Scottish Executive Health Department's (SEHD) Director of Finance until such time as the appointment of a Chairperson and Non-Executive members could be made.

Three completely new contact centres were developed – one in the North (Aberdeen), one in the West (Clydebank, Greater Glasgow) and one in the East (South Queensferry, Forth valley). The North Contact Centre came on line in May 2002, the West in November that year and the East in September 2003 just a few months behind the original schedule. Those centres would then progressively integrate technologically with GP out-of-hours services and subsequently with Health Boards across Scotland.”

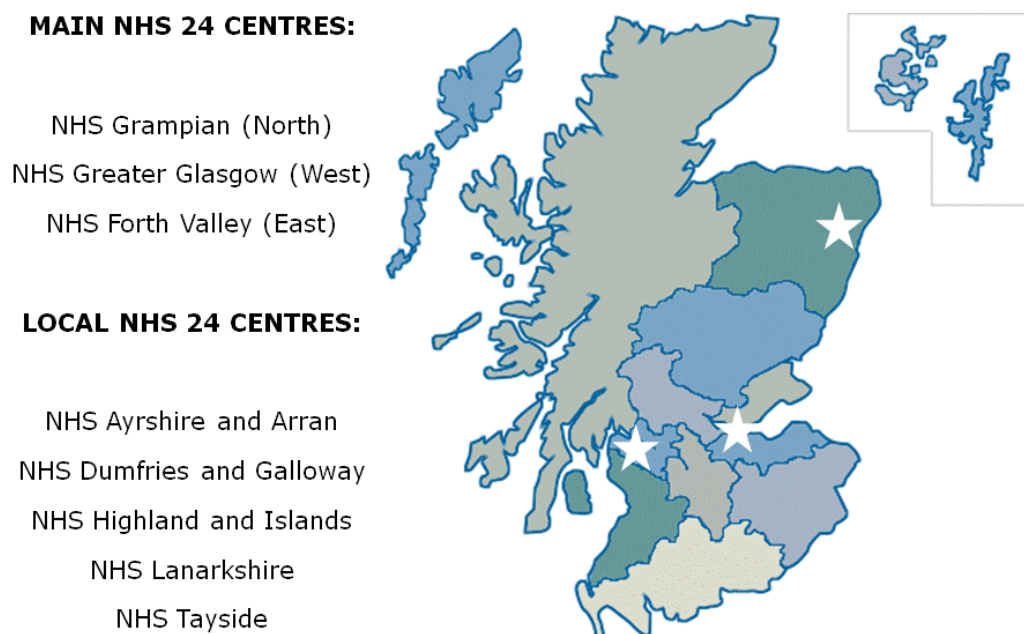


Figure 15. NHS24 main centres in Scotland

NHS 24 provides 2 main services to the public:

- There is a 24-hour nurse-led consultation service where callers can have their symptoms assessed by experienced nurses, be advised of the most appropriate response and, if necessary, have appointments arranged for them either at an out-of-hours primary care centre or at an accident and emergency (A & E) unit, or a home visit by an out-of-hours (OOH) service provider – usually a GP but occasionally a nurse practitioner.
- There is also a health information service which answers questions about general health issues and provides signposting to additional information sources.

NHS 24 is primarily intended for people who feel they need urgent medical advice in out-of-hours periods (generally from 6.00 pm to 8.00 am Monday to Thursday, and from 6.00 pm on Friday through to 8.00 am on Monday plus all public holidays) and who feel that advice cannot wait until the GP surgery re-opens. In practice however, NHS24 works round the clock, every day of the year.

The health information service, as distinct from the nurse-led consultation, is there to answer general questions about medical conditions, NHS services, health promotion, disease prevention etc. This service was intended to relieve some of the pressure on GP surgeries and so NHS 24 expects most of the health information calls to come in during normal surgery hours.

When a call goes through to NHS24 it is answered by a call handler who asks the caller about the reason for the call, the name and location of the patient, and also asks for a telephone number. If the call handler concludes, even at that early stage, that it could be an emergency then the call can be transferred immediately to the 999 emergency ambulance service. The call handler normally obtains additional information to bring up an existing

patient record, or create a new one, within NHS 24's computer system. In most other cases the call is passed to a nurse advisor.

When a call is passed to a nurse advisor, the nurse confirms the personal details for security and confidentiality reasons and then asks a series of questions designed to allow the nurse to decide on the most appropriate response for the caller. That response might range from immediately transferring the call to the 999 emergency ambulance service to reassuring the caller that the symptoms do not appear to be serious and can be managed at home, at least until the local GP surgery re-opens. Other arrangements may include a home visit by a GP or a District Nurse, or making an appointment at a hospital. If no nurse adviser is immediately available, arrangements will be made for one to call back within a certain period. (NHS24 Independent Review Team 2005, p. 6)

Calls directed to Health Information Advisors are non-symptomatic and mainly relate to health information needs, healthy living, vaccinations, questions on medicines, benefits, etc.

The other members of the frontline staff are the Team Leaders. These are floor managers (nurses) whose duties are mainly related to securing the safe and efficient functioning of the service, by leading a team of call handlers, nurse advisors and sometimes Health Information Advisors (HIAs) (not all teams have them). There are two main aspects to their job. One is the more directly managerial role which involves: managing the queue; estimating service volume; managing personnel's on and off times and absences; insuring safe handling of calls; insuring performance targets are attained; etc. The other role is support and development of personnel. This includes making sure that staff's skills and knowledge are sufficiently developed and supporting them for this to happen, by helping staff make use of mentoring, coaching, training sessions, listening to calls, etc.

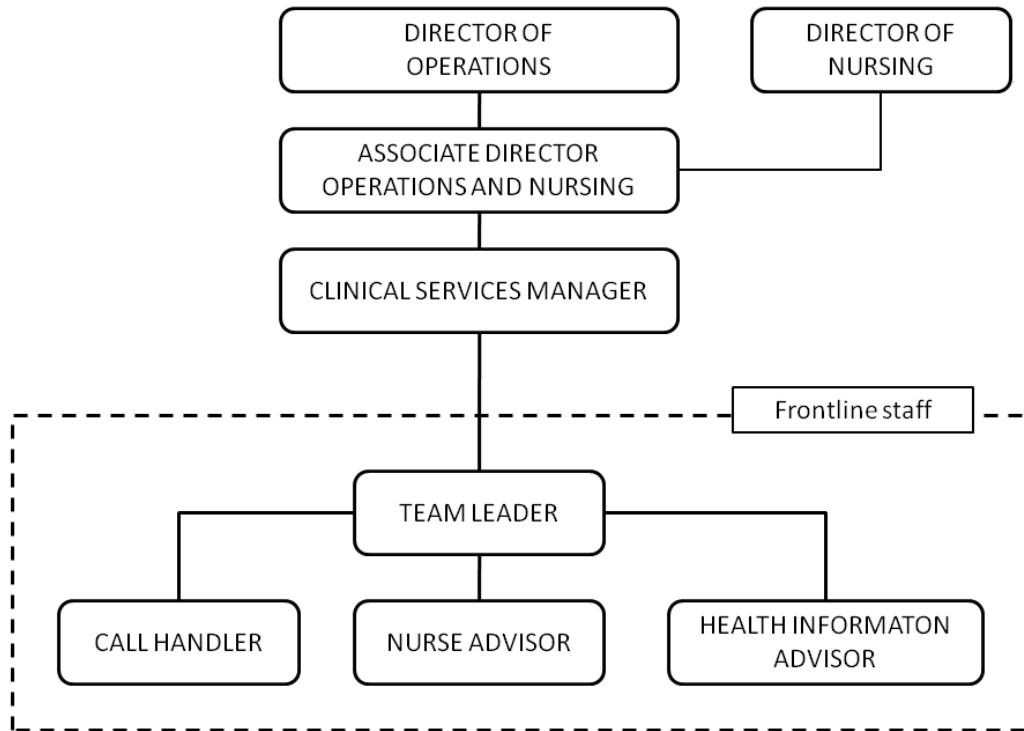


Figure 16. Organizational chart of NHS24 frontline staff

Development of the research proposal.

In July 2006 collaboration began with NHS24 to develop a research proposal. Although the majority of the work on the proposal was done by the researcher, collaboration was sought to fine tune the interview schedule and to gain familiarity with procedures and job descriptions. A visit was made to the NHS24 centre in South Queensferry to get a briefing on the information systems (patient record management, knowledge web, expert systems for triage) used in the process of handling a call and coming to a care decision.

An important aspect that surfaced early on in the development of the research proposal was that the concept of information literacy was not familiar in the context of NHS24 frontline staff and had an academic ring to it that was not considered helpful in the interview process. It thus became important to use the concept of *effective information use*, which seemed

clearer and facilitated linking it to the context of the service provision within NHS24.

We are all using information and learning all the time, but a central aspect of the research problem consists on understanding what characterizes higher levels of performance (doing things in 'effective', 'appropriate' or 'successful' ways), as this is one of the central premises behind both information literacy and knowledge management.

After a number of meetings and conversations a proposal was developed in collaboration with the Director of Research at NHS24 and one of the leaders in the Knowledge Team, and presented to an advisory committee that recommended institutional endorsement. Final clearance for this study from NHS24's clinical director was obtained as of October 2006 (see appendix 1).

Running on a parallel track, clearance from the Research Ethics Committee was pursued and obtained in November 2006 (see appendix 2). The Committee found no particular ethical concerns, mainly because this was not medical research and because no patient information was involved. However, this also meant that limitations were imposed on the observation of work processes such as live call handling.

4.5.3. Recruitment of participants and arrangements for interviews.

The people who operate the service directly to the public, the frontline staff, were determined to be the population of interest within NHS24 because this group of people works together as teams in close physical proximity and has many interactions on the floor. These people are the Call Handlers (CH), Nurse Advisors (NA), Health Information Advisors (HIA) and Team Leaders (TL). All of them make intensive use of information in different ways and several institutional initiatives for learning and knowledge management are directly relevant to their work. Lastly, this group of people had the advantage of accessibility in the required numbers. Two of the main

NHS24 centres, in Aberdeen and Glasgow, were selected to invite and recruit participants.

A target number of participants was fixed at 50, a number estimated on the basis of other research studies of this type as likely to provide sufficient data for a study of this type (Bruce 1997; Boon, Johnston and Webber 2007; Williams and Wavell 2006; Lupton 2004; Edwards and Bruce 2006) and also within the resources available to a single researcher. There was no intention of obtaining a statistical sample of the population. There existed however the aim of obtaining a mix of participants from the four targeted frontline job types.

“Qualitative researchers usually work with *small* samples of people, nested in their context and studied in depth - unlike quantitative researchers, who aim for larger numbers of context-stripped cases and statistical significance ... Qualitative samples tend to be *purposive*, rather than sample ... Samples in qualitative studies are usually not wholly pre-specified, but can evolve once fieldwork begins” (Miles and Huberman 1994, p. 27)

The process of inviting prospective participants and carrying out interviews proceeded in two stages. First the Aberdeen centre was approached (in February 2007), then Glasgow (in May 2007). At each centre a Team Leader was designated by NHS24 to provide support for this research. Both of these persons became key contacts who provided very valuable assistance (neither of them were participants in the study). In each centre the main mechanism for inviting participants consisted of an email sent to all frontline staff by a member of the Knowledge Team, explaining the aims of the study (see appendix 3). Another means of informing people about the study and asking for participation was the display posters in the corridors and in the canteen of the centres. Also, printed leaflets were distributed through the collaborating Team Leaders. (see appendix 4)

The arrangements for recruiting and interviewing participants were initiated at the Aberdeen centre in February 2007. After the initial invitation was sent through email, it was expected that some staff would become interested and volunteer for the study and it was planned that the

collaborating Team Leader would then help arrange appointments for interviews at times suitable to the participants' work schedules.

However, as the first volunteers emerged it was appreciated that arranging for interview times in advance was quite difficult, as staff were quite busy most of their shifts and it was almost impossible to predict a time when they could be free. The possibility of interviewing staff outside their work hours was avoided as this was considered more complicated for them and detrimental to the quality of the interviews. Even though NHS24 offered to pay for extra time if staff agreed to interviews outside the normal hours, few people were interested. Many of them were part time and had other jobs or were students. The full timers were generally quite eager to go home at the end of their shift, as their jobs are quite demanding.

In view of this situation it was arranged instead that the researcher spent some mornings or afternoons at the centre (on days when the collaborating Team Leader was on duty) just waiting for staff who had agreed to the study to be released upon availability. This proved to be much easier for everyone and had the added benefit of allowing some time for the researcher to interact with staff in between the interviews and to observe work at the centre. A quiet room was provided for the interviews to take place in privacy and out of the way.

On agreed dates the researcher arrived at the centre and the collaborating Team Leader had already identified a few people who had agreed to participate in the study. The Team Leader then released the interested participants as the work load at the centre and movement of staff allowed for people to be taken off line without affecting the operation of the service. Other people manifested their interest as the researcher was able to talk to staff in between interviews. The interviews were always done during week days, as the weekends are always busier periods for NHS24.

The same process, in general terms, was carried out at both the Aberdeen and Glasgow centres.

4.5.4. Data collection

The central technique of data collection used in this research was the semi-structured interview. This is the normal source of data for phenomenographic studies. Additionally, documental information was collected about NHS24 KM initiatives.

Between February and June 2007, a total of 42 interviews with an average duration of 38 minutes (ranging between 17 and 52 minutes) were carried out at the Aberdeen (21) and Glasgow (21) NHS24 Centres.

	MALE	FEMALE	TOTAL
Nurse advisors (NA)	1	12	13
Call handlers (CH)	6	6	12
Health Information Advisors (HIA)		11	11
Team Leaders (TL)	2	4	6

Table 6. Interviews by job type and gender

The number of interviews was finally capped at 42 (down from the initial target of 50) as it was felt that:

- a sufficient number of interviews had been done which offered a rich enough material;
- no other elements of critical importance would be added by having more participants; and
- the practical problems (especially for the host organization) of arranging for more interviews did not offset the marginal gains expected.

These considerations are in line with generally accepted qualitative data collection practices (Miles and Huberman 1994)

Interview schedule

Ashworth and Lucas (2000, p. 300) provide a set of guidelines encompassing the stages of planning and data collection for phenomenographic interviews:

- The researcher should tentatively identify the broad objectives of the research study, the phenomenon under investigation, recognising that the meaning of this area may be quite different for the research participant.
- The selection of participants should avoid presuppositions about the nature of the conceptions held by particular 'types' of individual.
- The most appropriate means of obtaining an account should be identified.
- In obtaining accounts the participant should be given maximum opportunity to reflect, and the questions posed should not be based on researcher assumptions about the phenomenon or the participant.
- The researcher's interviewing skills should be subject to ongoing review and changes made to interview practice if necessary.

The interview schedule basically consisted of the following questions:

- *Can you please give me your own brief description of the job you do?*
- *What is being effective in the job you do?*
- *What is using information effectively in the job you do?*
- *How do you learn in your job?*
- *What makes you an effective learner in this context?*

Other follow-up questions which were regularly used were:

- Can you tell me about your professional background?
- How would you characterise effectiveness in you work?
- How do you know when you are being effective?
- What sort of information do you use in your job?
- How do you find information?
- What information do you get from patients, or give them?

- What abilities or skills do you need to be effective in your job?
- What problems do you encounter in these exchanges?
- How do you interact with your peers to share or ask questions?
- How have you developed your abilities and skills for using information?
- What are your training and learning processes like?
- How does the organization support learning?

The order and the exact phrasing of the questions changed slightly from one interview to the next, even sometimes due to the fact that the conversation had already started while walking to the interview room with the participant.

The interviews initiated with checking that people had read the information sheet and were aware of the aims and procedures of the study (see appendix 5). After a short period of settling into the room, the interviewer took the lead in offering a very brief introduction re-stating the purpose of the interview. A clear point was made on every occasion that the interview would be audio recorded and that the identity of the participant would be kept confidential. Also, that the purpose of the interview was not evaluative and the study had not been commissioned by NHS24. Participants then signed the corresponding consent form (see appendix 6) and the interview started.

Throughout the interviews clarification and expansion was sought on different aspects of what participants said; frequently about the meaning of NHS 'jargon' and medical terms that the researcher was not familiar with. At times the conversation drifted into topics which were not the main focus of the interview, for example how participants felt their jobs were valued by more senior managers. In these instances follow up was not pursued when it was felt that they were outside the focus of this study.

After all the questions were presented to the participants, and before ending the interviews, they were asked to add anything they felt relevant to the main themes of the interview (effectiveness in the job, effective information use and learning). In some instances participants still offered important material, amounting to up to a third of the total length of the interview.

Collection of NHS Scotland and NHS24 documental information

For this aim, documents were collected from freely available websites while other documents were provided by NHS 24 staff. These publications generally fall under the following categories:

- NHS Scotland policies, initiatives, frameworks and plans related to service quality assurance, personnel development, information and knowledge management.
- NHS Education for Scotland (NES) documents on knowledge, information and learning support activities such as: e-libraries, portals, and personnel training and development.
- NHS24 specific documents, e.g. strategic plans and annual reports; job descriptions; induction guides; etc.

Many NHS Scotland institutional-wide policies, strategies and plans of course cascade down to all NHS organizations and therefore apply to NHS24 (e.g. education and development; quality assurance; clinical safety, etc.). Knowledge management initiatives at NHS Scotland have evolved mainly from concerns over safety and quality of service, centred on making the patient journey better, and developing a skilled and knowledgeable workforce. Efforts in this regard have been particularly supported by NHS Education Scotland, which is a special health board with the main responsibilities for information and knowledge management initiatives such as the e-library, community portals, e-learning, and other aspects of personnel training and development. Within NHS24 there is a Knowledge

Team which has been particularly responsible for the development of some of the information systems, the content available within the systems, information organization, and staff training in regard to using the systems.

KEY NHS DOCUMENTS IN A TIME LINE (The review of these documents is presented in full in chapter 6):

1999	Learning together
2001	Working together - Learning together
2003	Partnership for care
2004	Exploiting the Power of Knowledge in NHS Scotland – A National Strategy
2004	The NHS Knowledge and Skills Framework (NHS KSF) and the Development Review Process
2005	From knowing to doing: Transforming knowledge into practice in NHS Scotland
2005	NES Strategic work plan 2005-2008
2005	NHS 24 Independent Review Team Final Report
2005	NHS 24 Knowledge Management Strategy 2005- 2006.
2006	Working for a Healthier Scotland: NHS 24's Strategic Plan 2006-09

4.5.5. Data analysis procedures

This section details the theoretical support for the procedures followed in the different phases of data analysis. Section 4.6 'Development of the coding process' provides an account of the actual specific steps taken in coding the data set and arriving at the main clusters of meaning which led to the determination of the categories of conception in two outcome spaces: effectiveness in the job and effective information use.

The phenomenographic analysis of interviews generally proceeds in definite stages from the collection of interviewees' descriptions or accounts, to an identification and delimitation of the most relevant themes, to the

elaboration of an outcome space based on interpretation of underlying conceptions. Table 7 details the main stages in this process:

STAGE	EVENT	PARTICIPANT	RESEARCHER
DETERMINATION OF CONCEPTIONS OF THE PHENOMENON	Elaboration of outcome space		Organization of participants' descriptive accounts incorporating the range of critical variation in a parsimonious structure
INTERPRETATION ↑	Interview Analysis		Reflective understanding and delimitation of participants' relevant discourse and themes
CODIFICATION AND REDUCTION ↑	Interview Analysis		Identification of key concepts and ideas
DESCRIPTIVE ACCOUNTS ↑	Interview session	Reflective explicitation of focalized aspects of the phenomenon	Interviewing participants and transcribing interviews
EXPERIENCE ↑	Ordinary life	Pre-reflective experiences of the phenomenon	

Table 7. Stages in phenomenographic data collection and analysis.

Miles and Huberman (1994, p. 9) summarize some common features of qualitative analytic methods:

- Affixing codes to a set of fields notes or interviews
- Noting reflections or other remarks in the margins.

- Sorting and sifting through these materials to identify similar phrases, relationships, patterns, themes, differences, etc.
- Isolating patterns and processes, commonalities and differences.
- Gradually elaborating a small set of generalizations that cover the consistencies found in the data.
- Confronting these generalizations with a formalized body of knowledge in the form of constructs or theories.

In relation to the analysis of interview material, Kvale (1996, p. 190) suggests that:

“Three parts of the analysis may be discerned: first, structuring the often large and complex interview material for analysis ... The analysis proper involves developing the meanings of the interviews, bringing the subjects’ own understandings into the light as well as providing new perspectives from the researcher on the phenomena. Five main approaches to the analysis of meaning are condensation, categorization, narrative structuring, interpretation and ad-hoc methods”

The process of working with interview data starts with the transcription of the recorded interview material. Audio recorded interviews were transcribed word by word, noting instances when something was notoriously emphasized, large lapses of silence occurred, or interviewees laughed when saying something.

The initial steps into analysis imply reviewing the interview material with the intention of familiarising with the general content. At this point, ideas start to flow in the mind of the researcher. Reflections on the data can be recorded as *memos*, while at the same time important concepts, themes and keywords may begin to be identified and established as *codes* (Richards 2005).

Coding and writing *memos* are two operations involved in the analysis of data. Both are facilitated by the use of qualitative data analysis software. This study employed *QSR Nvivo* (Version 7) as the main qualitative analysis

software. Microsoft Office *Visio* and *Excel* were used for additional data processing and display.

Coding

Codes are tags or labels that assign units of meaning to the descriptive information compiled during a study. Codes are attached to chunks of varying size: words, sentences, or whole paragraphs, and are used to retrieve and organize them later. A fundamental procedure based on coding is clustering segments which are related.

“Coding is analysis ... this part of the analysis involves how you differentiate and combine the data you have retrieved and the reflections you make about this information” (Miles and Huberman 1994, p. 56).

In qualitative coding the purpose is retaining and localizing data by the use of labels which do not take the place of the original segments, but help in their retrieval and clustering as part of the ongoing analysis, usually by means of specific software. Codes reduce data because they are used to signal themes that account for a lot of data, making it intelligible, suggesting thematic links and working like a statistical ‘factor’ which groups disparate pieces into a more inclusive and meaningful whole. Richards (2005, p. 87) summarizes the main purposes of qualitative coding:

- To reflect on what the coded segments tell you about a category and its meaning in the project;
- To ask questions about how the category relates to other ideas from the data, and construct theories about those relations;
- To gather all material about a case, from different sources;
- To make further, finer categories, from finding different dimensions in the data gathered by the first coding;
- To search for blends or combinations of categories, to find patterns or to compare text at different categories;
- To compare how different researchers interpret data.

Coding can be done at three levels, ranging from the descriptive to the inferential:

- Descriptive coding: categorize attributes of cases (e.g. gender, age, location, etc.). This is descriptive information that may be used to ask questions about the cases, for example how some other code (e.g. collaboration) is reflected by gender, age groups, etc.
- Topical coding: Describe conceptual themes or central ideas in the data. Coding is usually started with tentative categories which are later elaborated. The initial codes may come from theoretical background or from the interview material. When concepts offered directly by interviewees are used, this is called '*in vivo*' coding. It is possible also to do auto-coding automatically using computer software. In this case, the program searches for instances of words and codes sentences or paragraphs accordingly.
- Analytical coding: this is used to indicate relationships and it comes from deeper reflection and interpretation of meaning in more advanced stages of analysis. This last type of coding is also called *pattern* coding by Miles and Huberman (1994 p. 57, 69).

Coding is an iterative process, and once a first pass has been done over the data set it is important to go back over the codes generated and examine them for consistency and the emergence of clusters or patterns. It is likely that some broad categories will be subdivided as it is found that they contain more than one concept or aspects of the concept. Also, some categories may be subsumed into another, disappearing in the process but building up support for the broader category. Finally, some categories will be deemed irrelevant as there is not enough data build-up to substantiate their importance.

Miles and Huberman (1994, p. 58) suggest creating a provisional 'start list' of codes that comes from the conceptual framework, list of research

questions, hypotheses, problem areas and/or key variables that the researcher brings to the study. The list is 'held lightly', applied to a small set of interviews and then assessed for fit and descriptive power.

It is important that codes develop some conceptual and structural order, relating to one another in coherent, study-relevant ways. The development of structure can of course go through several stages, from open lists of gathered labels, to groupings in 'bin' categories, to hierarchical or structural relationships. This can be related to the emergence of patterns in the data.

The application of these concepts and the actual steps taken in coding the interviews in this project are explained in section 4.6, as this has been deemed worthy of a detailed account.

Writing memos

Memos are annotations related generally to the data set or to specific sections, and contain reflections and ideas of the researcher. Another aspect they often contain is links or pointers to related material.

"A memo is the theorizing write-up of ideas about codes and their relationships as they strike the analyst while coding ... it can be a sentence, a paragraph or a few pages ... it exhausts the analyst's momentary ideation based on data with perhaps a little conceptual elaboration" (Glasser 1978, p 83)

Miles and Huberman (1994, p. 74) suggest that memos can be written:

- On what is intensely puzzling or surprising about a case
- As alternative hypotheses
- To propose a specific new pattern code
- To integrate a set of marginal or reflective remarks already made on field notes or other memos
- When the analyst does not have a clear concept in mind but is struggling to clarify one
- Around a general theme or metaphor that pulls together discrete observations.

Memos have been used extensively in this project, using a variety of tools. *NVivo 7* provides options for writing memos as separate documents in the project but with the possibility of linking them to other documents, making it easier to relate emerging ideas to concrete sections of interviews. They can also be coded and searched, as any other source document. However, *Microsoft Word* was also used extensively for writing memos, because as the analysis work progressed memos became part of more complex documents, and *Word* provides better editing tools.

Data displays

“Generically, a *display* is an organized, compressed assembly of information that permits conclusion drawing and action” (Miles and Huberman 1994, p. 11).

Looking at data displays helps us understand better the data and the relationships within it. It can be considered an aspect of data reduction, but is more related to the analysis itself, for example as concept mapping. Matrices, graphs, charts and networks are all designed to assemble organized information into an accessible form so that the analyst can see what is happening and help draw justified conclusions or move to a later stage of analysis.

Data displays were used throughout the data analysis stage and in the presentation of findings. Some instances of data display used in intermediate stages of analysis are shown in the following sections, as they were a central tool for representing the clustering of codes and refining the elaboration of the outcome space. Visual displays such as concept maps help identify connections between codes and also spot duplications and items that should be placed elsewhere.

Interpretation.

From the start, the analysis beginnings to clarify what things mean - regularities, patterns, causal flows, propositions, etc. Richards (2005, p. 68)

highlights the importance of theory in the interpretation of interview data, both as something that is brought in from the start and as the by-product of careful exploration and inquiry. All research carries theoretical assumptions and it is on the basis of these assumptions that interview data helps produce more theory, as reading of interview transcripts leads to growing interpretations. Kvale (1996, p. 201) suggests using the term 'interpretation' for:

"... more extensive and deeper interpretations of meaning, inspired by hermeneutical philosophy. The researcher has a perspective of what is investigated and interprets the interviews from this perspective. The interpreter goes beyond what is directly said to work out structures and relations of meaning not immediately apparent in a text. This requires a certain distance from what is said, which is achieved by a methodical or theoretical stance, re-contextualizing what is said in a specific conceptual context."

Miles and Huberman (1994, p. 245) highlight a number of tactics for generating meaning from qualitative data:

- Noting patterns and themes. Patterns can be of *variables* or of *processes*. Data analysis can produce added evidence of a pattern while remaining open to disconfirming evidence when it appears.
- Seeing plausibility. Intuitively finding 'sense' in data is important, although leads have to be checked systematically for evidence and subject preliminary conclusions to other techniques of verification.
- Clustering. What things are like each other? What things go together? What label shall be put on a grouping? Categories or classes used may be pre-defined or emerge from the data. Clustering can also be seen as a process of moving to higher levels of abstraction.
- Making metaphors. Metaphors involve comparing two things via their similarities and ignoring their differences. Metaphors are thus a partial abstraction which has an important place in the development of theory.

- Counting. When a pattern or theme is identified it may happen a number of times consistently in a specific way. These observations are judgements based on counting. An outlook on numbers or occurrences helps see rapidly what is happening in a large batch of data and to create or verify hypotheses.
- Making contrasts and comparisons. Comparisons highlight aspects in which persons, roles, activities or cases on the whole differ in significant aspects. Relevant comparisons should be made that show relations of some variable with respect to some attribute of the cases (e.g. gender, age, position, etc.)
- Partitioning variables. This can occur at many points during analysis. At the stage of initial conceptualization, it is useful to partition variables rather than to assume a monolithic simplicity. Partitioning a variable can be particularly useful when it is not relating as well as expected to another variable in a conceptual framework.
- Finding intervening variables. Often, variables that are expected to go together have an inconclusive relationship. At other times two variables unexpectedly go together, but without making much sense. The analyst can not figure out why they go together. In these situations, looking for other variables that may be in the picture is a useful tactic.

These concepts were applied in this study starting with clustering, which is one of the first structures to appear. Partitioning was also one of the main processes, as some clusters initially contained a number of sub-areas. Counting was also used to identify the 'weight' of some codes by their higher or lower number of occurrences. This was not used as a quantitative analysis, but just as a pointer to the relative importance of codes and as a clue for identifying the main conceptions. In phenomenography, the frequency of codes is not a definitive criterion for inclusion into a conception.

Phenomenographic data analysis

Interpretation of data for phenomenographic analysis follows many of the generic principles of qualitative data analysis, but has a particular interest in describing the variation occurring in the perception and understanding of a central phenomenon under study. Analysis of data therefore is centred on identifying and describing the variation found in regard to what has been defined as the phenomenon of interest (Marton and Booth 1997, p. 121).

The material in the hands of the researcher is made of the statements or accounts obtained from the interview process. These accounts point to ways of understanding and describing the phenomenon and its internal and external structure. Different expressions may point, however, to a common way of understanding or describing particular aspects. It is for this reason that a collective level of meaning may be ascertained. The phenomenographic analysis and interpretation of the interview material will try to identify these 'strands of commonality' through the pool of interview material and establish the degree to which each constitutes a qualitatively distinct clustering which can be assigned to a categorical label or metaphor.

"The whole process is a strongly iterative and comparative one, involving the continual sorting and resorting of data, plus ongoing comparisons between the data and the developing categories of description, as well as between the categories themselves. A primary feature of the constitution of categories of description is the search for key qualitative similarities within and differences between the categories" (Akerlind 2002, p. 3)

The allocation of themes to categories is carried out trying to achieve a parsimonious structure that reflects the variety of meaning with the smallest number of categories. An iterative process takes the researcher back and forth between the categories and the data seeking a fit, which may involve discarding or confirming emergent categories and creating newer ones until the process reaches a level of stabilisation where no new meanings are discovered.

"As the categories emerge and are consolidated the researcher's attention is now shifted from the individual subjects (i.e. from the interviews from which the quotes were abstracted) to the meaning embedded in the quotes themselves ... each quote has two contexts in relation to which it has been interpreted: first the interview from which it was taken and second the 'pool of meanings' to which it belongs" (Marton 1986, p. 42)

The context which surrounds the quotes and generally the whole interview are important in the interpretation of the meaning of a quote, both in terms of relevance and meaning. In that sense, a cut-and-paste construction of the pool of meaning may quickly lead to abandon the full context of the interviews. The risks of such de-contextualisation need to be taken in consideration, although the ultimate aim is to go beyond the individual interviews.

What the researcher is doing in this process is hermeneutic construction of meaning in which they are involved as active participants. The constructive process of interpretation is a negotiation between the meanings emerging from the interviews and how the researcher understands the phenomenon; what the people are saying about it, and the context of the inquiry.

"... the outcome space constituted by the researcher is seen as inevitably representing a relationship between the researcher and the data, i.e., the data *as experienced by* the researcher. Consequently it is acknowledged that the final outcome space produced need not be the *only* possible outcome from the data. It is an outcome that can be argued for, not empirically proven, and invariably represents a partial understanding of the problem" (Akerlind 2002, p.10)

Whether there is undue bias from the researcher in this process of construction (for example forcing data into a certain structure or cherry-picking data to fit a premise) and whether the categories are seen to emerge cleanly from the data is of course an important question. One way of preventing bias and building up reliability is by making a thorough account of the research process.

"The researcher must demonstrate how he/she has dealt with his/her intentional relation to the individual's conceptions being

investigated ... the researcher must demonstrate how he/she has controlled and checked his/her interpretations throughout the research process: from formulating the research questions, selecting individuals to be investigated, obtaining data from those individuals, analysing the data and reporting the results" (Sandberg 1997, p. 209).

The process whereby the outcome space was elaborated is detailed in section 4.6, where the steps in developing the coding and clustering are described. The actual outcome spaces are presented in Chapter 5, along with quotations from the interviews which serve as exemplars of how each category of description was grounded in people's accounts of their perceptions and understandings of the phenomenon.

4.5.6. Ethical issues

The development of this research has been compliant with RGU internal academic guidelines for ethical considerations in research projects and this has been a matter of continued revision through the Research Methods Postgraduate Certificate and at the PhD Transfer Stage.

This research also complied with NHS Research Ethic Committee guidelines and was approved without reservations (see Appendix 2) on the main condition that this project had no access to patient information. Other observations, which were complied with, were related to minor amendments to participant information packages, informed consent sheet, and assurance of confidentiality.

While this research does not have any serious ethical issues that stand out, some aspects of the design, the methodology and the behaviour of the researcher have ethical implications:

- The worthiness and meaningfulness of a research project can be considered an ethical issue. This research is strongly backed by literature reviews and experts' opinions that

point to the importance of studying information literacy in the workplace.

- Good scholarship in academic work is a characteristic of ethical research. The supervisory team has ample credentials in academic work, having conducted contracted research into this and other related subjects for many years, including contracted research.
- Qualitative methodologies are particularly prone to strong researcher effects, such as bias and prejudice. While these may be seen as directly related to the trustworthiness of the research results, they can also be seen as ethical issues and can affect several stages of research. The supervisory team has acted as a counterbalance to personal researcher bias and prejudice.
- Communications with all participants in research, both at the organizational and individual levels, were in writing to insure clarity and understanding: the research proposal, letters of invitation to participate, letters of consent, reports, etc. (see appendixes)
- Confidentiality was assured by means of written instruments that guaranteed this to participants and measures taken to physically guarantee the safety of data in all formats over time, such as storing data in password-protected university drives during processing and long-term storage of data disks in secure vaults.
- Informed consent of the participants in the study was obtained in writing, according to established conventions, with the allowance for disengagement from the study at their discretion.
- This research did not imply any treatments or interactions with participants that may be deemed risky or dangerous for their health, including psychological.
- This research did not have any type of negative implications to the environment.

4.6. Development of the coding process

In this section the concrete and specific steps taken in the coding process and in the elaboration of outcome spaces are reported.

This research used *QSR Nvivo* software (Version 7) for qualitative data analysis and the development of codes is related to the functionality of this software. This evolved as a process through several stages:

- Creation of a list of initial coding keywords
- Codification of 6 interviews using the initial coding keywords plus adding other keywords, as *Nvivo free nodes*.
- Analysis of the coding of the first 6 interviews for consistency and relevance.
- Coding of the rest of the interviews and development of a structure of *Nvivo tree nodes*.
- Analysis of thematic clusters and emerging categories of conception of effectiveness and effective information use.
- Analysis of the structure of the categories of conception and determination of an outcome space

4.6.1. Creation of list of initial coding keywords

This stage employed terms, concepts and ideas already generated from reviews of the literature and from the experience of carrying out interviews at NHS24. This stage is advised by Richards (2005) and Miles and Huberman (1994). Following (Table 8) is an excerpt from the initial coding keywords list. These codes were developed before going into the analysis of the interviews using software, but already were a result of the experience of carrying out the interviews and observing processes at NHS24:

WORKPLACE LEARNING
 SHARING INFORMATION
 SHARING KNOWLEDGE
 CONTINUOUS LEARNING
 ON THE JOB LEARNING
 E-LEARNING
 BMJ MODULES
 BROWSING
 SEARCHING
 SURFING
 KNOWLEDGE DEVELOPMENT
 KNOWLEDGE UPDATING
 COACHING
 IN THEORY
 IN PRACTICE
 EXPECTATIONS
 FEEDBACK
 POSTIVE
 NEGATIVE
 CRITICISM
 CALL REVIEW
 LEVELLING SESSIONS
 SELF-REFLECTION
 TRAINING
 COURSES
 TALKS
 OUTSIDE NHS24
 INDUCTION
 PERSONAL DEVELOPMENT
 CONTINUOUS PROFESSIONAL DEVELOPMENT (CPD)
 MOTIVATION FOR LEARNING

Table 8. Examples of initial coding keywords

4.6.2. Pilot codification of six interviews using *Nvivo free nodes*

Nvivo employs two categories for codes: *free* and *tree* nodes. The former constitute just a list of keywords used to code; the latter have a hierarchical structure where some codes branch into sub-codes. It is argued by several authors (Richards 2005; Lewins and Silver 2007) that developing a structure of codes reflects the conceptual organization of the emergent findings. Following is an excerpt from the list of free nodes after coding six interviews:

Free Nodes				
Name	Sources	References	Created	
✓ Abilities using info	2	2	12/12/2007 13:53	
✓ Abusive callers	1	3	12/12/2007 18:09	
✓ Advice backup	1	1	10/12/2007 19:21	
✓ Algorithm use	1	1	10/12/2007 19:30	}
✓ Algorithms	3	6	12/12/2007 17:43	
✓ Appropriate care (TRIAGE)	1	1	12/12/2007 14:25	
✓ Appropriate communication	3	19	12/12/2007 14:18	
✓ Appropriate decision making ←	3	11	12/12/2007 15:06	}
✓ Appropriate information	3	5	12/12/2007 15:14	
✓ Approved websites	2	3	12/12/2007 15:17	
✓ Asking peers for help	1	1	07/01/2008 11:14	
✓ Autonomy using info	1	2	07/01/2008 11:11	
✓ Bad calls	4	9	12/12/2007 18:06	
✓ Barriers to communication	1	1	07/01/2008 13:33	
✓ Best practices	2	2	07/01/2008 11:28	
✓ Call control	4	14	12/12/2007 14:36	
✓ Call quality	2	2	12/12/2007 14:45	
✓ Call reviews	1	3	12/12/2007 14:53	
✓ Changes in practice 5	2	5	07/01/2008 11:34	
✓ Clearing mind for next call	1	2	07/01/2008 11:07	
✓ Coaching	5	12	10/12/2007 19:40	
✓ Coaching_coach	2	4	10/12/2007 19:26	
✓ Collaboration w - peers	1	6	08/01/2008 12:39	
✓ Communication skills	1	1	12/12/2007 14:18	
✓ Communication tools 2.	1	1	12/12/2007 14:13	
✓ Communication upwards	1	1	07/01/2008 15:51	
✓ Confidence using info	2	2	12/12/2007 13:51	
✓ CPD	2	5	12/12/2007 17:56	
✓ Decision making ←	3	12	12/12/2007 14:24	
✓ Developing info abilities	2	3	07/01/2008 11:11	
✓ Documentation	1	4	12/12/2007 14:43	

Table 9. Initial list of Nvivo free nodes (examples)

The codification of six interviews using free codes produced 116 codes of which the following were used on 10 or more references:

Effective information use 20	Probing - sourcing information 12
Appropriate communication 19	Sharing knowledge 12
Learning with peers 18	Coaching 12
Listening to patients 18	Decision making 12
Call control 14	Appropriate decision making 11
Patient satisfaction 14	Information quality 10
Personal knowledge updates 12	

Table 10. Most frequent initial free nodes

These are examples of important categories starting to emerge, still highly disorganized. The labels used also show a level of abstraction implied in 'naming' the concepts contained in the interviews (e.g. 'personal knowledge updates').

4.6.3. Development of a structure of *tree nodes*.

At this stage some of the free codes were dropped, renamed, merged or sub-divided and an initial structure of tree nodes was developed. This structure was also developed utilizing *Microsoft Excel* worksheets and conceptual maps using *Microsoft Office Visio* software. A revised structure of the codes was developed that reflected the emergence of several cluster areas and hierarchically related codes. Following is an example of the initial analysis of codes, their meaning, relevance and relationships to other codes:

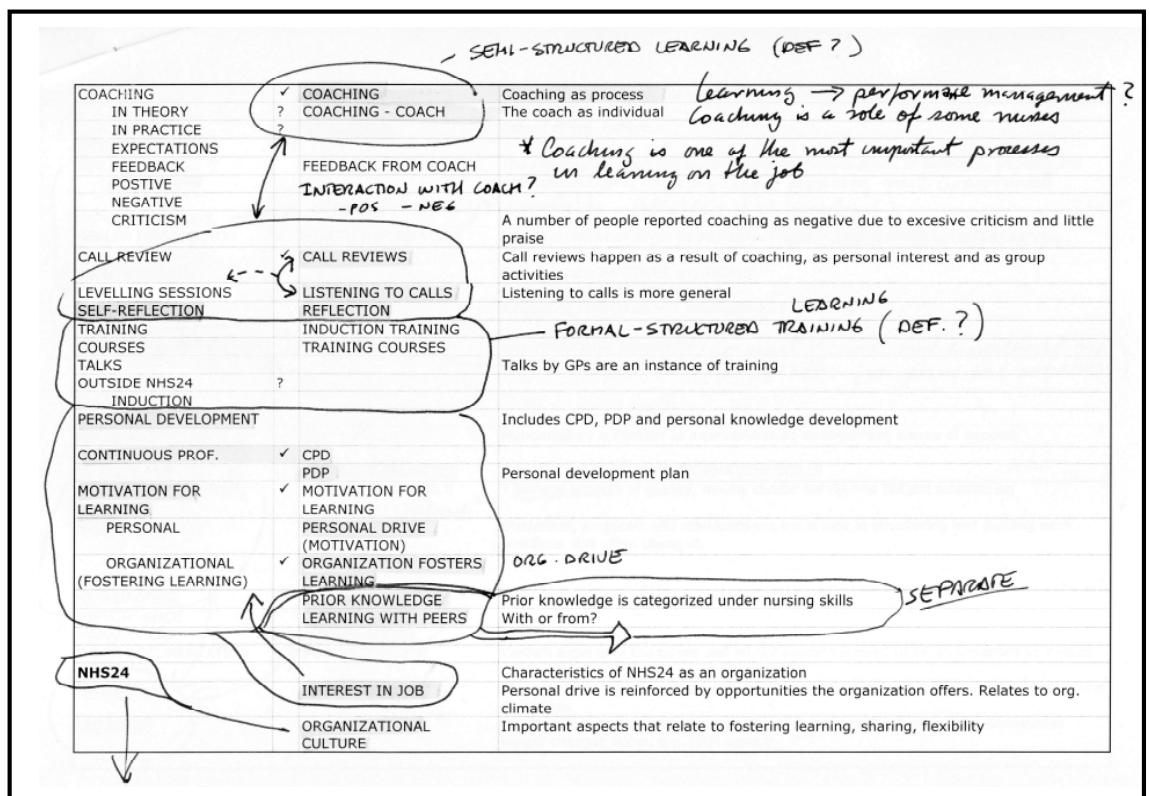


Table 11. Example of the analysis of free nodes

As the rest of the interviews were coded, a structure of *tree nodes* was being developed. This process was iterative; new codes were created that found a place in relation to existing codes and some codes were moved around, subsumed under others, or merged. Following are two examples, showing the emerging hierarchical categorization in a section of the coding (done using *Microsoft Excel*). The rightmost column is showing relationships of the emergent categories with others (not shown):

CODING KEYWORDS		FEB 12TH 2008		
Appropriate communication	Barriers	Callers on behalf		
		Distress / Anxiety		
		Inappropriate language	Abusive callers	
			Foreign	
		Lack of focus		
		Sensory limitations		(--> Appropriate communication / Patient / Focusing)
		Abusive callers		(--> Sense making / sensory limitations)
				(--> Triage / Sensory limitations)
	Institutional	Communication upwards		
		Email		
Other advisories				
Plasma screens				
Patient	Appropriate language	Inappropriate		
	Bad calls			
	Empathy			
	Feedback from patient			
	Focusing	Lack of focus		
			(--> Call management / Call control)	
			(--> Appropriate communication / Barriers / Lack of focus)	
			(--> Appropriate Info behaviour / Relevant info)	

Table 12. Emergence of first tree nodes

Coding was also analyzed using conceptual maps (by means of *Microsoft Office Visio*) to further establish the relationships between codes. An example is provided of the concept map for the node "Appropriate communication" and its associated codes:

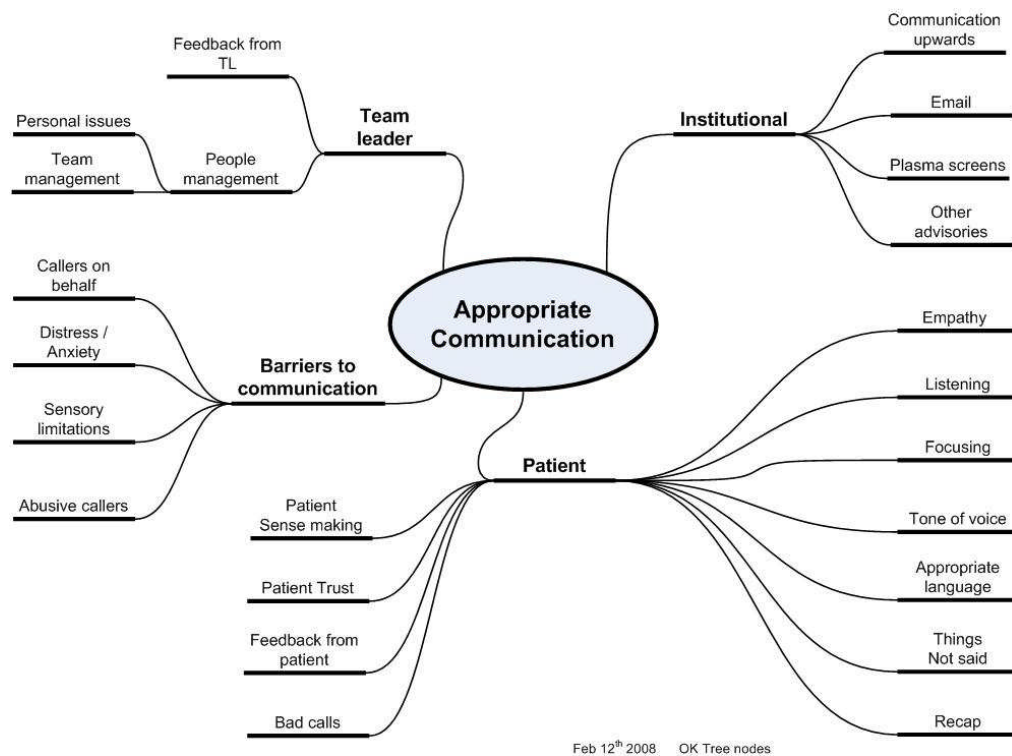


Figure 17. Concept map of “Appropriate communication”

Further analysis and re-arrangement of the structure of tree nodes was realized to account for some duplication of categories and generally to try to clean-up the structure. This was not an arbitrary process, but a reflective evaluation of, for example, whether a category should stand on its own or form part of another. This process eventually led to the development of a structure of *tree nodes in Nvivo*, which is the natural step when structures and hierarchical relationships are already recognized. However, the process is iterative and several changes were done through the process involving moving, creating and deleting categories. An example of this is shown in the following table:

Look for:		Search In	Tree Nodes	Find Now	Clear
Tree Nodes					
Name			Sources		
<input checked="" type="checkbox"/> Institutional normative			1		
<input type="checkbox"/> Aims of service		0		0	
<input type="checkbox"/> Guidelines and standards		2		4	
<input type="checkbox"/> Performance targets		1		4	
<input type="checkbox"/> Validation of knowledge		1		1	
<input type="checkbox"/> Interaction and dialogue with peers			10		
<input checked="" type="checkbox"/> Justification of actions	- DEC. MAKING		11		
<input type="checkbox"/> Meaning of information			9		
<input checked="" type="checkbox"/> NHS partners			0		
<input checked="" type="checkbox"/> Feedback from partners	→ LEARNING	2		5	
<input type="checkbox"/> Picturing patient situation and needs			12		
<input type="checkbox"/> Triage			6		
<input type="checkbox"/> Advice backup			4		
<input type="checkbox"/> Algorithm use			5		
<input checked="" type="checkbox"/> Backing up decision making	DEC. MAKING ↓ USUF.	2		5	
<input type="checkbox"/> Establishing priorities	MERGE	2		2	
<input checked="" type="checkbox"/> Reviewing case information		1		1	
<input type="checkbox"/> Clearing mind for next call			1		
<input checked="" type="checkbox"/> Consulting with peers	DEC. MAKING SUPPORT		1		
<input checked="" type="checkbox"/> TL support		1		1	
<input type="checkbox"/> Disposition for care			7		
<input checked="" type="checkbox"/> Four hours		0		0	
<input checked="" type="checkbox"/> Next day		0		0	
<input checked="" type="checkbox"/> Self-care		0		0	
<input checked="" type="checkbox"/> Serious and urgent		0		0	
<input checked="" type="checkbox"/> Worsening statement		0		0	
<input type="checkbox"/> Nursing knowledge			3		
<input type="checkbox"/> Nurse instinct		2		2	
<input type="checkbox"/> Nursing background		4		5	
<input type="checkbox"/> Speciality knowledge		2		4	
<input type="checkbox"/> Patient follow up			4		
<input checked="" type="checkbox"/> Picturing patient situation	SENSE-MAKING		3		
<input type="checkbox"/> Questioning patient			3		

Table 13. Re-arrangement of tree nodes (examples)

The structure of tree nodes represents an advanced stage in the analysis process, as it is the immediate precursor to the elaboration of the outcome space. The structure is presented showing the main tree-node branches identified along with the frequency count for each of the related or subordinated codes:

Effectiveness in job			
Following procedures	73	Feedback	26
Collaboration	70	Performance targets	24
Patient satisfaction	57	Support	23
Team leader support of team	56	Evaluations	19
Staff feelings	54	Interdependence	14
Staff satisfaction	41	Appropriate care	9
Job knowledge	40	Self reliance	7
Abilities and skills	37	Solving problems	5
Helping patients	34	Caring for people	4
Time limitations	32	Public opinion	3

Table 14. Tree nodes main branch: effectiveness in job

Effective information use			
Giving patients appropriate advice	28	Recognizing knowledge gaps	7
Sharing information and knowledge	21	Listening	7
Probing and questioning	18	Prior knowledge in decision making	7
Getting updates on changes	17	Using quality assured sources	6
Controlling the call	11	Understanding patient situation and needs	6
Updating personal knowledge	10	Obtaining accurate information	5
Using information systems	9	Information horizon	5
Focusing	9	Asking peers for help	2
Obtaining enough information for decision making	8		

Table 15. Tree nodes main branch: effective information use

Appropriate communication

Barriers

Distress and anxiety	25	Caller on behalf	6
Sensory limitations (voice and hearing only)	22	Language	4
Abusive callers	17	Frustration	2

Institutional

Email	21	Communication upwards	12
Other advisories	13	Plasma screens	7

Patient

Questioning patient	77	Feedback from patient	19
Listening	71	Things not said	18
Focusing	39	Bad calls	17
Empathy	37	Difficult callers	15
Recapping	36	Background sounds	7
Sense-making patient	35	Patient trust	6
Appropriate language	24	Sufficient time	1
Tone of voice	23		
Calming down	21		

Table 16. Tree nodes main branch: appropriate communication

Appropriate decision making

Justification of actions	84	Guidelines and standards	19
Call routing	44	Negotiation and agreement	13
Support from peers	32	Confidence	13
Information given	27	Team leader	8
Advise and refer	25	Accountability	6
Support from team leader	24		

Table 17. Tree nodes main branch: appropriate decision making

Appropriate information behaviour

Abilities and skills

Finding information	46	Using information systems	11
Obtaining relevant information	45	Putting together information	11
Selecting information	31	Accuracy	10
Interpreting information	25	Empowerment	7
Skills development	20	Retaining information	7
Obtaining enough information	16	IT skills	5
Confidence using information	15	Autonomy using information	3
Focusing	14		

Access to information

Knowledge web	39	Email	19
Internet	16	Advisories	16
Intranet	13	Handover	12
Library	3	Plasma screens	9
PRM	3		

Exchanges with patients

Sourcing information	62	Giving information	42
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Information awareness

Information horizon	44	Knowing where information is	38
Changes in procedures	39	Peers	24

Information application

Service provision	32	Learning	14
Communicating information	32	Sense making	7
Decision making	28		

Table 18. Tree nodes main branch: appropriate information behaviour (continued in next page)

Information needs			
Patient's needs	49	Personal knowledge updates	19
Requirements of service provision	48	Decision making	17
Relevant information	30	Validity of information	11
Enough information	29		
Information overload			
Staff	17	Patient	12
Quality of information			
Quality-assured information	33	Approved websites	33

Table 18. Tree nodes main branch: appropriate information behaviour (continued from previous page)

Call management			
Call control	57	PRM	14

Table 19. Tree nodes main branch: call management

Learning			
On the job learning			
Coaching	83	Reviewing performance	32
On the job learning	78	Learning from mistakes	28
Sharing information and knowledge	70	Asking TL for help	26
Learning with peers	66	Peers' speciality knowledge	17
Asking peers for help	57	Feedback form team leader	16
Experiential learning	48	Coach (role)	14
Learning from calls	47	Helping peers	12
CPD	36	Second job	5
Feedback from coach	33	Secondments	5

Table 20. Tree nodes main branch: learning (continued in next page)

Personal knowledge updates			
Training courses	67	Job knowledge	13
Personal knowledge updates	63	Multiple knowledge	11
Time limitations	57	GP talks	10
Looking up information	30	Scottish Vocational Qualifications	5
Learning on your own	23	Degrees	4
Reading journals	18		
Effective learning			
Personal drive	49	Information use	14
Reflection	37	Openness	6
Reviewing performance	33	Questioning	6
Organizational support	29	Empowerment	5
Interest in job	21	Confidence	3
Feedback	17	Autonomy	2

Table 20. Tree nodes main branch: learning (continued from previous page)

Situational sense making			
Picturing patient situation and needs	98	Meaning of information	52
Interaction and dialogue with peers	85	Conceptions of NHS24 service	47

Table 21. Tree nodes main branch: situational sense making

Triage			
Disposition for care	37	Establishing priorities	11
Nursing background	29	Speciality knowledge	11
Nursing knowledge	27	Patient follow-up	9
Algorithm use	22	Nurse instinct	6
Questioning patient	17	Clearing mind for next call	2

Table 22. Tree nodes main branch: triage

NHS24			
Learning support	72	Patient safety	16
Training	49	NHS partners	15
Organizational change	44	Guidelines and standards	14
Coaching	39	Best practices	9
Service improvement	32	Targets	8
Work environment	31	Information systems	8
Organizational learning	29	Connect	7
Openness	29	Clinical governance	7
Collaboration	26	Information organization	6
Aims of service	24	No-blame culture	6
Performance management	22	Patient journey	5
Knowledge team	19	Evaluations	5
Organizational culture	18	Recruitment	4
Procedures	17		

Table 23. Tree nodes main branch: NHS24

This stage of the analysis revealed several important clusters of meaning as tree nodes. These clusters were further cross-analyzed to arrive at the identification of conceptions.

4.6.4. Analysis of thematic clusters and determination of the outcome spaces for 'effectiveness in the job' and 'effective information use'.

The concept of 'effectiveness' (in relation to the job and to information use) was analyzed in three ways, depending on how it appeared in the interviews:

- As an immediate response to a question on effectiveness. The importance of this instance is that regardless of the words used by the interviewee what was answered corresponded directly to a question on effectiveness in the job and/or information use.
- When the words 'effectiveness', 'effective', 'effectively', 'success', 'successful' or 'successfully' were used anywhere in a paragraph to talk about some aspect of the job and/or information use.

- When the researcher interpreted the idea of 'effectiveness' or 'success' from what was said in any part of the interview, even if these words were not used at all by the interviewee. Examples of this may be when an interviewee said something like 'that made me feel good' or 'I felt that was the right thing to do', etc.

Following is an excerpt of annotations made in a report of the code "effective information use", showing the analysis of underlying categories. Each annotation refers to a paragraph in the report, which in turn is an excerpt from an interview that was coded initially (along with other codes) as relating to some aspect of effective information use:

EFFECTIVE INFORMATION USE	Annotations	March 04 2008
1	Communicating information makes it useful (TL)	
2	This paragraph and the next (references 2 and 3) talks about the need to control and shorten the call to respond to higher demand and to raise the quality of the service (TL)	
3	Being able to talk and work in two separate kind of levels in this same time. So, while you are speaking and having a conversation on one level, your head is on the other level (CH)	
4	Controlling the call and people being happy to be brought back into line (CH)	
5	Making sense of the patient's situation without tools, then bringing the algorithms into play (NA)	
6	Getting sufficient information for an informed decision in triage (NA)	
7	Being effective is giving good advice to patients in self care (NA)	
8	Being effective is giving good advice to patients in self care (NA)	
9	Questioning is an important way of getting information from patients (NA)	
10	Questioning is an important way of getting information from patients and leads to effective triage (NA)	
11	Staff rely on using information in systems (NA)	
12	Giving only a few points of info to patients and asking them to write it down and possibly repeat it (NA)	
13	Call control and setting the scene at the start of the call (NA)	
14	Speaking calmly and slowly and trying to reassure the patient that you have an understanding of what their situation is (NA)	
15	to get the information as effectively as possible from them, initially. (NA)	
16	Call control and setting the scene at the start of the call (NA)	
17	Call control and setting the scene at the start of the call (NA)	
18	Call control and not letting distressed people go on and on (NA)	
19	Remaining calm and not emotionally involved to get the information correctly (NA)	
20	Updating yourself on changes to procedures or anything that's current on the day (NA)	
21	Constantly updating your knowledge (NA)	
22	Using only quality-assured websites to give out information (NA)	
23	Understanding the information you use and give out (NA)	
24	Adjusting practice to changes in the organization (NA)	
25	Using prior knowledge along with the algorithm tool to make sense of patient information and come to an appropriate care outcome (NA)	
26	Filling gaps in knowledge by asking for help from peers or TL, or using information in systems (NA)	
27		

Table 24. Analysis of tree node branch "effective information use"

These annotations (a total of over 150 in this report) were used as the basis for the sub-division of the large category “effective information use”, establishing a sense of weight for sub-topics according to the number of references pointing to the same concept. Following is a partial account of this categorization, using *Microsoft Excel*:

CATEGORIES	REFERENCES
Abilities and skills development	70,72, 98,
Multi-tasking	
Multiple knowledge	
Attitudes and motivation for effectiveness	71,
Communicating information	1,111,118, 91,97,
Giving nurse additional information verbally	
Controlling the call	2, 4, 13,16,17,18,92,93,94, 100,110,172, 77,84,85,92,93,104,10 8,109,110,149,172,
Focusing	
Setting the scene at the start of call	13,16,17,
Appropriate probing and questioning	9,10,27,51,55,56,57,5 9,61,78,124,125,126,1 47,148,150 80,87,90,108,146,170, (Obtaining enough information for decision making) 6,28,76,83,84,85,94,9 5,127,128,129,130, 62, 64, 49,50,78,139,140,141,
Sticking to procedures and guidelines	
Respectful probing	
Prior knowledge and experience	
Things not said	
Obtaining information efficiently	15, 82,95,99 87,88,102,170, 103,171, 14, 18, 19,86, 33,
Obtaining accurate information	
Calming patient down to get information efficiently	
Speaking calmly and slowly	
Remaining calm to get information efficiently	
Recapping	
Making sense of patient's situation and needs	5,95,99,104,108,124,1 25,126,139,140,141,1 47,148,168 79,86,99,105,106,107, 139,140,141,170, 42,49, 49,50,
Listening	
Understanding the caller's information need	
Unexpressed needs (things not said)	

Table 25. Categorization of annotations on tree node branch “effective information use”

This analysis was cross-checked with other codes which were independently assigned such as: *decision making, sourcing*

information from patient, patient communication, sharing information, etc. This helped confirm some of these codes as expressing conceptions of effectiveness in the job and/or effective information use mainly by means of the above stated criteria (mentioned in response to a direct question on effectiveness and/or using words such as 'effective', 'effectiveness', 'effectively', 'success', 'successful' or 'successfully')

Following this, the analysis proceeded to further organize the clusters of the most relevant codes according to a conceptualization of the place they should occupy in a simplified and logical structure of meaning. This phase depended less on the use of software and relied more on an overview of the most important focuses and their relationships. A very graphic analogy can be made with twisting the *Rubik Cube*, where a number of apparently disparate elements, which are part of a whole, can be arranged so that distinct facets appear.

The key points in determining conceptions were:

- The centrality of the concepts underlying the conception. This can be determined to an extent from the frequency of a code, but also needs to be assessed from the broadness of meaning of the term (the degree to which it contains other sub-concepts), and from its relevance within the interviewees' discourse.
- The capability of the conception of aggregating and organizing other elements along an axis of meaning, not necessarily as hierarchical sub-concepts.
- The distinctiveness of the conception when compared with other categories. One conception should not be capable of being subsumed into another.

- The elaboration of a parsimonious structure containing the minimum number of relevant and distinct elements.

The analysis produced two outcome spaces, one for general effectiveness in the job and another for effective information use. These are presented in detail in the following chapter "Findings".

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Chapter 5. Findings of the phenomenographic study.

This chapter presents the findings obtained from the phenomenographic analysis of interviews of NHS24 frontline staff along with a thick background of quotes that show how the categories of conception, and the focuses of awareness present in each one, emerged from the interview material. The quotes presented here have been carefully chosen for their descriptive qualities. The analytical process which led to these findings was presented in chapter 4, section 4.6. Further discussion of these findings is presented in chapter 7.

Two outcome spaces emerged from the phenomenographic data analysis:

- Conceptions of effectiveness in the job, and
- Conceptions of effective information use.

While it is not common that a phenomenographic study produces two outcomes spaces, this study presented questions on effectiveness in the job as a way of introducing the theme of effectiveness in the interviews, prior to questioning on information use. However, it was found that there was in fact a separation in the interviewees' conceptions of these two aspects. This was evidenced in two ways. First, the participants' initial responses to questions of what made them effective in their jobs never focused on using information, of itself; second, exploring their conceptions of effective information use actually required specific questioning and some reframing in order for them to focus and reflect upon their information use. Use of information seemed to be perceived by the interviewees as part of a background of subsidiary particulars to the main activities of service provision, and information behavior appeared largely based on implicit or tacit knowledge. These issues are further discussed in chapter 7.

It is important to maintain a perspective of the global relationships between these two outcome spaces, as they emerged from the analysis of the interviews as two layers of description which show alignment but also have significant differences between them. There is overlap and interrelationship between the two outcome spaces in that the categories are focusing on the

same type of events, e.g. the handling of a call. The call implies, almost simultaneously, communication, information exchanges, decision making, support and collaboration, etc.

The categories of description are a way of analyzing shifting focuses of meaning as to what is significant for different people at different moments in regard to what they conceive of as being 'effective', and they show a structure of awareness in how different aspects of their activities, relationships and organizational environment are focused in each conception. The same things or events may be focused in different ways by distinct conceptions in how they appear in the foreground or background, or how they are related with other elements (e.g. sourcing information from the caller is related to communication and decision making; controlling a call involves following a process and communication skills). In this sense, a main difference between the two outcome spaces is related to how information use is placed in the structure of awareness. One of the findings of this study is that effective information use appears in a background, or underlying, plane of awareness to frontline staff at NHS24.

The conceptions are not related to single individuals but rather constitute an outcome space of the collective interviews. Conceptions are not exclusive of each other, and any individual may share several which may appear to them as foreground at different moments or in different situations. Conversely, although the conceptions arise from the collective it cannot be said that they are held by the whole group.

This research is not attempting to obtain a hierarchical arrangement of conceptions. This point was discussed in chapter 4 and indeed the outcome space obtained does not show hierarchy but rather interconnection or flow between the conceptions, perhaps reflecting the fact that the activity of frontline staff is process-based. Another reason is that the purpose of this research is not evaluative; therefore there was no intention of determining better or worse ways of staff doing things, or identifying more or less advanced conceptions of effectiveness.

The sequence in which the conceptions are presented and discussed is thought to be logical in reflecting to a certain degree the normal flow of events in service provision at NHS24 (i.e. service design has developed processes that guide interactions; then communication with the caller happens; then decision making; and finally outcomes), but it must be kept in mind that it is not intrinsic to the conceptions to be organized in the ways they are presented by the author.

5.1. Conceptions of effectiveness in the job

Effectiveness in the job is seen by the staff interviewed under seven main conceptions or focuses. Each one of these conceptions can be thought of as a distinct way of answering the question:

What makes me effective in the job I do?

Under each main conception are listed some key characteristics or aspects that help describe the focuses of the conception. Those descriptions will be enhanced as each conception and the related focuses are introduced along with supporting quotes.

- **Conducting an appropriate process.**
 - Following guidelines and standards.
 - Awareness of events and changes to processes.

- **Engaging in appropriate communication with the caller.**
 - Listening.
 - Probing/questioning.
 - Focusing.
 - Controlling the call
 - Signposting and providing information to callers.

- **Making appropriate decisions.**
 - Sourcing relevant/enough information from the caller.

- Interpreting the information
 - Using decision support systems.
 - Getting support from peers.
 - Agreeing with the caller on care decisions.
- **Achieving appropriate outcomes.**
 - Effective call routing
 - Appropriate dispositions for care
 - Staff satisfaction
 - Patient satisfaction
 - Helping patients
 - Giving appropriate health information to callers
- **Support and collaboration.**
 - Support from Team Leaders and coaches.
 - Asking peers for help and helping peers.
 - Sharing information and knowledge.
 - Organizational culture.
- **Developing an appropriate knowledge and skills base.**
 - On the job learning.
 - NHS24 training.
 - Learning from calls.
 - Learning with peers.
 - Personal knowledge updates.
 - Recognizing knowledge gaps
 - Looking up information.
 - Further training.
 - Developing appropriate skills.
 - Communication skills.
 - Information using skills.
 - 'People' skills.
 - Effective learning.
 - Motivation.
 - Reflecting on practice.

- Keeping updated.

- **Managing performance.**

- Reviewing performance.
- Supporting performance.
- Attaining service targets.

The following diagram shows a view of the relationships between conceptions and also how they relate to the general aims of the frontline jobs:

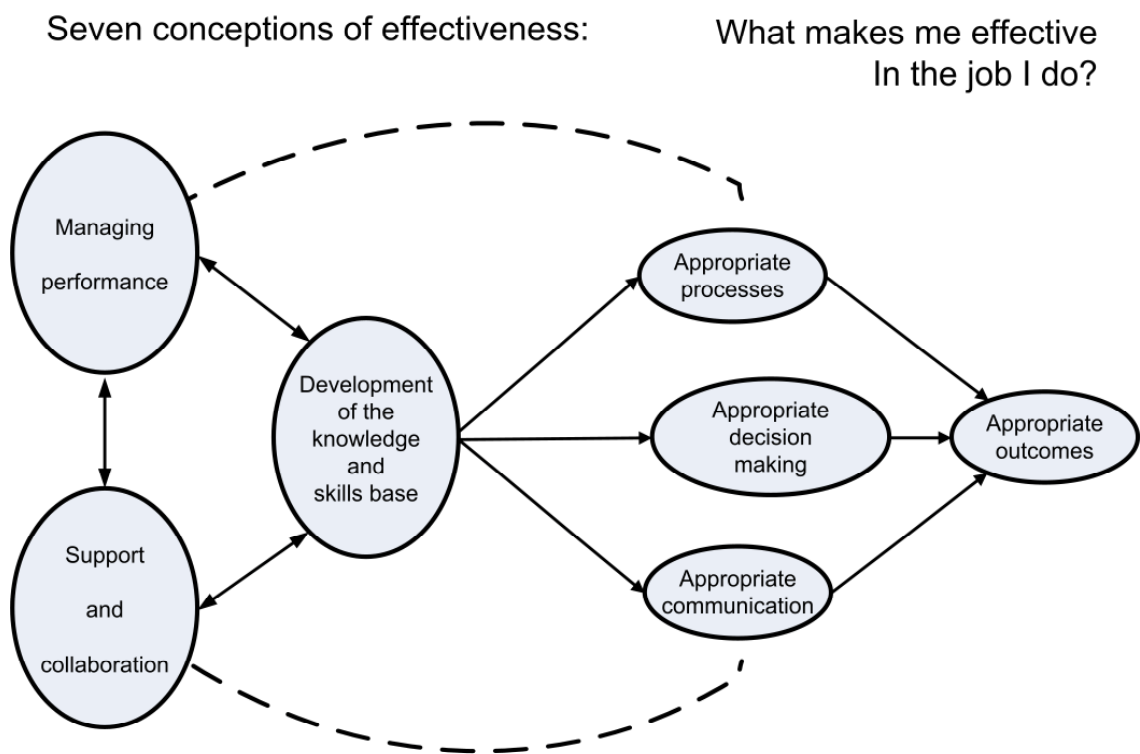


Figure 18. Conceptions of effectiveness in the job

In this view it is highlighted that achieving appropriate outcomes is what seems to drive everything, as these are the ultimate results of the service. Appropriate outcomes ensue from three main aspects directly related to

service provision: conducting appropriate processes, engaging in appropriate communication with the caller, and making appropriate decisions. In turn, these elements are supported by: the knowledge and skills base of staff; support and collaboration among the frontline staff; and performance management, which focuses on quality assurance and attainment of performance targets, but is also closely related to support and development (e.g. through coaching). Both support and collaboration and performance management extend to all activities in the service (indicated by the dotted lines) as well as being directly involved in developing the knowledge and skills base.

In the following descriptions of each conception quotes are provided. Each one has a coded 'signature', for example: (AB11_CH) or (CB5_TL). The first part shows whether the interview was done at the Aberdeen (AB) or Clydebank, Glasgow (CB) centers, along with the interview number. The second part shows the job type of the interviewee with the following codes: CH = Call handler; NA = Nurse Advisor; HIA = Health Information Advisor; TL = Team Leader.

5.1.1. Conducting an appropriate process.

- Following guidelines and standards.
- Awareness of events and changes to processes.

"... Everything that you ask is a procedure; you don't ask random questions, everything is scripted almost. So if the person who is listening to your calls comes back to you and says, 'Yeah, you asked all the right questions at all the right places' that basically makes you an effective call handler." (AB11_CH)

This conception focuses on appropriately following established processes. At NHS24 following processes is related to key issues such as: patient clinical safety; confidentiality of patient information; and efficiency. Patient safety is dependent on quick response, sound assessment of needs and appropriate decision making. This is helped by following procedures and

guidelines. An important aspect of the management of NHS24, as in other health services, is clinical governance whereby the organization establishes what is safe clinical practice and puts in place a number of guidelines, standards and checks to ensure patient safety. Clinical safety is one of the main reasons why there are strict processes and protocols to follow:

“...Just to make sure it is clinically safe, so that is why, you know, it's so important that you know how all the protocols and processes connect with each other.” (AB9_CH)

“... There is some criteria that recommend what we either don't do or check with our team leader...” (CB14_CH)

“We... the whole of our job is structured the same as the nurses' and the call handlers' around processes to ensure patient safety ... And everything is process based. Nothing we do, we do off our own back, we have to do everything following a process which protects ourselves and protects the patient.” (AB20_HIA)

“...they have set time frames in which to have calls prioritized. And for the safety aspect of calls to make sure that these have been taken, you know... serious and urgent calls are being handled firstly...” (CB5_TL)

The use of processes and protocols is a consequence of the development of the service, which has become more structured as the service got busier and a number of quality issues were addressed to make it safer and more effective:

“When I started in September 02 ... the average time for a call was 18 minutes, ok, that's slowly changed ... we should improve the quality of our outcomes, improve the quality of our questions to the patient and get more efficient ... doing calls in 18 minutes, you can take your time, ask them about their holidays, have a much more social conversation. I think, however, ‘Is that effective for a good consultation?’ Probably not. I think what we have done is we've looked at what makes a good call and... made it more efficient ... because I think what we found in the early days was nurses were actually being led by the caller ... whereas we are being more professional and effective in taking control of the call when the nurse is in charge...” (AB10_TL)

An important aspect of processes is related to controlling the calls to insure a proper patient journey and effective response, according to standards set by NHS24. Procedures therefore affect the ways communication is handled.

There is a certain structure for handling calls which is called 'service design'. This means there is a starting point and a finish point, with a number of clear stages in between:

"You have a basic structure of a call, what is called service design, where everyone works off that structure of a call, and the first part of the call is very much letting the patient know what their expectations are, what's going to happen on this call ... So they kind of know where they are going to go throughout the call. Because they sometimes just come on bolts. And you have to sort of take control from the very first and tell them this is what we're going to do, and we're going to work it like that. And then you go sort of like 'Tell me what's happened', you know." (AB4_NA)

"We do have a structure that they want us to follow and that's fine. Because actually I think that is a good thing. Because initially everyone was just taking a call in their own individual way and dealing with it in their own individual way, so... but now there has to be a beginning, a middle and an end. And that is good." (CB6_NA)

"... you should set your scene at the beginning of the call, introduce yourself, explain to patient what it is that you are going to be doing, how it works, then you do your assessment, then you are supposed to recap and repeat back the information you've been given, and then you say 'And here is what we are going to do' and you give your outcome and the information to the patient. So there is a set system for each call..." (AB15_NA)

"... you let somebody ramble on for too long and that means you didn't get them to the nurse as quickly as you could..." (AB9_CH)

The use of processes and protocols is also linked to appropriate decision making. There is complexity in even the simpler job of the call handlers, as there are many differences among callers and the type of reasons why they call, and following an established process helps streamline service provision and quickly identify the seriousness of the situations calls are about:

"... in the process of, say, a two or three minute call you have to know... I mean, you always use the written tool in any calls to check the symptoms, but you have to know what needs to be done and it can be from three or four different places in the protocols or the processes, you have to put it all together in your head and you have to remember how they overlap, and what parts come from somewhere else." (AB9_CH)

“A lot of the time it's probably about just assessing very quickly, you know, how clinically serious the call is, and sometimes we get like old ladies on a quiet shift and you know that... you quickly establish maybe that there is nothing too serious going on... Calls like that you can maybe let them go on a little more than normal, whereas if they come on saying that they have chest pain and things like that, you would take control of that call a lot quicker and get the details captured and process the call a lot quicker than you would if it was maybe the old lady who just wants to chat.” (CB14_CH)

“Usually all these questions cover all bases, so you will check serious and urgent, initially you're checking there's no problems breathing, chest pain, any obvious medical problems like diabetes, epilepsy, anything that can be related to more serious and urgent calls that we deal with quicker, and then deal with the problem that they have, assess in relation to their major problems and then base the outcome on that. So deal with the most serious first, get that out of the way, tackle the problem that they've got and make sure everything is covered.” (CB9_NA)

Conducting appropriate processes tends to insure that the information required to come to a decision is obtained quickly and efficiently:

“... Using protocols and asking specific questions we can actually... if we decide that's, or possibly could be, a cardiac situation then we can always send an ambulance to take the people to hospital.” (CB11_CH)

“So that is why they are always looking for you to use these specific questions in order that you will definitely get all the information that the service requires to be able to deal with that person's problem effectively and as quickly as possible, so there is no need to digress from what they want you to ask really. That is how you know you're an effective call handler.” (AB11_CH)

“... to pass through accurate information successfully and safely in accordance with the process would be doing my job effectively.” (CB12_CH)

An important aspect of the processes at NHS24 is the constant changes they are subject to, depending on: new clinical guidelines; identification and correction of mistakes; development of improvements; and emerging events that affect the service:

“Because there is an awful lot of information, we’re getting an awful lot of changes. And we get changes on a day-to-day basis that you need to deal with, because it is pertinent to your shift at the time, you know...” (CB20_TL)

“Every day you get an e-mail saying there is a change! (laughs) ... There's always changes to how we are doing things. So, working here you are constantly learning or updating processes.” (AB13_HIA)

“The other thing that has an impact on what you are going to be doing is obviously the social circumstances of the patient and the services that are available that the patient can reasonably be expected to access. And that varies over the course of the day depending on whether their GP surgery is open, whether they have access to the dentists or mental health workers or whatever.” (CB21_NA)

“... you go over the processes, because the processes can change from week to week, you're always just popping to them to read them to make sure you're doing it the way it is supposed to be.” (CB10_CH)

5.1.2. Engaging in appropriate communication with the caller.

- Listening.
- Probing/questioning.
- Focusing.
- Controlling the call.
- Signposting and providing information to callers.

“It all probably boils down to communication... it is underlining all aspects of it ... no matter where you look you'll find communication along the line...” (AB10_TL)

The fundamental activity of all frontline staff at NHS 24 (save Team leaders) is communicating with the caller. This is basically a verbal exchange that occurs over the phone. Appropriate communication requires some fundamental skills and is a highly structured activity. It is related to call control and is the basis for sourcing information for decision making and

giving advice and information to callers. It involves information behavior, although frontline staff focus on the interaction mainly as communication.

One of the most important communication skills for frontline staff is listening, as they have no visual image of their caller, what is happening to them, their situation, etc. This involves a bodily sense of the tone of voice, the speed of speech, things not said, background noises, etc.

“I think the biggest skill we use is listening, we have got to listen... I mean as a nurse we’ve always... everything’s always been hands on, you look at your patient... but we can’t do that here and it makes it much, much harder. You know, so I think the biggest skill is listening to what the patient is telling you. But also listening to what they are not telling you, because sometimes the story that comes through to you, once you start to probe a wee bit deeper isn’t actually what the main problem is. So, it is listening to what they tell you and then trying to use your skills and past experiences to work out what is the basic course of action...” (CB7_NA)

“Oh, it’s listening. You can’t see them, you can imagine in your head what’s going on, can make pictures in your head of what you think is happening at the time, but that’s all they are, you can’t actually see them. And you’re not going to be the one who is going to see them when the call is finished.” (AB2_NA)

“... because you only have speech, you know, you only have your ears and your mouth, your eyes don’t come into play unless you’re reading something from the screen, but that’s your communication tools.” (AB1_NA)

“... you’ve got to really listen, and it’s not just listening to the caller, it’s listening to the background, it’s listening to what’s going on behind them.” (AB2_NA)

“It’s not only what they say, I do need to be able to listen. I just had someone on the phone said, ‘I’ve been coughing and chest pain’, but I heard wheezing, she was wheezing in the background, so I asked her ‘Have you got asthma?’” (AB5_CH)

Appropriate communication involves controlling the flow of the call so that stages of information gathering can proceed logically and the necessary information, including the main reason for calling, can be sourced as quickly and effectively as possible. This involves, among other things, signposting

the caller as to what is expected from them and focusing the conversation on the main call reason and other items needed for handling it properly:

“You have to be able to control the call, so it is about listening but it’s also about controlling the call as in signposting what you are going to do, explain to the caller what is going to happen. Sometimes they can be really high because they are upset or they are panicking, so it’s your job to control that, to be able to explain to them what you’re going to do, when you are going to do it, why you’re going to do it, and that’s a skill in itself, to know when you can cut in ... if you can’t do that then you are not doing the job properly.” (CB8_CH)

“... obviously, our aim is to get the patient assessed as quickly as possible. So when someone does come on and tells us every single illness they’ve ever had, it can be quite taxing to kind of interrupt them to say, ‘look, we need to...’ (AB8_CH)

“... to deal with somebody’s call effectively and quickly, the best thing to do is to bring them back to the line of questioning just for their benefit, really.” (AB11_CH)

“Sometimes you can pull them back in so they can refocus on what they’re calling for. I could say that’s good communication, it’s trying to get them to rein in and tell me exactly what’s happened... refocusing, and it’s gathering the information, and if you need to expand on that then to do so.” (AB1_NA)

“Yeah, if you let them know at the beginning, this is the way it’s going to work, it does take a lot of the anxiety out of their voice already, you know, because as soon as they get through to a nurse they go ‘Ohh!’, you know. But as soon as you get that control, and if you say it in a voice that maybe reassures them, I don’t know, at the end of this call we’re going to work out what’s best for you. It’s like the anxiety level drops like that, I think. So... that’s all part of the control of a call...” (AB4_NA)

Frontline staff have to deal with a number of difficulties and barriers to communication, including language problems, aggressive callers, and just the natural anxiety that people in distress can show when making an urgent call:

“If somebody is phoning with what they think is a potentially life-threatening situation then, you know, I think it’s a case of... speaking calmly and slowly and trying to reassure the patient that you have an understanding of what their situation is and to get the information as effectively as possible from them, initially.” (AB15_NA)

“People before they even phone they probably are quite anxious anyway, so I think they kind of feel a relief when we take control of the call and we just start asking the questions. If you just let them ramble on the call will go on probably for quite a bit, whereas if we intercede and say, you know, once we have an idea of the nature of the call.” (CB14_CH)

“I had a patient with manic depression, this afternoon, and with manic depression when you are a bit knocked off you just go off on a tangent, you know, speak, speak, speak... and it's hard... quite hard to bring them to what the problem is, and sometimes you just have to let them flow on... it's also happened with alcohol problems... so I think that call was about three quarters of an hour ... But at the same time, he's a patient with a problem, so you can't just say 'Sorry, off you go. You've had your five minutes'” (AB12_NA)

“With the elderly or the confused as well you need to try and get them to understand that you are getting them help, or they will constantly be pressing the community alarms. You need to make... It's difficult to get the elderly or the confused to understand what you're trying to do. But, if you can communicate with them, and then you come off the call you can feel satisfied that they've understood and they're quite happy for the length of time you're going to leave them before you get them help, then your job is... for that call it's done. But you must be able to impart the information.” (AB2_NA)

Appropriate communication implies giving information to callers, such as directions to places of care, self-care advice, worsening statements (what to do if symptoms persist or get worse) and general health information. Information must be provided in a way that is clear, understandable and useful to the callers:

“It's not just the information, it's agreeing with the information, or finding that the information connects with them, it's got to mean something for them, I think, the information you've given them to be effective. Cause if they're not getting it... it's like how you get that information across. The information is the same, no matter who I'm speaking to, but the context of it, how do you relay that to your patient...” (AB1_NA)

“... I would kind of meter who I was talking to, if it was some young girl with a new baby you want to keep it... you know, if her knowledge seems really basic from the initial sort of consultation, I would keep it very basic. The same information would be given, but I would watch the language that I use, how it is coming across, you know, simple, simplify, whereas if somebody was very well educated you'd pick that up with their communication first of all, what they were saying, the words they would use, the context you would sense it, you

could... same information, just in a different context, different wording..." (AB1_NA)

"... You have to communicate, you're not reading verbatim the information, you have to communicate... in another way, obviously, taking all these different elements, you have to... Put it together and then communicate it in a way that is understandable. So, I suppose that's the skill, I suppose it's a communication skill..." (AB14_HIA)

"But also you have to be able to communicate clearly with the patient in a way that is not condescending but at the same time doesn't involve too much in the way of medical jargon if it is at all avoidable ... it has to be explained to them in terms that they can understand..." (CB21_NA)

There are some specific skills which are associated with appropriate communication at NHS24, for example using empathy to achieve trust from the caller, or calming down patients in stressful or emotional situations (see Developing Appropriate Skills in section 5.1.6.):

"... because it's telephone, you don't have physical contact with the patients, then your verbal communication is all you've got, that's all you've got to grab somebody, literally to get them to trust you, they haven't seen me or anything, you know, I could be anybody, but to get trust, that they want to give their most personal things over the phone to me, that I can be... a good communicator, that I can give that information, that they trust that they can rely on me..." (AB1_NA)

"It's just getting a kind of connection with the person on the other end of the phone and building up a relationship, a rapport with them and try to kind of listen in between." (CB1_HIA)

"You've got to... be able to talk to people in a way that you are keeping them with you, you're not antagonising them, you're keeping them calm because in many occasions people are very stressed on the phone, and so you have to make an attempt to keep people calm. Then, once we have gathered as much information as we can we pass the details over to one of the other professionals." (CB11_CH)

"I think empathy and just to... your concern and you don't have to have a big chat, I think it's just how you say things and your tone 'Oh, yeah... what's your name?' Rather than being sharp with them, yeah okay, take that and just your tone ... I think it's how you are with them, it's your tone and just if you do care that comes across if you don't, you know?" (CB13_CH)

“I think it's all about the tone of your voice and the pace of your voice you really have to think about, because obviously if someone is very, very anxious and upset, you can't be aggressive to them on the phone, you have to be as nice as you possibly can, and the nicer you are, I think the more relaxed the person at the end of the phone becomes.” (AB8_CH)

“... you have to work harder to create a... connection on the phone, because you're using voice only to get some trust and to get the correct information from how I probe... so I am establishing a relationship on the phone for a brief interval, as opposed to taking time as you would do on a face-to-face contact for a longer period of time.” (AB16_NA)

5.1.3. Making appropriate decisions

- Sourcing relevant/enough information from the caller
- Interpreting the information
- Using decision support systems
- Getting support from peers
- Agreeing with caller on care decisions

“A clinical decision, because that's what it is at the end of the day and... you want to make sure that they're going to get the best care that they need at that moment in time, the most appropriate and safe for them.” (AB1_NA)

“To be effective would be... to get a robust triage... so to get all the information from the patient that is necessary to make an informed decision.” (AB12_NA)

All of the frontline staff are making decisions with every call taken. The nature and complexity of these decisions varies, but it is a constant of their jobs to make quick and appropriate decisions which sometimes have very important consequences for the welfare of callers. Decision making can sometimes be quite challenging. There is a need to balance the perceived urgency of a call, the need for a sound clinical judgment, and the rational use of the service's resources. This has to be done with sometimes partial

or conflicting information and a large variety of problems or needs that callers present:

“... whether it's a single point of question that they have or whether they come on with multi-information, and it's trying to locate what to focus down on, what the problem is at that point in time that they need a response to, or an answer to, while still retaining all the information that they've also given, because that might affect your decision as well.” (AB16_NA)

“...we are given guidance as to what is suitable for people being called back and what is suitable for not, so we have to keep an eye on these protocols so that we effectively do not put anything urgent on to be called back. So, I mean, we have to make decisions, we are making decisions all the time as to what we are told.” (CB11_CH)

“I have to say when I first started here I found it an incredibly stressful job, I found it incredibly difficult because I would go home at the end of my shift and I would have flashbacks and think that I didn't make the right decision, that I had missed something critical there. Over time, as I got more confident in my abilities and also... you just have more understanding of where people are coming from and what they are describing, and what is possible... and what is actually happening to them at the time...” (CB21_NA)

Sourcing information from callers is fundamental to decision making. Enough and relevant information has to be obtained that will allow reaching a decision and an appropriate outcome depending on the circumstances of each call:

“I need to acquire information to a level that I think, that I personally feel, I am clinically able to be reassured about the decision I am going to make with that person...” (AB16_NA)

“To get the most accurate and complete information in the shortest time possible so that you get them through, either to help, if they have one of the... something wrong that we are not able to advise them for on the phone like chest pain or a urinary infection, or bone injury, or through to the correct advice of who is going to get them further help, like a pharmacist, or an ambulance, or a nurse advisor. Get as much information to get a complete picture as quickly as possible” (AB9_CH)

“Sometimes, you know, the patients the answers they give you are very, very vague, and that obviously makes it very difficult and sometimes you just have to dig and dig until you can get some kind of... Sometimes, if they are really

giving you a good history and you're asking questions and you are still getting nothing back, sometimes it is necessary to just get them seen by the doctor simply because you can't rule out what is going on, you can't say 'Is this serious, is this not serious', you know..." (CB7_NA)

"... they leave the best bit to last, and just as you think you've completed your triage they slip something in which is relevant and will change your decision making." (AB3_NA)

"... what we try to do is to speak to the patients themselves, which is not always possible, especially where children are concerned, you know, it would be the parents that you'd be speaking to, but quite often it's a third-party that you're speaking to, so you're not... you get second hand information, and their understanding of somebody's pain or a symptoms is not going to be accurate... trying to get to the actual patient to get their first-hand experience of their symptoms is the first point that we try to make, if that's not possible then we try to facilitate it so that we get as close to correct information as possible, but that is not always the case and we just kind of have to choose bits of the information and get the safest possible outcome from what we'd been told... (AB15_NA)

The information received must be interpreted and it must be meaningful for decision making. A sense making process is performed that goes from: identifying relevant information and going back to asking for it if it is missing at some stage; to interpreting its significance and developing a picture of the situation of the patient and his or her needs; to establishing a desirable outcome. The interpretation of information and the determination of an outcome are obviously related to having an appropriate knowledge base.

"Well, it is simple, I think first of all the main abilities you would need are to be able to read and understand and interpret what is being said there, and then... prioritizing." (AB10_TL)

"'Why are you phoning?' I mean, I really don't know why you're phoning, you know, my question to that is, 'What is it that's really concerning you today?', you know, that's when I'm really struggling. If I can't get... a clear picture of what the individual is calling about, you know, that's my usual, then I will say, 'What is really concerning you today?'" (AB19_NA)

“You know, they go, ‘Oh, I’ve had that for two years’. But, ‘You’ve had it for two years, but it is the most serious thing in relation to what you called about today?’” (AB5_CH)

“In your initial assessment having done open questioning to find out what the general situation is you then try to identify what you think the real significant problems are and the ones that would have the biggest impact either on patient's quality of life or in their general health.” (CB21_NA)

“I do use my clinical or my experience and knowledge gained prior to this job, alongside the algorithm, which gives me support along areas where my knowledge is weaker, so a combination of gathering that information and using my own knowledge and information to interpret what is the information received from the patient, and whether that sits within the tool that is there to guide me to come to an outcome that I clinically decide is appropriate for that person.” (AB16_NA)

“When I’ve... I’ve asked all the questions I need to ask so I have an idea in my mind of... ‘This person's got chest pain, they need an ambulance’ ‘This person has possibly urinary infection’ it is urgent but they are not bleeding, these things can wait till the next day... How do I?... When I have all... when the questions have all been answered I’m gonna have a picture in my head of what is going on with the patients...” (CB6_NA)

Nurses use intelligent decision support systems (algorithms) to follow certain paths of questioning that insure appropriate questions are raised in the process of triage and therefore nurses don’t miss them. However, for most nurses the algorithms are a support tool, which they use to corroborate their assessment of the patient’s situation rather than being led by them (see section 5.2.8 Using Information Systems):

“I tend to not touch my algorithm until I’ve got a full history of them. I’d rather spend two or three minutes in an adequate history of what’s concerning them and what symptoms they’re having or problems that’s causing them... So I tend to have a discussion there and at that point I make an initial decision, you know, ‘Is this likely to be an A&E?’, ‘An ambulance, based on what they’re telling me?’, ‘Is it likely to be something I can give self-care advice on, or are they likely to need to be seen?’, and then I’ll use the algorithm to support that.” (AB3_NA)

“‘Tell me a bit more about it’, so you can kind of rationale is this relevant or irrelevant to what’s going on now. So it’s useful too, but not one to miss a head

injury for ear pain, it's like always, always, 'Oh, yeah'. They're nice just to flag that up. When we started we used them all the time for triage and we would go rigidly with them, but that's now changed, and you look at them more rationally, and you've got your nurse's head back on as well." (AB3_NA)

"I think when you first start it's so different to what you've done before and you can't see, you can't feel, you know, you lose all your senses, it's your hearing and what they're telling you, so you do become quite dependent initially on your algorithms and... but as you bed into the job and you've got your coaching and you can look at how your calls are going, your nurse head comes on as well, and you can marry the two comfortably, so part of it is organizational, part of it is your own development and confidence in the job, and that you are actually making the right decisions, thinking out of the box." (AB3_NA)

In the decision making process all frontline staff (but more so nurses and HIAs) use knowledge bases (e.g. the Knowledge Web and the e-library) that are part of their information systems to gather additional information:

"... when patients call they explain their symptoms and their main concern and... I use that to decide what to do with the patient. But... if it is a patient looking for more information about what is wrong with them, then I would access the database or the clinical information" (AB12_NA)

"... use information systems to say... for instance, in rashes, the only thing you can be fairly sure of in a rash is chickenpox, other than that we have no idea of what is going on with rashes, but we can see using information systems like *patient.uk*, which tells us what measles is like, and say well, this is not presenting like this, so therefore it is unlikely to be... so we can use the information, access to other information to get some reassurance and to say why..." (AB16_NA)

"Also, we have other tools that are available ... we have a knowledge web, and the intranets and the GIS screens, all of these have got a lot of information that we can draw on as well." (AB11_CH)

"...clinical information is the books that we had been provided with, there are certain books that every nurse is provided with. The same books have been quality assured and those are the ones we are going to use. We also use databases, which have been also quality assured, we have on the computer NHS24 full knowledge Web." (AB12_NA)

"We use the Knowledge Web, I think the health information advisors probably use things like that a lot more than ourselves, but we are may be looking up

which area to send the person and we would look up, you know, we would use the knowledge system to look up what is the nearest referral centre...” (CB14_CH)

“...you'll need to know how to access your systems for a start, you know, the information that you are drawing up from your screen. I'll say *ToxBase* again is another one, and... you have to know how to access your systems, you have to know your way around the system in order to get the best from it, in order to give the best advice and information for your patient...” (AB19_NA)

Quite often, members of staff go to Team Leaders or peers for support in decision making. Perhaps a situation is not clear enough, or some information is needed that has not been found. Sometimes other people's specialty knowledge and experience are sought, rather than just a simple piece of information:

“Yeah, and we use each other's knowledge, you know. As I say, renal is very specialized, midwifery is very specialized, and you get to know your colleagues and who's come from what backgrounds, you can have a discussion... you know, tell me a little bit more about... and that can help your decision making as you go through a call.” (AB3_NA)

“Or if you hear somebody you think ‘Hmmm...’ I maybe could get a team leader over and say ‘Look, I think that is a little bit more serious than what they're saying’, you know what I mean? And they will say ‘I will put it straight through’ or ‘It's safe to queue’, you know, so if you just have the inkling apart from what they are saying, you then think ‘They are getting help’ you know, rather than just ‘they are in the queue’ or whatever.” (CB13_CH)

“If I have questions around that either in what I've been told or whether it's something beyond that I can't think of an answer around that or a solution, or there is a query, a gap in my knowledge, that's when I use... I will speak to a colleague next to me if they're not on a call, or I'll ask the team leader for additional support or information...” (AB16_NA)

“Again, nurses raise their hands for various different reasons and it is also very dependent on what stage the nurse is at. Very often the nurse is very new, they will put their hand up very often, it will be more a reassurance of the decision they have come to and they kind of talk it through with you, ‘Do you agree with what I'm doing?’ And that is how we reassure them and that's building up their confidence. Other reasons they put their hand up is if they are unable to negotiate an outcome with the patient, the patient is unhappy, they are unable to

properly speak to the patient, and there's many different examples of that, you know..." (CB15_TL)

"... a caller can ask something and you may be literally stomped and think, you know, I've never really come across this before, I'm not a hundred percent sure where I will find this information, so you say to a colleague: 'I've got a call on the line they are looking for blah, blah, blah, what do you think?', and nine times out of 10 somebody will say 'Oh, I had that last month, I found it on this site'." (CB2_HIA)

Arriving at an appropriate decision involves understanding and agreement between the caller and the member of staff about whether the information received or a specific provision for care is adequate:

"Good would be to cut a compromise... not a compromise, but come to a decision that both yourself and your patient is happy with, that they feel... from listening to their voice, tone of voice, what they're saying, are they agreeing with you..." (AB1_NA)

"So they're involved in the decision as well. It's about getting them to a point where you know that they have heard what you said, they understand or appear to understand what you've said, and they are happy to implement it with the proviso that if it's not helping they come back to you." (CB3_NA)

"For me an effective outcome would be where I've heard what the patient's told me, I've listened to the symptoms, I've been able to formulate what I believe might be happening, I've been able to feed back to them what they've told me and then get them to agree or disagree, 'Yeah, that sounds probable'" (CB3_NA)

"... if you have agreed on a pattern of care between you and the patient and it's all organized, and that's it out the window, then you can go on to your next call and that's when I feel the happier. You don't go home thinking about any of them." (AB4_NA)

"...and then an effective outcome would be where they're happy with what we have decided and they go off with either a set of instructions or of things to implement to try and relieve the problem, or they are happy to go to a centre or whatever it might be. So, an effective outcome might be when there is agreement between all of us, and everybody is happy." (CB3_NA)

5.1.4. Achieving appropriate outcomes

- Effective call routing
- Appropriate dispositions for care
- Staff satisfaction
- Patient satisfaction
- Helping patients
- Giving appropriate health information to callers

This conception of effectiveness focuses on achieving appropriate outcomes. An important aspect to consider in this regard is that the frontline staff at NHS24 almost never get to see the complete outcome of the patient journey. It is not always evident for them whether a decision taken was ultimately the best, unless there is some feedback from the partners (e.g. Scottish Ambulance Service, hospitals, GP practices, etc.) which generally happens when something did not go very well (e.g. an ambulance sent was not needed as urgently as expected). But most often, staff do not get feedback and they do not see the end result of their outcomes.

“I was thinking about that just yesterday when I was reading this, how do you measure that (effectiveness)? And I am not sure... I know that there are certainly calls that when I finish I feel satisfied, I feel that I have gotten the person... you see... if I could see, for example chest pain, someone with chest pain is relatively straightforward, you know that this person has possibly a cardiac episode, there is no debate about what should happen, you get them an ambulance and I feel quite satisfied at the end of that, that I have done as much for that person as I can in that time frame. Otherwise, and I was talking to one of my colleagues about this yesterday, it's difficult to know because it makes it very difficult for us in that we don't see the outcome as such, we just refer people on and the only time... and one of the issues I see around this, the only time you know that you have not being effective is when there is a problem, and it comes back to you whether that be via the GPs or the patient's complaining, whoever, and you are in trouble because you haven't sent the person to the appropriate place or in the appropriate time frame ...” (CB6_NA)

“Some things you'll never learn, you know, you have a very sick child, you send them to A&E. At least you are a little bit unsatisfied that you can't actually find what the outcome is, because you can't really phone up the A&E and say 'I sent

this child, can you tell me what happened?’ Or ‘What the diagnosis is?’ That breaches patient confidentiality, so you just can’t actually do that.” (AB2_NA)

One way of assessing appropriateness is from the point of view of their professional knowledge and experience, for example in establishing the clinical safety of an outcome. Often these assessments are subjective and relative, as even using guidelines there are no absolute best outcomes:

“An effective outcome is getting the patients seen at the right place, I think, within a set time, you know, if you're going to get a treble nine ambulance it's got to be done quickly, so that you are making that assessment quickly, I think is the effective... Getting to exclude any kind of immediately threatening illness or whatever the early on, so that they are getting the appropriate care.” (CB4_NA)

“I think just generally a successful transfer to the nurse advisor or an appropriate skill set. Generally most calls are clinical calls so, for me probably, you know, reassuring the patient and capturing the demographics efficiently and safely and transferring the call to the nurse advisor, generally for me that is a satisfactory outcome, for the calls that I deal with.” (CB14_CH)

“A successful outcome for me would be that the caller has been attended to appropriately and has the best advice and treatment for that particular presenting problem at that point in time.” (AB16_NA)

“Probably, on a call, if you get the outcome that is safe, that works for the patient and yourself, really, that you come off the call thinking, ‘I’ve done the right thing’. That’s probably when I think, ‘yeah, that went OK’” (AB4_NA)

“... generally I am very comfortable with my dispositions, you know, I like... if I ever come to a situation where I am not sure, then I’ll get the team leader for help, but that is not a regular feature. Usually I’ve got the picture and I know where I’m going with it. There have been occasions where I have not been sure... and then I get a team leader’s help in that.” (AB19_NA)

One aspect of this conception focuses on a perception of satisfaction in the caller. This is obviously subjective, but in the absence of other assessments available at the moment a call is finished, it is an important indicator for staff of an appropriate outcome. Patient satisfaction is often related to agreement with the decisions taken:

“Well, most of the time you just get a feeling that they’re happy. You also know when they’re unhappy. It’s to do with the tone of voice, it’s to do with listening, and there are certain ways people speak to you and there are certain ways that they say things and you know that they’re not happy.” (AB2_NA)

“... a satisfied patient, basically, with their pathway to care, and the management of their needs, that's what I would consider most satisfactory to me.” (AB16_NA)

“You can pick up a lot obviously in tone of voice... Are they just saying ‘Yeah, yeah, yeah’, because they’re not getting what they wanted? Or are they saying ‘yes’ because they’re truly believing what you’re saying? ... is it true that you’ve given information that they trust, you know, that they are actually going to act on rather than saying ‘yeah, yeah, yeah’ and ignoring it or, you know, they’re not going to follow through with what you’re saying, because, you know, they’ll tell you, they’ll tell you if they’re not happy... “ (AB1_NA)

“A successful outcome for me is if I’ve taken a call and I feel that I’ve done the very best that I can possibly do for that patient, and I’ve given them appropriate advice, and that I confer with them, I always check with the patient if they are happy with the decision that we've come to and if they are happy and I have given them the best possible care, then to me that is a good outcome.” (CB9_NA)

“... when they go off the phone and they’re happy and satisfied that you... you can then pass them on to someone who can help them or information that they need regarding an illness, for example chickenpox or an illness they had been diagnosed with.” (CB17_HIA)

“A big factor for me is that patients are happy with the outcome, the patients say ‘Thank you very much, that sounds fine I'll try that’ and I feel unsatisfied if... there is a lot of debate around where the patient should be going, what they should be doing, what they should be taking, and they are clearly unhappy with the outcome.” (CB6_NA)

Another aspect of this conception focuses on helping patients, and is related to values and attitudes held by staff about the aims of their work and their relationship to the caller as providers of care:

“I would want to think if I phoned on behalf of any of my family that they get good help, you know, somebody that could be bothered, and... you know, cared, rather than say ‘No, whatever’ you know, you would want somebody who cared ‘Right, I’ll get you through this’ ... rather than just passing the buck.” (CB13_CH)

“... I think successful calls are also those that... where you can actually give advice and empowerment to the caller so they can take control of their own situation.” (AB19_NA)

“... our job is to make them... for a patient to call and to know that we are there to help them, and we’re going to help them to the best of our ability, to what we can do. Obviously some things are outwith what this organisation is about and what we supply, but we will do the best that we can, that’s... I think that’s how we should come across. As a call handler you have to do that from the minute you answer the phone.” (CB8_CH)

“... to know that no matter what comes on the end of that phone you’ll be able to help that person, you’ll be able to guide them, empower them with the right information, the right... to know where to go for help...” (CB2_HIA)

“I think a successful outcome is if... basically if the caller goes off the line happy knowing that you have helped them, whether that be giving them advice on what they were calling for or whether arranging an appointment, and you knowing that you have done the most appropriate thing in order for that person to get care.” (CB7_NA)

“The other times that it is successful is... maybe a patient is giving you lots of symptoms, and you suspect he has maybe developed diabetes that's not been diagnosed yet, and you can, you make the suggestion to them that they should seek medical advice and get some tests done ... you know, picking out potentially life-threatening illnesses that they’ve had not had any advise about before... to get them to seek further advice and treatment that can be quite satisfying as well.” (AB15_NA)

Providing adequate information as part of an outcome is one of the focuses in this conception of effectiveness. For HIAs in particular this is one of the hallmarks of a successful outcome:

“When you provide the client with what they are looking for, the information on health that they are needing at the time ... they go off the phone and they’re happy and satisfied that you... can then pass them on to someone who can help them or information that they need regarding an illness, for example chickenpox or an illness they had been diagnosed with.” (CB17_HIA)

“A successful outcome would be that the service users are satisfied that we have answered the questions that they have come on with, or that we have been able to signpost them to the correct service that they have been looking for... a result if you like...” (CB2_HIA)

“It gives you a lot of satisfaction to be able to give people the information that they’re looking for... because there is an end to the... you know, there is a result to the end of the call and... I think having, being able to give the caller... as much information as possible that they are looking for is a great satisfaction as well.” (AB18_HIA)

“Sometimes it's a little bit more difficult when you are sending people on to be seen somewhere else, because we don't know what happens to them, but if it is a self care... and we've have given them the information to deal with it themselves, that can be quite satisfying.” (AB15_NA)

“A number of our calls are not... the patients are not going anywhere, they are not going by ambulance or to a doctor, so they are only being dealt with by ourselves and so to be effective as a nurse adviser as well there is also to provide the patient with the right advice on what to do with their problem.” (AB12_NA)

“If it is a self care... and we've have given them the information to deal with it themselves, that can be quite satisfying.” (AB15_NA)

5.1.5. Support and collaboration

- Support from Team Leaders and coaches
- Asking peers for help and helping peers
- Sharing information and knowledge
- Organizational culture

“... if you're next door to somebody, and you've got something you're not quite sure of, you always converse with them or you ask the team leaders, you put your hand up and say if there's something you're not quite sure of to get advice.” (AB4_NA)

Interviewees generally made a strong point of the importance of collaboration and mutual support as a central aspect of their effectiveness, and they often talked of it as a matter of everyday experience. The need for collaboration seems to ensue from the demanding nature of the job which can basically throw anything at them, from broken bones, to urinary tract infections, to heart attacks, to mental health problems. Patient safety is paramount but there are risks involved in how calls are handled and decisions taken. Also, internal procedures and guidelines change quite

often. These aspects make the job demanding in terms of information and knowledge. Even very prepared and trained nurses with years of experience will face uncertainty and find knowledge gaps which they often address through exchanges with peers. Support and collaboration are also actively encouraged by the organization and the organizational culture is one of openness that allows for people actually to say: 'I don't know what to do here'.

“So, I think the reason that we all share is because we all felt very vulnerable and to a certain extent I don't think we will ever lose that because of the vast numbers of calls that we get and because of how medicine is evolving and nursing is evolving, there are always new things happening and there are things that you have not worked with, things that you have not done, so it is always comforting to know that there might be somebody in the department who has worked, for example, with rhino dialysis. Or, you know, unusual things... And I think we all realised that there's so many things that people can phone in with, nobody could possibly know absolutely everything to deal with everybody that phones.” (CB3_NA)

“I have no problem at all with going to a nurse or a call handler and saying 'Can you help me please? I don't remember how to do this' or 'How do you do that?' You know, there's no point in being dignified if you don't know, and nobody can know everything. So, sharing information is important...” (CB18_TL)

“I think my development within this job, the main thing that I see personally is my confidence, my confidence has grown tremendously because of the support and guidelines that I get, and not only the procedures that had been put in place by the “powers that be”, that we have no control of that, but also, like I was saying before, the backup and support that you get from the team leaders and from the nurses and from your fellow call handlers. You don't feel stupid if you make a mistake ... I have more confidence in my own ability, because these people have allowed me to make the mistakes and to see... you know, when you can have a look at the mistakes you have made but reflect on them...” (AB8_CH)

“I think ... it was the original team leaders set it up that way... we realised that the only way we were going to survive and not sink, as a brand new organisation ... we were determined not to fail. So we have to develop this open format for sharing information, saying 'This worked; this didn't work; let's try it this way; how did that go?' and that's how we developed all the processes that now sit there, I don't know how many processes there are, we walked in here with none and we had to write them as we went along and change them every day ... and that is the system that we developed and that is a good point that I think has just

been continued, that people have to learn from what is going on, so we have to be open with the information.” (CB18_TL)

The focus on sharing information and knowledge is an important aspect of this conception of effectiveness. Using peers as sources of information and specialist knowledge happens constantly, although this may be limited by the heavy workloads of some shifts, when there is almost no free time to turn to peers for help or to discuss calls:

“Yes, I think everybody interacts in this job. I think that's part of doing this job and I think it's good that you should interact with the nurses, because nurses can teach you... not in a clinical way but in a safe way, we learn things from them, you know. They may give you a bit of information that you remember. You know, I've learnt so much over five years from nurses and team leaders, from saying ‘No, no, that’s a serious and urgent call now’” (CB8_CH)

“From training, from use, because I been told things, I know from the information that I gather that I should pass it along as well, so I’m not going to... you know, doesn't take anything from me to share the information, it doesn't cost me anything to share the information, so, because I have seen how it helps when people give me that the information, how it helps me do my job better, obviously, if somewhat less experienced sits beside me and needs that information, I just pass it on...” (AB5_CH)

“... My last job before I came here was like a clinical support nurse, which meant I took turns through the hospital so I had to have a fairly good knowledge of what’s going on including mental health. And that way they can tap into what I know, and I can also tap into what they know, and it’s a two way street all the time. There’s always learning in this job, always. Things change.” (AB2_NA)

“Today I am doing a five-hour shift. On an average day I would probably have someone come to me say two times within those five hours, for some advice. So... quite regularly and quite frequently, yeah.” (CB6_NA)

“If you don't find what you’re looking for ... we could also get the information from people ... colleagues that are working with us, who have maybe been doing it a lot longer than we have. We work together, you know, it's nothing for us to turn around and say ‘What do you think about that? Do you think that I could maybe pass this on? ... So you’re using your colleagues for their experience and for their help as well...” (AB18_HIA)

“... sometimes it can be very difficult when it is very, very busy, but I mean, yes, on a day-to-day basis it is very easy, you can actually, you know, turn

around to someone who was sitting right beside you. When it is quieter it is easier to do that, when it is running absolutely full bill at the weekends it's a bit more difficult. But, yes, there are people that you can call over..." (CB3_NA)

The role of Team Leaders is particularly important in supporting all the people on the frontline. This is due to their obvious role as managers with responsibility for the service but also because they are very experienced nurses:

"If there's something that I think might be of relevance that I don't feel I understand I will certainly ask a team leader." (CB21_NA)

"I would then be speaking to my team leader who would often be able to access maybe a specialist in that particular area, or someone who worked in that particular area so I would at least whether it be orthopaedics... I don't know, upper GI, whatever, but they would be able to point me to someone who would know a little bit more about it than I do." (CB6_NA)

"Yes, I can... we can do... depends on how busy the place is, if everybody is on a call then you can't, so I mean, that's what the team leaders are there for, you just put your hand up to say I need support with this particular call, you know... that's about... just to get the advice and help of the team leaders." (AB19_NA)

"There's being effective operationally on the floor, and there is being effective as a manager for your team ... team wise it is obviously being able to support the team that you have, making sure that they can develop... and that they feel supported and that you are a good manager, they can come to you." (CB5_TL)

"... but also you do go on the phones, you do act as a nurse advisor and take phone calls as well when we are busy. So I still have got to talk to patients, I also support the nurses because of twenty years health visiting I may go to answer questions very quickly when it comes to babies and young children, because that is my area of expertise. While I may get stumped on other areas like diabetes and then I'll ask one of them, but it is very much about team work." (CB18_TL)

"...Sometimes they put their hand up if they are having problems with the electronic system and we will help them with that... they will put their hand up very often for problems with poison calls, because there are calculations involved they and again it's about reassurance. But very often their hands are up or help is required... the reasons are multiple. Call handlers will put their hand up if they can't find the patient's record, and again we will help them find that." (CB15_TL)

Often interviewees focused on the organizational culture as one that strongly encourages and supports collaboration:

"...And it's the most open transparency which no other organization I've done has had that, it's usually been very much a blame culture..." (AB3_NA)

"You know, it's a friendly environment, and when you do come in as a new starter, it is... You know, I don't think many people would have any problem with turning to whoever is sitting around them and saying, 'I just want to make sure I'm doing the right thing with this call'" (AB7_CH)

"I think NHS24 is completely unique... from any other NHS environment. If we had an environment where there was no sharing and no openness I don't think NHS24 could effectively work in anyway. I think from day one it was kind of driven out that the structure of NHS24 was flat and it was a shared environment and I think that makes it quite unique, and I think that's something that NHS24 has delivered on is being open, through information sharing and the... partnership forum, staff are always invited on to any committee, any development groups, anything like that, it's not a top-down it's very much a shared network... in my perspective." (CB15_TL)

"Yes, I find that everyone is very open with each other, with regard to discussing how well or... how well they've done the job or where they think they may have slight problems, and it's very supportive. All the call handlers are very supportive of each other, and I'd say from the call handler to the nurse as well, it's nice the nurses can sometimes also give the team leaders feedback on what the call handler has done." (AB8_CH)

"AB7_CH: ... it's not like there's a hierarchy, well, there is obviously a hierarchy, but it's not a hierarchy where you would have to worry about who you went to with your problems or anything like that, you know, if you went to someone who was possibly a manager or a team leader who was too busy to help you, and they normally aren't, they normally have plenty of time to help you, they would just redirect you to someone who could help you with that problem at that time." (AB7_CH)

"... to give the organisation some credit I think there isn't unconstructive criticism of making mistakes and requesting assistance, it's a culture where, like in a school classroom, you are encouraged to think laterally and request assistance at all times with information, decisions, anything at all. You just raise your hand or walk straight to a team leader and request assistance. I think it's a cultural thing of this organisation, this organisation, not all of NHS, I think it's a culture where people are taught from day one, and people are recruited on that basis perhaps but they are also nurtured from day one to accept that..." (CB12_CH)

5.1.6. Developing an appropriate knowledge and skills base

- Learning on the job
 - NHS24 training
 - Learning from calls
 - Learning with peers
- Personal knowledge updates
 - Recognizing knowledge gaps
 - Looking up information
 - Further training
- Developing appropriate skills
 - Communication skills
 - Information using skills
 - 'People' skills
- Effective learning
 - Motivation
 - Reflecting on practice
 - Keeping updated

This conception came through quite strongly, with focuses on several areas of learning. All frontline staff require a knowledge base relevant to their jobs that needs to be constantly updated. The nurses' and the Team Leaders' is probably the widest and most demanding as they need a broad training and experience in health and nursing. The constant changes and developments both in general medical knowledge and within the organization are continuously creating the need for new knowledge and information. Nurses come from a host of specialty backgrounds, e.g. midwifery, A&E, mental health, community, etc. This means a variety of knowledge backgrounds and a variety of workplace settings and practices where they have worked before. Some nurses came to NHS24 from a hospital ward and others came from community service. Very often, they

mentioned that this variety of knowledge is an asset which lets them provide the service together, which no single specialty could provide. The variety of call reasons also generates the need for developing a 'multiple' personal knowledge, more diversified that is usually required of individuals in other health care settings. At NHS24 nurses also have to develop a host of new skills that are relevant in telephone triage and are not common in other settings.

“I think if you review what you're doing, keep your skills updated, you know, your knowledge and the clinical processes you can be effective then.” (CB13_CH)

“To be really effective, I feel that you've got to have a good base of experience before coming into this place of work...” (AB19_NA)

“... you have to have a wide clinical knowledge and because a patient... anybody in Scotland can have anything wrong with them and phone us, so very different things that the patient's call. Like today, all day, mental health problems, pregnancy problems... sliced finger. Everything is so different... problems throughout the shift. So you have to have a broad knowledge of things that are problems for patients in primary care, and... so that is one thing to be very clinically aware of, of a lot of different areas.” (AB12_NA)

Expanding and updating the knowledge base happens basically in two modalities: the first is learning directly on the job, taking calls and interacting with peers; the second is more personal and individual, often happening through reading journals, looking up information in knowledge bases or engagement in training courses both within and without NHS24. Learning on the job is accompanied by reflection on practice which happens formally through individual coaching, listening to calls and discussing them in groups (called leveling sessions), and performance reviews with Team Leaders.

Developing the knowledge base includes updating information, developing skills and applying them in more effective ways to the tasks and problems of each role. Different paths in addressing knowledge gaps involve awareness of information and knowledge sources, as well as awareness of learning opportunities. Both of these aspects involve people as well as

documental sources. Some aspects of keeping updated with changes and events that affect the service are provided by the organization through information 'pushed' to the staff by means of the institutional communication systems: email, plasma screens, shift handovers, advisories, etc.

Prior training and experience is fundamental for nurse advisors. Indeed, most of the nurse advisors interviewed had a considerable experience (> 10 years) in nursing. However, they continuously referred to the need for continuous professional development as the job is always challenging them with new problems and knowledge gaps. Nurses do not just transfer their professional knowledge and skills from other nursing settings, but actually have to develop many new skills as they work in a completely different situation with patients.

“... I think people who can come here anyway are quite experienced nurses, so they have a broad knowledge. But for me, my background being secondary care is quite different from the problems patients have in primary care. It's quite a different perspective, and so I had to learn a lot of new things... and occasionally maybe once every two months, or once every six months we have a GP who comes to talk... and we go over a few cases with him... For an hour possibly, maybe two hours... and that's really helpful, very helpful because the GP has been doing it for years of similar triage and so it... you know, he has the broad knowledge that we are needing... so, it is helpful too, to have sessions like that, but they are just very few and far apart.” (AB12_NA)

“I know that you can be very... very sure that you are very experienced, and know lots of symptoms and what you look out for, but... but there is always a surprise with patients, you know, who are outwith the norm, and so... I find that no matter how much learning that you do... that you always have to be aware that it might be that none of that matters when it comes to what the patient's like and what the actual problems they have are and... I think that, really, is something that has to be... its experience has to be shared more with peers...” (AB12_NA)

“I think just because we have... because it is such a short time, you know, and it is such a completely different job it does take a long time to settle into it, and so from that point of view you're constantly learning, every day you go home with knowing one bit of information that you didn't know the day before, you know,

and I think that will probably continuously keep you learning like that.” (CB7_NA)

“... I have a psychiatric background, I’ve done my general, but I have never been a sick children's nurse or a health visitor or anything like that, but I am involved in child protection, and that would never have happened anywhere else, it has just happened here. And I think you have to be grateful for things like that. And there must be many, many people in here who have taken to skills that they never thought for one minute that they had.” (CB20_TL)

“And I also get annoyed when... I was talking to my GP a couple of weeks ago and he said ‘Don’t you feel you are being de-skilled? The nurses are being de-skilled?’ and I said ‘No, absolutely not. The skills that we have to develop to take these calls, to do the job that we do, far outweigh what we lose’. Because he was talking about you don’t have physical patient contact, you know, taking temperatures and all that. ‘Absolutely not’, you know. I mean, I used to be a practice nurse and I know if I were in tomorrow to do a whole list of patients I could probably do a good job with that, probably still do jabs and still do what I have to do. I’m not saying I wouldn’t have to ask a few questions, but there is no practice nurse sitting there that could come in and do our job. Just without any kind of background training. So, there is no doubt about it that you learn a lot in this job. You learn an incredible amount, because you have to be diverse ... as an organisation it will involve you in things you would have never thought possible. And there must be many, many people out there who think the same as me.” (CB20_TL)

“Working the wards is different, because you are either doing medicine, or surgical or orthopaedics, and whatever you did there you concentrated solely on that aspect. Here you have to have a knowledge of everything. It’s not just... you just don’t go in and it’s ITU and you’ve got your ventilator and that’s what you specialize in... Here, you have to specialize in paediatrics, orthopaedics, gynaecology, paediatrics, mental health, and on and on it goes. You need to have a little bit of knowledge of everything. And in some areas you have a lot of knowledge, in others you have very little.” (AB2_NA)

“It is, and this is why this is such a different job, it’s completely different skills, because if a patient came to me in the hospital I could see them, I could hear them, I could touch them... on the phone, all I can do is go back to what they tell me, and rely on my experience and the information available to me, to decide what to do, so it's very, very different from everything I have done before...” (AB15_NA)

Learning on the job involves three main aspects, reported in the interviews: learning from calls, learning with peers and NHS24 training. Listening to

calls, as a learning and development activity, is one of the most important all frontline staff do. This is done in several ways: on your own; side by side with a coach or a team leader; or in a group who listen together to anonymous calls and discuss them (called a leveling session). Listening to calls is an intrinsic aspect of coaching and of performance management at NHS24, and it centrally involves reflection on practice:

“... call handlers get an opportunity to listen to the nurses and to listen to the health information advisors. That has certainly helped me, listening to the nurses to see what they do and I can now see how important it is, the information that we gather, how important that is for the nurse” (AB8_CH)

“... So you don't know who it is, and it's much easier to step back, it's not your call, and listen to a call and think 'That was good information, done like that', and 'Where do we get that from?'... And we do that about once a month, if we can... A leveling session, which I... I think are great. It's very difficult to listen to your own calls sometimes, that's why I like other people to listen to them, with me..” (AB1_NA)

“A leveling session ... I found that a big, big help, even just to hear that other people do their calls the same way as yourself, because, you know, you're taking your calls and you think you feel happy with them, then I think 'Did I do that right? Should I've done it a different way?' so even just hearing how other people do their calls is a big help.” (CB7_NA)

“... that's one way of learning, when you're listening to other people and saying 'She should be getting in there', you know, you'll know that they are doing it wrong and you know what you would do, and... so, you're learning all the time.” (AB18_HIA)

“It is also important to go and listen to your own calls and learn from your own mistakes, you know, hear what you're doing that you could be doing better, you know, it's not... it's not about just sitting back and expecting someone to come and tell you, you have to take part in your own development I think.” (CB8_CH)

“Because you may feel you are coming across fine... and... when you listen to your calls you may think, 'I feel I was a little bit sharp there' or you could tell 'I was getting kind of angry' or 'I was getting frustrated', so it's quite good to address those things.” (CB2_HIA)

“If you feel yourself a call was good or bad, or you want to review a call you can go and do that if you want, anytime, that's up to you. You can invite your peers to listen to your calls if you want to, you know...” (AB1_NA)

Learning from peers is one of the main ways in which the frontline staff report developing their knowledge base. It is encouraged by the organizational culture of collaboration, and also helped because of the physical proximity of people sitting around pods. It is however hindered by the heavy workloads of some shifts and this is particularly the case of many part time staff:

“We’ve got people who have got some... specialist knowledge if you like, we’ve got those who have come in from nursing and midwifery, so you can approach your colleague and you know that they maybe have a mental health background, or they’ve got a midwifery background. So you can pull your knowledge that way...” (AB19_NA)

“Obviously, your peers, everyone here’s got their, I think, their own specialty where they come from. I was a Burns ICU sister. The girl sitting next to me was a community nurse, there are midwives in situ and learning for me, who’s been here less than a year, I rely on my peers roundabout.” (AB1_NA)

“I think group discussion is good. And you kind of do that informally, you listen to people ‘Have you heard something?’ ‘Oh, that’s interesting’ or some you may think ‘Oh, no. I don’t like how they are going about that’ but some sound fantastic, you kind of think ‘That sounds good’ and I think that is quite good to discuss things amongst yourselves as well ... one of the girls I’ve been with today she went to a refresher course and she was discussing things with us.” (CB13_CH)

“In the out of hours period, in our busy period, it is not possible to discuss with other colleagues or peers... during the day, like today, there is a break in between calls... it’s a different case altogether, and it’s much better. It’s much more facilitated to discuss and usually we discuss each call, well maybe not each one, but most of the calls, like we’ve had such and such and what we’ve done with that, or ‘Do you know anything about...?’ as I said everybody, nobody is fully experienced in all subjects so... we kind of know like if somebody’s a midwife or somebody’s a paediatric nurse or a health visitor or... you know, if you know somebody... if you were really stuck on a call and you know somebody’s there that has a specialty you would go and ask them, but as I was saying, in our out of hours period it wouldn’t be possible to do that.” (AB15_NA)

“...you can ask a nurse about it, ‘What was that?’ you know, ‘Is that life-threatening?’ or ‘Is that serious?’ and maybe somebody comes back and says ‘That can potentially be...’ you know, so that is quite good and everybody helps

each other that way and you are free to ask and you get the information and the team leader is available if you want to ask her about something.” (CB13_CH)

Coaching is a very central support activity which is always linked with listening to calls. It can have two main aims, which sometimes appear ambiguous. From a learning perspective it is considered a development process for helping staff reflect on performance and develop their skills. In other cases it is considered a tool for performance management, often with a focus on quality control. Due to limitations in the availability of coaches, coaching has tended to be used to help the people who are seen to be performing less well, which is not ideal as this has emphasized its role in performance management rather than on reflective practice for development of all staff.

“You have the coaching as well, so that’s someone who reviews your calls and you do learn, because there is different people who do the coaching you get different styles, they maybe mention something to you that somebody else hasn’t, so usually get something out of it, so that’s... so you learn... it is surprising you have in doing it for a year and you still learn more, it is when you hear different phrases you think ‘Oh, that sounds better than what I am doing’ or ‘That flows better’, you know, and obviously that’s better for the patient, you know, so you learn that way just by listening and your coaching.” (CB13_CH)

“Coaches, they listen to our calls twice a month, I think... yeah two calls a month minimum they listen to, and sometimes they sit beside us and plug-in and listen as we are doing the call... and then they feedback, they take notes of how we are managing the call and they feedback to us ‘Yeah, you’re doing this good’ and ‘You’re doing this not so good’, and ‘You need to build up on this’, and nurses also... listen to their own calls a couple of times a month...” (AB12_NA)

“... the coaching role is about, instead of teaching or telling them, it’s about working with them and getting them to identify their learning needs and how they can sort them, how they see themselves making forward with the coach kind of pulling them, pulling it out with them rather than telling them. So working with them, alongside them, supporting them. Sometimes they do have to demonstrate, to teach, but the main part of the role is about supporting and about developing the person rather than telling.” (CB19_TL)

“Unfortunately the resources are limited to things like coaching. At the moment there is a huge emphasis on the coaches working with people who perhaps are

not performing well. So the people who are performing well are not having coaching, so that is a huge issue, because we should be able to support both, we should be able to support people who will be performing very well, but also need to know that they are performing well, still have that encouragement and that coaching as well. But because of limited resources that is not happening at the moment.” (CB5_TL)

“I do get... coached on a continual basis every month, and you get feedback from the coach, we might get feedback on what we're doing well, what you could be doing better. There's also team leaders involved in that as well...the coach always listens to about five calls, but remote, which means you may not be aware of it until she comes along and says 'I've listened to five of your calls' and 'You did this... this could have been done', you know. You also get usually a side-by-side, which is also done by your coach normally, she again listens but obviously at that point you're aware she's listening to your calls, and... we also get one-to-ones, that's normally done with your team leader and the team leader will ask, you basically about what you have been doing this month, and your concerns, and anything you want to bring up this month.” (AB14_HIA)

“As a call handler... we are always getting coached, all the time. Every single call handler has a peer, so they speak, and regularly we get taken off to one side and our coaches will sit in and listen to our calls, all the time” (AB11_CH)

Training is provided to frontline staff initially as induction and then on a continuous basis through short in-house courses, development sessions, talks offered by GPs, e-learning modules, degree courses outside NHS24, etc. However, these opportunities are not very often and people may have problems attending due to work loads. Some of this training is compulsory (e.g. induction and when major changes to procedures or systems occur) while other aspects are optional and are offered (or discovered) as opportunities for development and this aspect makes them a matter of awareness:

“... when we started it was a case of 'Here are your quality assured websites, familiarise yourself with them', and that's that. We had to set up the system ourselves, now there's more advanced training involved... there is more monitoring involved... and there's coaching, there's leveling sessions, all these kind of things.” (CB19_TL)

“... the training has changed so much because when we started we had weeks and weeks and weeks of intensive training. We were taught about mental health

calls. Looking back a lot of the training was totally irrelevant, but I don't think anybody knew what we needed to know. And now I believe they have very brief training, basically how to use the systems and a lot of the training I understand is on the job, and just asking 'What do I do?' and by making mistakes and learning from them." (CB18_TL)

"When you come into the job at first it's classroom teaching for eight weeks, where the whole PRM system is taught to us by practice facilitators in educational departments. You have eight weeks where you have this turnover where you're not online, you are not taking calls and then when you come in on the floor our team leader is very, very good and we were closely monitored by preceptors, they allocated us an individual named nurse advisor that we sat with on a shift and we were able to ask them very specific questions and they could listen to our calls or, you know, one to one advise if we needed it. So we had that for a good two or three weeks before we came on to the floor and then we have access to the protected pod ... say six nurses on the pod with maybe three or four coaches, and you've got coaches who listen to your calls and then we go off to listen to the calls in a leveling session, we will discuss the calls, discuss the outcomes, we will discuss what we would have done differently, the structure of the calls and ..." (CB9_NA)

"... here they tend to push your professional development, they constantly have like ongoing updates and they have GPs coming, they allow you to write to the GP centres, I would definitely say they promote self development in here as an organisation, they definitely do. Because I have certainly been more motivated along updates and study days and things like that since I came here. And the access to them is easier." (CB9_NA)

"... there is training... there is opportunities all the time, if you're interested. But just for normal, you would have your calls listened to every month and then you do get a chance, if you so wish, to speak to your coach about them then..." (AB6_CH)

"But there is training going on all the time, there's the coaches and there's very different things... they are very keen for people to train in different things, there is an SVQ now for health information, I never had that before, but that just came on board, it's called 'Advice and guidance', so we are being told about that to see who wants to do that SVQ." (AB21_HIA)

"... for example the nurses may have one on chest pain, and now I am not a nurse and I don't triage but I now do chest pain calls and although I follow-up protocol there is still something I could learn from that. Or... breathing difficulties is maybe one that I would do, but I can learn from that because if I had someone on the phone who is breathing with difficulty I may just have

learnt something from that session that will help me help that patient, not in clinical way but in getting them the best care as quick as possible.” (CB8_CH)

“I think the organisation provides multiple opportunities for... multiple pathways and opportunities to learn, to participate, to be involved and other things... if you are in a position to take up what is there. But not every individual has the same opportunity and that’s to do with my personal restrictions on this one. So don't discredit the organisation, I think the organization is a total... has lots of opportunities, you know, really good options for learning, if you can utilize it, and if you can get practiced at it.” (AB16_NA)

Personal knowledge updates are activities that people do basically in a personal way to access information and knowledge that they require as knowledge gaps are identified. An important implication is being aware of where information and knowledge can be found. Other implications are the development of information skills to search for information, communication skills to talk to others, and the possibility of access to others who can provide information or knowledge. Although it is based on personal motivation and awareness of knowledge gaps, updating is also a social process because peers are used as sources, and also have an important role in signposting and in sense making. Personal knowledge updates mainly involve: looking up information in the organization’s websites and in the internet; reading paper-based books and journal; doing e-learning modules; doing college degrees; or Scottish Vocational Qualifications (SVQs).

“I think because in nursing everything changes so quickly it is important to keep on learning... and it is not always easy, specially if you have been on a long shift and you're tired you don't always want to go home and read up on new things, but it is important that you read as much as possible to try and keep, you know, on top of things ... ” (CB7_NA)

“And if there’s things for instance that come up in a call, a medical condition that I’m unfamiliar take a note of it and when we have a pause between calls, it’ll give you time to look that up, and you can either look that up on any of the quality assured websites we’ve got, or there are text books available.” (AB3_NA)

“... what I tend to do is just take a note in my pad and think: ‘I need to look up more about that’. And then you can access it and I usually move to the hardback

books you can access. I find it easier to read in between calls and flick between that and the Internet. Other than that you can go on and explore that further and expand your knowledge. You may never ever come across it again, but then again, three calls down the line you might get someone with the same syndrome, and at least then you've got a bare understanding of it." (AB3_NA)

"I tend to do my speciality, which is cardiology and I like to keep up to date on that, and anything medical wise. Actually, medicine itself, I like to keep up to date on that. Surgical things... maybe a couple of times a year I go back into that to see if there's anything new, or... my husband will come and say things have changed in whatever field and I go back and look at that. Or my colleagues will tell me, you know, 'Things have changed', or... 'Have you seen these authors, there's a good course on here and it doesn't take long to do'. So, that's how I keep updated." (AB2_NA)

"Just... just going in through the Internet, and just... keywords you hear or conditions, you know, and I would just go into, you can do it between your calls ... Because you may just hear the label and know nothing about it, so I would just go into the Internet and just look that up..." (CB13_CH)

"A lot of it's reading, a lot of it is on the Internet as well just trying to keep up with the guidelines and things like that. We also have a library here so there is a lot of reading stuff, plus we also have a variety of organized teaching evenings. Initially when we started we used to have a GP, what they call GP coaching sessions, and one of the GPs would come in and take a topic, say for example chest pain, abdominal pain, that kind of thing. So that would be, you know, that would be one way. So, reading, GP coaching sessions, we also have team leader sessions, they all arrange a day they call a team development day. There's actually one tonight, there's a lecture at the Southern General tonight on chest pain. There's a whole range if you're interested, there's a list of monthly meetings for the junior doctors and we are allowed to go a long to them. There's also a variety of courses that you can keep up with in literally just about every university and college that you can think of at the moment, so it's a variety of ways really." (CB3_NA)

"Also, self learning, so it's keeping up-to-date with current research in Midwives Magazine which comes out of the RCN and our union once a month and also the Nursing Times and Nursing Standard has up-to-date research that's going on within areas that you are working in. Reading on the internet, reading on the quality assured websites, access to Athens, you know the learning package for the British Medical Journal (BMJ) I use a lot, for reading and updating. I like learning, so I am okay in that respect, it's not difficult I enjoy learning and I actually feel more competent and confident with myself if I know my... my learning is up to scratch..." (CB9_NA)

“What I personally do is I am in the middle of doing a degree just now, it’s a BSc in health care, so I am staying updated on that side of things and also I am doing a management course as well. Specific... if I find specific knowledge gaps in my own knowledge then I’m using the BMJ website which has learning modules and I do that as well. And I also use our library, what I tend to do is each month I kind of target an area, so for example it may be cardiovascular and I will pick up an area of learning. Because our role is so huge, you know, we are dealing with patients from baby to... form cradle to grave (laughs) for want of a better phrase, so we have to have a really robust knowledge and I am always trying to keep that knowledge updated.” (CB15_TL)

Developing appropriate skills has three main focuses:

- Communication skills
- Information using skills
- ‘People’ skills

Key communication skills are listening to and questioning callers. Related to this are also the abilities to steer the conversation over the phone in order to focus on items which are key to effective and safe service provision, such as quickly identifying the main call reason and the most important symptoms. Also high importance is given to establishing rapport and empathy, as well as being able to calm down callers who are anxious, distressed or angry (see section 5.1.2 *Engaging in appropriate communication with the caller*).

“I feel to be effective and successful in this job you have to have very good listening skills, and along with that, very good probing skills, and... not to assume anything, but to explore... explore sufficiently in order to get a really full picture of what is going on, and never assume. And just probe very effectively, and rule out immediate life threatening situations, thinks that even sometimes the clients don't recognize as potentially life-threatening.” (AB19_NA)

“The biggest skill that you need to use in this form of nursing is communication skills, and it has to be number one would have to be your listening skills. Because if you don't have effective listening skills then there is no way you can assess what is truly happening, and therefore you can't plan the best outcome for them if you haven't properly listened to the problem ... So it is listening and it’s

probing and it's questioning skills that are the most important part of this job.”
(CB9_NA)

“I think the biggest skill we use is listening, we have got to listen... I mean as a nurse we've always... everything's always been hands on, you look at your patient... but we can't do that here and it makes it much, much harder. You know, so I think the biggest skill is listening to what the patient is telling you. But also listening to what they are not telling you, because sometimes the story that comes through to you, once you start to probe a wee bit deeper isn't actually what the main problem is. So, it is listening to what they tell you and then trying to use your skills and past experiences to work out what is the basic course of action...” (CB7_NA)

“... and that's a skill in itself, to know when you can cut in and say to someone, you know, when they are speaking to you sometimes they go on and on and on, and they'll tell you things that happened six months ago because they are so high, but it is your job to be able to control that and signpost everything you're going to do by telling them what you're going to do, why you're interrupting them...” (CB8_CH)

“It's just by adjusting the tone of my voice and the volume of it, my voice slightly to try and control the call, to gain back the control of the call to see exactly what they're looking for ... Try and get the proper reason why they're calling up. So it's just to try and bring them down, to get the information that I need before I get them through...” (AB17_HIA)

“... the ability to talk on the phone, well I had that anyway but I have improved that, the ability to talk on the phone, to listen, to be able to stay quiet and listen to what people are saying.” (AB18_HIA)

“... some people give out a lot of history to the call handler that is unnecessary and that comes back to the communication skills, being able to say 'Stop! It's not relevant for me. Tell the nurse that'.” (CB12_CH)

Information using skills are related to the use of information systems, particularly searching and retrieving information. Although using information systems is a central aspect of all frontline jobs their use is matter-of-fact and somewhat transparent. Using information systems is seen to require skills but once these develop their use seems to be not very conscious. Interviewees talk of finding information as generally unproblematic and something they do naturally without reflecting much on the process of information retrieval. Other related skills are accurateness

and conciseness in documenting information, for example for the patient record.

“There’s a huge difference. I’m very much more autonomous now and I think very much at the start of your career, and even when you’re newly qualified, it was still very much you were told what to do, as opposed to going and finding out yourself, and very much almost spoon fed even with courses that you did. When I think back to the early days, it was like being in school, teacher would say and you would do. That was very much myself directed ... So it’s very much more self directed and self orientated access of information. You use it more effectively.” (AB3_NA)

“For me I suppose the difference is in how I use it, and the confidence in how I would use it now... that I’d have nowhere to look but research. My horizons have sort of been changed and expanded now I know where I can get information from, and you develop more and more resources as you go through life, don’t you? So you can reflect back and think, ‘Well, I got that from there, I wonder if they’ll be able to...’ I think as a student, when I was nursing, there were my books... that’s what I tended to use as maybe mature, and that was it... I think I was quite narrow in my horizons for looking for something else, but now I think there’s always more that I can go and search what I need till I find, that I need to keep asking... and I suppose I’ve been able to accept I don’t know everything and I can keep asking, I can keep looking and finding what I need... I think that has changed... but that’s probably personal rather than resources.” (AB1_NA)

“We must be very accurate in our details because people could require urgent assistance sent to them, so we must make sure we have everything taken down. As I say, it has got to be done very accurately.” (CB11_CH)

“... maintaining the information accurate for the benefit of the third party, either the A&E or the primary care emergency service they will go to.” (CB12_CH)

“... taking in the information and listening clearly, documenting and confirming the information, all of these skills are really, really important to do this job.” (CB8_CH)

“You also have to have IT skills, and be able to navigate the system and get the information for them reasonably quickly and credibly, accurately...” (CB1_HIA)

“I can assure you I am not nearly as adept as someone who’s full-time. Someone who’s full-time is dealing with much more varied information, day to day, and they are just doing it more. And it really does come down to the more you do it the better you become, the faster you become ... Quantifying experience, I don’t

know. How long have you been doing the job? How smart you are as an individual? How curious you are?" (AB20_HIA)

For some interviewees, particularly team leaders, 'people' skills are another important aspect of developing appropriate skills.

"Probably be a good leader, you've got to be able to lead people by example. So if you're seen to be working well on the floor, communicating well on the floor, people will see you as being a good leader and know that you're in... there is nothing worse than coming on your shift, you know who is going to be around and just think 'Oh, my goodness' because there is too much of a... you get too anxious or... I've been like everybody would think that if was on it is not going to be run well, so it's good to know the people that you're working with as well, you know. It's all about people's skills." (CB20_TL)

"But it is very much a job where you learn on the job, I think I became... I developed these skills as I developed as a team leader. But also I think as I came to NHS24 I was a nurse with many years of experience and I think my communication skills were effective, and I think they've become better and I become better helping people... or enabling people to help themselves better." (CB15_TL)

"...it's just a case of, I think... being able to interact a lot with people, being quite sympathetic, being able to question what they are looking for, basically just being helpful and quite nice to people on the phone." (AB21_HIA)

"When I first started nursing, I was quite shy, I wouldn't say anything to anyone. But I think that's changed a lot. My communication techniques, everything's changed... a lot more. I'm quite happy to talk to everybody now. But I think that's nursing for you, isn't it?" (AB4_NA)

"So that would be the ideal, to brief and debrief your team at the beginning and the end of the shift, and your one-to-one communications with your team are really important and most of that comes from your skills, your people skills, how you manage people, how you treat people, how you respect people, because then you get the best out of them and they take on board what you're telling them and they've got a respect or regard for you. So I think a lot comes from your attitudes." (CB19_TL)

"I think a lot of it is people skills. You have to have very good people skills. For the team side of it specially you need to be very organised and plan your time very well, because there's lots of distractions all the time, we have very limited

time, so good planning you have to have, to be able to meet with your staff and organise meetings with them.” (CB5_TL)

“You've got to be a good communicator. You've got to be a good listener. You've got to have... you've got to be a people person. I'd say that's the most... for us probably the skill we need the most. Being able to see a situation and deal with it before it escalates out of control, because that can so easily happen, and that means not just dealing with people on the floor, like I said that's everybody like GPs, ambulances, people, everybody really you've just got to communicate well...” (CB20_TL)

The issue of effective learning is focused by interviewees as having three main aspects: having a personal motivation to learn; keeping updated; and reflecting on practice. The second aspect has been already discussed in the immediate previous section. Having a personal motivation to learn is seen as a key element of being an effective learner, and the personal source of this motivation was emphasized strongly, in distinction to it being a result of actions or initiatives of the organization.

“... you really would have to have an interest in the job and I think to keep up... to have respect for yourself, to know that you are going to be able to do the job properly, that's the only way that you would want to, you know, effectively keep up-to-date with what is going on, any changes. So... you just have to keep your ear to the ground and watch out for what is going on and make sure that you are kept up-to-date with everything.” (CB11_CH)

“Being interested, being interested is the biggest thing for me, and I love it here because I learn something new every day. I learn about new diseases, I learn about updates on old diseases, I learn about things I've never heard before, I deal with people I would never have normally dealt with in my midwifery life, because actually I never saw myself as anything other than a midwife until I came here... I've learnt so much. The day I am not learning enough I'll get fed up. But it keeps me motivated learning new things and being interested in things that are going on, that's what keeps me going and that's what keeps me motivated and I am quite motivated with my job still and I still enjoy it and part of that I think is the fact that I am part-time.” (CB6_NA)

“I think it's got to be a bit of both. You've got to be motivated to learn, anyway in the first place. But the organization promotes learning as well because we do a lot of CPD sessions. If delivered a few myself. But if you're not motivated to learn, it doesn't matter how many of these sessions you go to, if you're not

interested you're not going to learn. I haven't found anybody here who is like that. Everybody seems motivated to learn things, always bringing in new things, 'This is happened, this is new', new health alerts." (AB2_NA)

"Open-minded... and willing to learn, interested." (CB17_HIA)

"For myself, it's very much a personal driver, you know, done five years, let me see where do we go from here, and I've got clear ideas of where I want to progress and how to do that, and what courses I'll need to take me to where I want to be in five years time. So, for myself, I think my personal drive is high on the organizations but it's because I have a clear idea of what I want to be doing, which is hugely helpful. It's nice to know what it is that I want to achieve and I can reflect it into what I'm doing. If I couldn't reflect it on what I'm doing, I wouldn't want to go and do further education." (AB3_NA)

"I think you need to be motivated, I think, you need to be interested. I think you need to want to... to be knowledgeable... and I think I probably am, I'm quite motivated, I'm quite driven..." (CB5_TL)

"What makes me an effective learner is my desire to learn, my enthusiasm for my job, I just love my job. The service we provide is second to none. I want to be a very, very good health information advisor and if there is any information for me to learn I want to be taught it, I don't want to be left behind." (CB1_HIA)

Reflecting on practice was highlighted as another important aspect of effective learning, often related to coaching and to using feedback:

"I think the call reviews and being interested and if you want to improve ... I think if you review what you're doing, keep your skills updated, you know your knowledge and the clinical processes you can be effective then. And I think group discussion is good. And you kind of do that informally, you listen to people 'Have you heard something?' 'Oh, that's interesting' or some you may think 'Oh, no. I don't like how they are going about that' but some sound fantastic, you kind of think that sounds so nice... and I think that is quite good to discuss things amongst yourselves as well..." (CB13_CH)

"... we can listen back to our calls, and reflect doing them, if we weren't happy was has been said... take it out of context and have a look how it could change it, what could be different, how we'd make it more productive." (AB1_NA)

"It's reflection, yeah. I don't see it as being spied upon or being watched. I can sit relaxed; do a call with the coach beside me, because it's not that kind of process at all. It's just about trying to make things go right and... I expect it works well." (AB4_NA)

“... Learning from mistakes, I think we can always learn from mistakes but it's good to actually sit back and reflect on them and see, you know, what happens, why did it happen and what we would have done differently about it. And that happens on every shift, you know, there is always things, not major things that go wrong but there's things that we could do better. And I think within the team leader group we are certainly very open to discuss that and look at how we can improve what we do on the floor.” (CB5_TL)

“I think the coaching is a fantastic, fantastic way of... just reviewing yourself, reflecting on your practice and have, you know, sessions where you can go and listen to calls from people from other centres and everyone has an input into it and they're the best way of learning is to listen to calls and ‘What have you done? What would you've done?’ and work around that, but unfortunately that is sporadic and it is pushed down the list if there's anything else happening.” (CB6_NA)

“... most of your speech is documented, it's on tape, that's how our documentation goes. If you feel yourself a call was good or bad, or you want to review a call you can go and do that if you want, anytime, that's up to you. You can invite your peers to listen to your calls if you want to, you know...” (AB1_NA)

“I think you do have to reflect on your practice regularly, because it's not a job you can do for a limitless time, and you have a look at how you are performing... Is what you are doing changing? Are you not working as effectively? Because you are overtired, you've done too many shifts, your shifts are too long, whatever ...” (AB15_NA)

5.1.7. Managing performance

- Reviewing performance
- Supporting performance
- Attaining service targets

“Being able to insure that the staff are doing the job and being able to do their job, that there is nothing stopping them being able to do that, whether it's operationally, whether they feel that there's problems with their shift, that they can't come to work, whether they are not trained enough to do their role, whether they feel that, you know, that they are not having the training or the facilities to do their role. So that's my responsibility to make sure that they're

comfortable in their role, that they're effective in their role and that they are performing well." (CB5_TL)

Managing performance is an aspect of effectiveness which is particularly focused on by Team Leaders, who are the people responsible for most of its formal aspects. But it is also a generalized concern of frontline staff. It has a focus on attainment of performance targets, many of which have established parameters, for example: number of calls taken in a shift; duration of calls; type of outcomes; etc. There are also qualitative standards that apply to appropriately questioning, listening and recapping to callers. The role of coaches is important in this conception as it is one that bridges support for learning and performance management. There is not always a clear separation between the two aims. Team leaders also listen to calls (sometimes off-line) and give feedback to team members, with the more specific aim of helping their performance.

"... they have calls reviewed once a month, but that is completely different from coaching so that is where the team leader will review the calls..."

RT: Perhaps I don't have this separation clear... I thought call reviews were coaching... or at least an aspect of coaching.

CB19_TL: No... it depends on how it's done, sometimes calls are reviewed and feedback is given maybe by e-mail or by... you know, the feedback is just what you did... that your calls are fine. But that is not coaching...

RT: So who is doing this?

CB19_TL: The team leader. So that is a management role." (CB19_TL)

"As a team leader we have quite a varied and responsible role, and it is the dual role. The first part is an operational role where we are responsible for the running of the service on a day-to-day basis, so what we are doing is ensuring that the service is running smoothly, from calls coming into the call handler to other nurse, referring or completing their call ... Also I have another role which is a managerial role where I have the responsibility for managing nurses and call handlers and health information advisors within my team. What I am doing is I am managing their performance, managing any other aspects, any problem aspects within their career, and that is anything from problems with their roster or rota, family problems... basically any managerial issues that crop up day-to-

day in the management of the staff. So, it is the dual role of operation and management.” (CB15_TL)

“I listen to the team's calls, in fact that's what I was doing this morning, just randomly selecting calls and listening to them and picking up on any points that are good or could be done better and feeding that back to the staff. If for example I pick up on something where I am really not happy with the way a member of staff is progressing, then if I have the time it would be lovely to sit down with them and take them through some calls myself. I don't have that time, I would have to ask for one of the coaching department to spend some time with that member of the staff, work with them on a specific problem with their agreement, needless to say. I have that going with one of my nurses at the moment. And then to continually monitor calls to make sure that everything is okay.” (CB18_TL)

“... you have to meet them at least once a month, and you've got to do an at least two call reviews, that's your set targets to keep your eyes on. It's always better if you can get a bit more in, but some people you could see six times in one month, some people you don't see at all, you know, and there are others that you have to manage completely, every aspect of their performance and there are people who you don't have to manage at all, because there are more performance issues, and I am afraid that has to be maintained, so you really should be focusing on the people who perform well as well, you know, to maintain that, to keep that standard up.” (CB20_TL)

“... one of the biggest dangers with it being a contact centre and nursing, the two are not necessarily compatible at all times. And I... when I have new members of staff I will say, I always tell them ‘Don't worry about your figures’ I am under a lot of pressure to say ‘That call time is too long!’ That is the contact centre mentality coming.

RT: The managers looking for the numbers.

CB18_TL: And it is a numbers game. They don't care whether I care about my staff, whether I am supportive, whether I take calls and I am effective in that, whether I am managing my team beautifully, whether my staff will say ‘Hey, it's _____, hi, nice to see you!’ or ‘It's her again’, they are not interested in that as long as I have ticked the right boxes with numbers and statistics. That is a bad thing. Using information... the feedback comes through the contact centre people saying ‘These numbers are too high’, ‘These numbers are too low’, ‘You go do something about it. Manage this person's effectiveness’. But we're hopefully getting it into a balance.” (CB18_TL)

Coaching and the Team Leaders' listening to calls are both important support activities related to performance management. Supporting performance implies a range of activities that encompass various focuses on checking safety, attaining performance targets, correcting mistakes, developing skills, developing confidence, etc.:

“So very often the call reviews (team leaders) they're almost monitoring to check the safety of their team, that their calls are safe, and that they've got to the standard where they know that their team is safe. But that is not coaching.” (CB19_TL)

“Well, that is what I was talking about before with the coach, that she sits with you, she listens to your calls and the questions that you need to ask to get the exact information, and if you ask all these questions the coach says, ‘Yeah, you did this good’ or ‘No, you didn't do this good’, that kind of thing. So although coaches don't necessarily do training as such, they're more like monitoring that you are doing all that the organisation has set down for you to do. So they don't really do training as such, more monitoring your performance.” (AB11_CH)

“... the coaches or the call handlers who have been here for a while, they'll listen to your calls and show ways to procedures and processes, and make sure you're sticking to the scripting, and if there's anything wrong they will point it out and it's always like very positive, it's not derogatory in anyway, it's always very encouraging, and then that will go back to your team leader who will go over it and... because every single call that you make gets recorded, for the clinical safety... that's a massive source of information in making sure that you continue developing, your calls are still fine...” (AB9_CH)

“You are assessed, continuously assessed, and your calls listened to, monitored, developed and... if there was any issues you would have extra coaching in place, to try and support, you know, these weaknesses.” (AB19_NA)

“... they listen to your calls side by side, or they can listen to them remotely, they can, you know, get a tape of it and listen to it. And it is nice to have someone listen to your calls... and... either tell you that you're doing well, saying you did this bit well, but it's nice to get feedback, and saying maybe we could do this differently, or approach this differently, so we've always got something to work on to improve your call. I think that's the most effective way, because otherwise you can keep going on and on and on, you can get kind of...” (AB4_NA)

“Yes, so they will go through each call and say ... ‘Have you done all of these things during the call that you should do?’ and so, if they are constantly picking up that you are maybe not recapping, then that's the point where you'll have to...

you know, you go and listen to your calls yourself and you say ‘Yeah, I didn't do that’ or ‘If I’d done that again I would’ve done it differently by doing this’ or whatever so...” (AB15_NA)

“Coaches actually listen to your calls, they just randomly pick four or five calls out, listen to your calls and give you feedback, which is usually a positive feedback, you know, and... just to make sure that the processes, that you’re following them all and make sure they run okay.” (CB10_CH)

Attaining service targets is a focus common to all staff, but is a particularly important responsibility of the work of Team Leaders:

“... you've got to manage the team to perform well, to meet their targets. So we've got to be seen to manage them to meet their targets, and point them in the right direction and make sure they've got all the necessary equipment and necessary knowledge and be able to recognize their needs as well because it is a case of for some people not knowing what you don't know, so you’ve got to have that, you've got to be able to see... for other people where there might be a performance need. So, and once you do that, once you recognize and work on it, develop plans for every person I've got in my team, so I do that for everybody. You know, you know your targets, you know your people, and you tend to maintain a standard.” (CB20_TL)

“Lots of things, from their attendance, to their sickness, to the reasons for that; how they perform on the floor, I have to complete call reviews with them, listen to their calls and assess them and grade them; meetings with the staff, sit down and do one-to-one discussions with them; discuss the stats, you know, how we have what is called KPIs within the organisation, key performance indicators and measure that with their performance, how they are performing operationally. Are they meeting these KPIs? Or are they managing what the service needs? If not, why? And also, you know, again to give them the support to come to work. Are they happy to be at work? You know, are they enjoying their job, do they want to be here? That's all part of my role.” (CB5_TL)

“And if you haven’t gathered the information properly, accurately, then you will be told. So we have to... you have to be aware of the fact that someone else will be listening to your calls. It's not done in a Draconian way but it is just to insure that there is always accuracy and consistency in what you do.” (CB11_CH)

“All the team leaders get a management report every Monday, that we can use to assess performance, that will look at the number of calls, how quickly we dealt with the calls, ok, how long was our time down, how long people have... we get that, we also get on an individual basis, like teams how... every month a dashboard telling me my nurses, what percentage of the nurses outcomes of the

nurses were home visits or there were no further actions. Giving their talk time and their off time, that can be used as the basis for coaching, ok, not as 'You took 10 seconds too much on that call, sort it' but it gives you a base to look at her calls, listen to a call and say 'Did you really need to ask that question?' It's not like 'Your calls were too long, sort it', it is used as a guide in order to coach on a target basis, 'How can I improve that person's call time? And they are asking may be too many questions, or they're sitting chatting away about the weather, or having problems navigating the system... you can listen to calls and find out what is really going wrong there, and improve performance from there.' (AB10_TL)

"... the structure of your calls, the time, there's statistics to see how long you are call times are, what your outcomes are, so they'll break it all down into how many ambulances did you send, how many A&E referrals did you make, how many people did you get seen at home, how many people you had seen at the centers, how much self-care advise do you give and so... you would have a once monthly meeting with your team leader, who will look at the statistics and see what your performance is like really, and it's obviously compared month-to-month... then, they will look at the coach's advice as well, feedback..." (AB15_NA)

"Time constraint can be a huge worry, but I tend to put it to the back, I don't allow it to affect my work. I know that they've got their statistics, and with their outcomes, and they measure you through your time, and they measure you by your dispositions, you know, whether it was an ambulance, if it's been a GP visit or otherwise, you know, if it is A&E care, you are measured by this, and I always think to myself that this is call centre ethic, and I put my patients first and I won't allow myself to be dissuaded or... to allow constraints of time to influence that, even when you can get told off for your call times. And I just think, I am dealing with human beings here and with lives, it's not exactly a call centre, you know, and it shouldn't be viewed as such, even though this is a way we can be measured, our performance is measured in this way." (AB19_NA)

5.2. Conceptions of effective information use.

The analysis of the interview data identified eight conceptions of effective information use:

- **Awareness of changes to procedures and of events that affect the service**
 - Changes in procedures
 - External and internal events that affect the service
 - Using institutional communication systems
 - Sharing and discussing information with peers

- **Awareness of information and knowledge sources**
 - Awareness of documental information sources
 - Awareness of peers' specialty knowledge
 - Awareness of new professional knowledge
 - Awareness of training opportunities

- **Sourcing appropriate information for decision making**
 - Probing and questioning the caller
 - Obtaining enough and relevant information
 - Interpreting information
 - Using documental information bases
 - Sourcing information from peers

- **Giving appropriate advice and information to callers**
 - Giving advice and instructions for health care
 - Giving health information
 - Putting information together

- Signposting
- Recapping

- **Controlling information**
 - Using quality assured information
 - Controlling patient records
 - Controlling information sourced from callers
 - Controlling information given to callers
 - Controlling institutional communication

- **Sharing information and knowledge**
 - Sharing information with peers
 - Openness to others

- **Using information to learn**
 - Using documental knowledge sources
 - Accessing peers' specialist knowledge
 - Using feedback

- **Using information systems**
 - Using transaction processing systems (PRM)
 - Using decision support systems (Algorithms)
 - Using knowledge support bases (Knowledge web and Intranet)

These conceptions appeared in the interviews altogether as a relatively secondary focus of awareness, and they can be represented as underlying the conceptions of effectiveness in the job presented in the first section of this chapter:

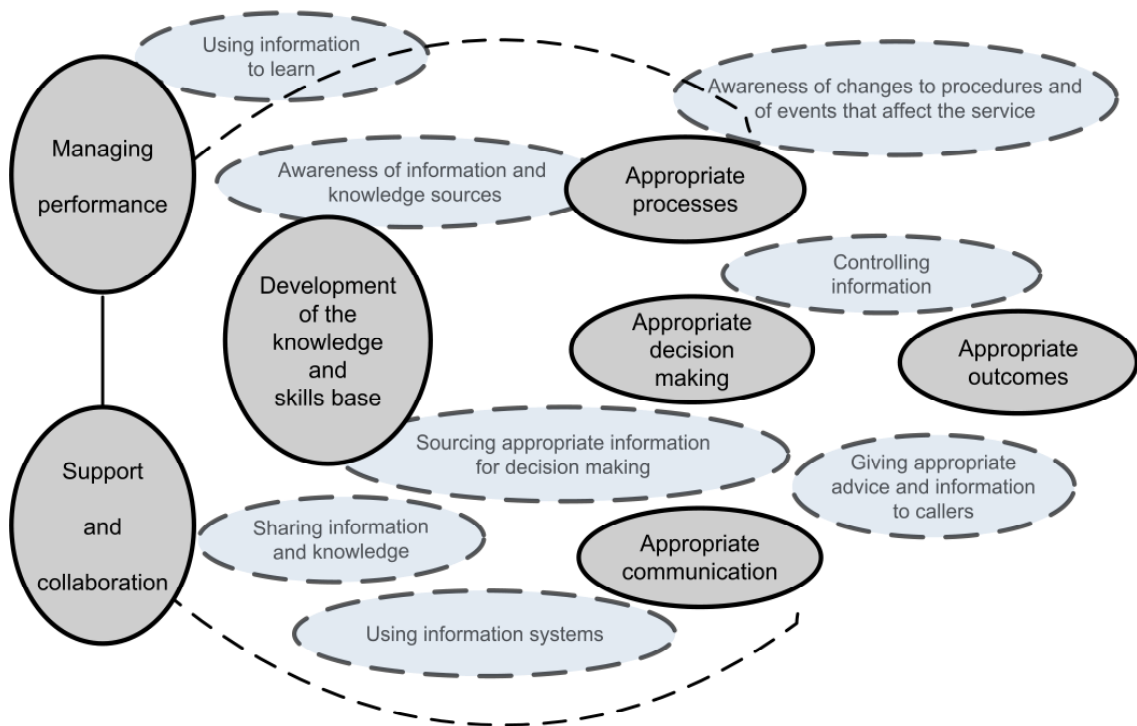


Figure 19. Conceptions of effective information use underlying effectiveness in the job.

As it was mentioned at the start of this chapter, both outcome spaces are interrelated; they overlay or map unto each other. Conceptions of effectiveness in the job represent the top layer of awareness, as frontline staff's foremost concerns are the callers' needs and the appropriate outcomes of the service, and this drives everything else. Being an effective information user is in this sense subsidiary to the main aims of the service (i.e. being an effective call handler or nurse advisor). Activities such as awareness of changes to the processes or gathering the necessary information for decision making are instrumental, they are done for something (those aspects focused mainly in the outcome space of effectiveness). This is not to say that information use and information behaviour are not important to the interviewees, but this is not what they talked of firsthand when asked about: What makes you effective in your job? Another way of visualizing the relationships between conceptions in this outcome space is the following:

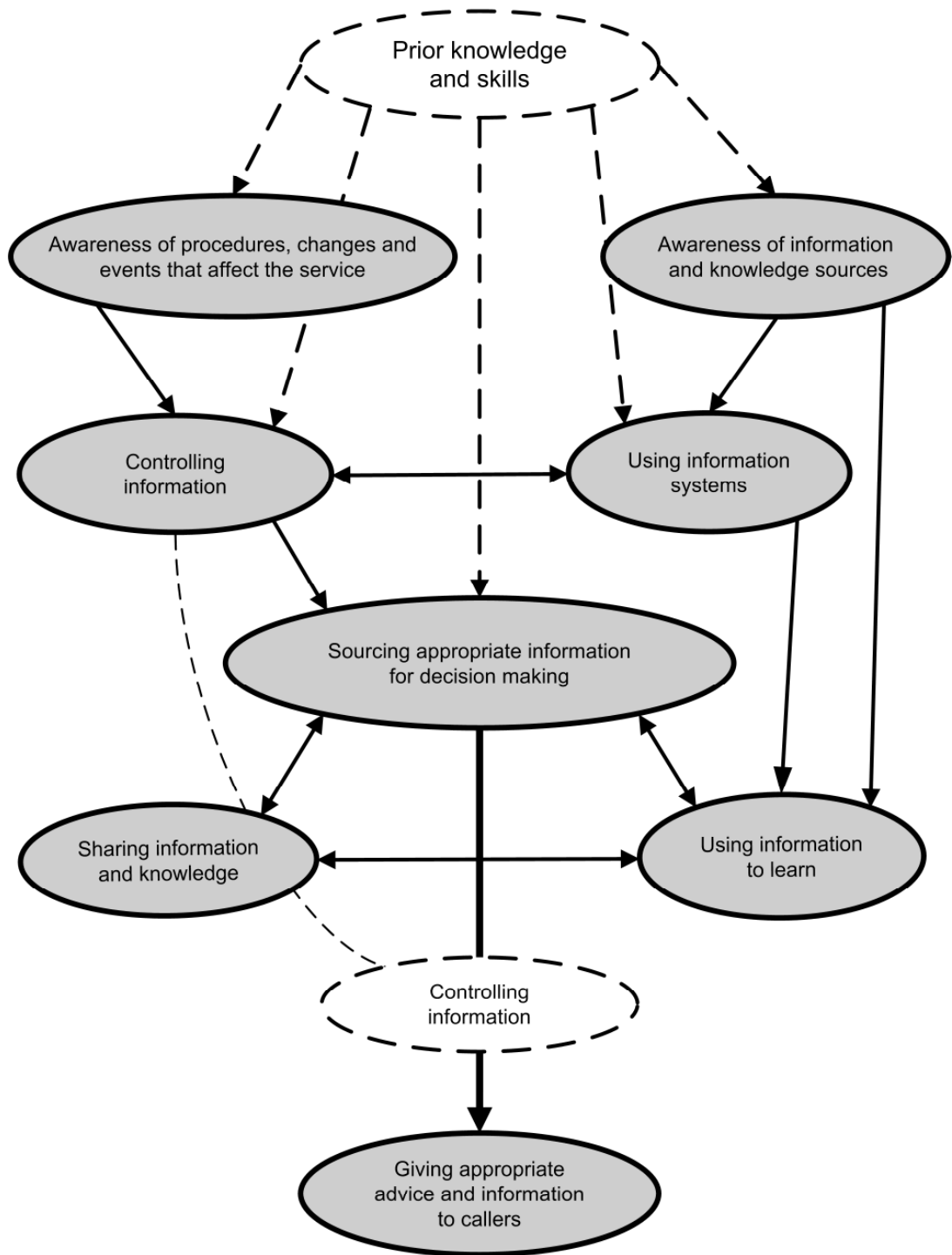


Figure 20. Conceptions of effective information use.

This diagram includes the element of prior knowledge as antecedent to all the conceptions, i.e. all conceptions imply prior awareness, knowledge and skills. The diagram also shows a duplication of the conception of controlling

information just to highlight the fact that this control is exercised at several points in the process, from the initial stage of taking the call and sourcing information from the caller, to the stage of giving out information and advice.

5.2.1. Awareness of changes to procedures and of events that affect the service.

- Changes in procedures
- External and internal events that affect the service
- Using institutional communication systems
- Sharing and discussing information with peers

NHS24 is an organization where there are frequent changes in procedures and where various external events can affect the service. Problems at any of the partners are important and need to be accounted for (e.g. road works restricting access to a hospital or a telephony system down). Even what is on the news may affect the service by causing many people to phone in asking for information on particular illnesses or health concerns (e.g. avian flu). Awareness of these changes and events is an aspect of effective information use that allows considering them and applying this information in the job.

“The clinical processes are constantly updated, again it's just trying to find time to actually read them and that certainly is a good way of keeping us up to date on what is changing. The big plasma screens which are up in the centre they're certainly, at the beginning of the shift it's advised to read those because they'll tell you anything that is important for that particular shift, whether it be an outbreak of something or whether there it be a particular area where the phones are down, and that is certainly a good way of keeping up-to-date. A lot of it is just... a lot of it is just passed on from person to person, you know, one of your colleagues will say 'Oh, did you hear about such and such?' and a lot of it is done through that way as well.” (CB7_NA)

Awareness of changes is related to use of the institutional channels of communication, such as: e-mail; plasma screens on the floor; intranet advisories; shift handovers; etc. It is also related to sharing and discussing information with peers, as they are often an important way of becoming aware and interpreting it.

“... things change all the time, and because things change all the time I, after five years here feel personally overwhelmed, and sometimes I feel I remember things that were to years ago, the question is, ‘Has it changed since I last remember it?’ Well, I will have to find out whether it has changed, because things do that, and again you’re trying... I try to keep on top of all the changes within () because it is a very multitasking job. So, ‘Do I remember? Has it changed? Has it changed again’, because things change, two or three times. Not in an advice or necessarily the management of outcomes, but the other supporting information just keeps changing and you need to go with the changes.” (AB16_NA)

“... you just have to... you sift out the stuff that you really need, you know, you kind of forget about stuff that is not important. And even the stuff that you really need to know I find over the years, I do what I need to do with it but it might change tomorrow, so... you actually get a bit blasé about all the changes after awhile, because they only last five minutes.” (CB20_TL)

“We are constantly given e-mails, again this is on the plasma screens when anything is updated, you know, you get notification either via e-mail or the plasma screens, or via the team leader that this process has changed, you know, ‘Please familiarise yourself with these’ or that another website has been added, so you're constantly updating your knowledge of the information that is there...” (CB2_HIA)

“From there what I do if I am leading the field that day as I have a point of contact in each centre where I would communicate any changes, and you have to be effective from the point of view that if you fail to pass on vital information, then the service could fail at any point, and fail disastrously.” (CB15_TL)

“When we come on shift there is a web-based handover, on your e-mails, some of them you can access to find out about any changes to processes or anything that's current each day, each shift, you have to access that information so, you know, if you have been off for a while, even if it's only a few days really, you should update yourself with that, as soon as you come in really, before you take any calls, because there may be something quite important that's changed.” (AB15_NA)

“...For our role, again, it is very important to keep yourself up to date and clinical processes are constantly added as the service expands and that is important to keep refreshing yourself on the clinical processes...” (CB16_HIA)

“... I only work 12 hours a week and if there is a holiday or something, at times it's like two or three weeks and you haven't been here... a lot of it gets updated through e-mail and you maybe get... new card... so whatever comes out to tell you there's updates, but you can miss a lot of things...there are certain things and they are written down in a piece of paper and this gets handed to you when you come in on a shift, if it is a new update and you sign for it to say that you have received it. You get updates as well on topics like meningitis, child protection, things that are big issues... but there can be minor things that you miss... just for not being here, and not hearing.” (CB4_NA)

In addition to changes in procedures, external and internal events that affect the service are constantly occurring about which information is made available by way of institutional communication that 'pushes' it to the frontline staff or by word of mouth from colleagues:

“Well, at the start of a shift... we've got the plasma screens in terms of the more short term information... there might be a fax broken in an accident and emergency department... a particular board area may have trouble with a contaminated water supply... any, a huge variety of things and all sorts of alerts are going up on the plasma screens.” (CB21_NA)

“... maybe there is being a flood at a centre or some A&E is closed, or something like that, so... that's sort of constant updates there... you don't want to send someone to a place that is closed... be aware of that kind of things.” (AB15_NA)

“Sometimes we read about them before they actually come up on our screens. You know, you came in and you have a new health alert, somebody's got meningitis or you just heard there's TB...” (AB2_NA)

“For the health information job we have to keep quite up-to-date with anything that is on the news. We get a lot of calls related to anything that is happening on the news, or... to do with everything that's on TV...we've had lots of calls about avian flu. We had a helpline, a special helpline set up for that and a lot of people, it is just the panic when they hear something, something that has been in the news.” (AB17_HIA)

The intranet and e-mail are the main institutional communication systems used to push information on to staff. However, there is an impression that these communication channels are often saturated and that makes it difficult to keep awareness:

“... within the organisation there’s various ways of communication... one is e-mail... one is obviously posters, newsletters, various awareness of changes of processes, change of policies and insure that either a member of the front line team know that it is there and can then bringing that out or communicate as convenient or necessary.” (AB10_TL)

“Usually... up in the boards, they’ll tell you about processes, changes in scripting, read process 22 and you will copy it and then read that, it's always in the message board of the day, and this new computer system will have that message of the day in it, you pop in to see the new messages so you can read out whatever they’re saying.” (CB10_CH)

“Within the organisation most of that is by e-mail, the 64,000 e-mails, if you can, again colloquial expression, ‘Sort the wheat from the chaff’. So much of the e-mail is rubbish but some of it is highly pertinent and we will be notified when there is a change in process, it comes to us, we’re told ‘There is a change, you must look it up, because this has changed’. (CB18_TL)

“New information is cascaded mainly through the email system. Any changes to processes, any updates on the operational side come in through e-mail, and that is quite difficult to manage because at any point you can be juggling 100 or 200 emails, and e-mails become almost out of hand...” (CB15_TL)

“It is a very e-mail orientated organisation. You get a lot of e-mail, clinical update e-mails telling you the coming talk topic, e-mails from the knowledge team giving you the details about maybe changes in protocols, that sort of thing... you have a lot of very relevant e-mails related to shift swaps, people trying to get swaps just to get on leave and yeah, sometimes there is too much information coming in from too many different directions, because you get e-mails you are supposed to be up-to-dated with, the plasma screens to read and you’ve got the weekend update and people, things, ‘*News and Views*’, there’s a lot... and sometimes there is a certain amount of repetition and there is also a certain level of risk there’s an important piece of information which either you will not see or you will see but will not absorb because there’s too many other things going on.” (CB21_NA)

“Other methods I use, as I have my staff on weekends only I have a leaflet that I give to them so that I am picking up any organisational changes, for example something in the way of process changes and if I am not able to communicate that face-to-face I will have a leaflet that they can access which is for them only

and I e-mail that to them. And it keeps them informed of any changes that happen Monday to Friday, so that before they go on to carry their role they are aware of any changes.” (CB15_TL)

“... When you first log in to the computer system there also is a health alert. It is quite easy to get overloaded with that information, you're thinking about an awful lot of different things, at an awful lot of different times, after six or seven different messages on the plasma screen it takes about eight to 10 minutes to cycle through them, so you may not even get a chance to read them all before you are actually online again speaking to patients. So yeah, there is a certain amount of information overload and that can happen particularly at the weekends...” (CB21_NA)

“Well, we've got the intranet, we have got the clinical processes and the highlighted tools if there has been changes and we should go into that every so often anyway just to keep yourself aware of what is going on and it will be highlighted if there is a recent change, maybe just a small change or a big change is highlighted to you, plus you usually have meetings about it. We have ‘*News and Views*’ that’s a magazine related to changes and there's another one, it's the... I can't remember the name, but it comes up in your e-mail and you just go into it and it's like a wee journal and it will tell you about any changes, topics of the week, things like that, so there is information that way or you just talk to your neighbor: ‘What do you think about that?’ or ‘That’s a new thing’” (CB13_CH)

Sharing information with peers is another important way of keeping awareness of changes and events. This also involves discussing and interpreting the information:

“Because we are such a big organisation any changes... for example... if the way we deal with chest pain calls changes we revert back to our teams and I am responsible for the issue that everyone in my team has got that learning, and that wouldn't be through e-mail, that would be through a face-to-face, where the guys sign to say they've had the training, the update. Other operational changes can be by word of mouth, or through meetings and things like that.” (CB15_TL)

“A lot of times... in this particular place, I happen to overhear a conversation with my colleagues or peers, ‘What’s that?’ and that is how I get some of the information which is certainly not ideal. I don't feel that information is disseminated very well here. I don't feel that what these people here know, and what we know, are necessarily the same thing. And it is not about them trying to protect us, or keep it from us, it's just that the information doesn't get passed on,

there's not in my opinion, there is not a proper forum to update us on changes that are going on within the organisation.” (CB6_NA)

“What we do as team leaders is we have a dial in, so everybody is on the telephone and we have a communication, we have a leveling session if you like, where we have a set format for discussing what information is required for that day, for example, how many staff members are on, is there any sickness, is there any organisational training that we have to factor in, is there any particular problems with certain GP practices or with any of the technological aspects that we deal with... so, what we are doing is we're sitting down and having a dialogue where everyone is informed.” (CB15_TL)

“... maybe someone who was on the previous day, on shift the previous day, who was there when the helpline was set up maybe can stay to have a quick just five minute chat to talk about what happened yesterday and you are given time to take a look at the information that has been prepared about the health alert, so that you are not going on the phones blind, so to speak, some people will come on calling about the special helpline and you don't know anything about it, so you're kept informed by both the electronic communication, and the plasma screens, and your colleagues, and your team leaders, so there should never be a time when anything is lost.” (CB2_HIA)

“... in our own centre every day when we start our shift we have a handover with the team leader from the previous shift, gives all the different team leaders a handover and an update on what has happened on the shift, and any kind of special plans for our shift.” (CB15_TL)

5.2.2. Awareness of information and knowledge sources

- Awareness of documental information sources
- Awareness of peers' specialist knowledge
- Awareness of new professional knowledge
- Awareness of training opportunities

Awareness of relevant information and knowledge is fundamental to being able to use it and is a central aspect of developing the knowledge base. This conception of effective information use involves awareness of the existence and location of documental knowledge as well as specialist knowledge held

by people in the organization that can be used to develop the knowledge base on a more consistent basis, for example awareness of developments in professional knowledge (particularly nursing) and training opportunities. It is different to the awareness of changes and events in that those are fast changing, newsy bits of information that affect the service on a daily basis from an operational point of view.

Awareness of documental information sources mainly involves knowing what information is available and where the information is. This involves knowing about sources accessible through information systems such as the intranet, the Knowledge Web, and the e-library, as well as paper-based books and journals:

“I think being aware of where to find that information, where to access the information, if you're not clear, if you're not sure about it I think that's probably where we fall down a lot, people are unaware of actually where to find information, where to go to access the information, but that is up to the line managers to make that information available as well.” (CB5_TL)

“You can have all the information stored away certainly. But if you can't find it, then the information is no use to anybody, that doesn't matter if... I mean, it's no difference if... an IT intensive environment like here or a purely paper-based environment where things are on files. You've got to have... first of all you have to know where the information is...” (AB10_TL)

“... the knowledge Web that we've got is very good. You can usually find just about everything you want in that. And sometimes it just... again, because we are new, it does take a wee while to find your way about it, sometimes it's just a case of remembering where you have seen the information, but usually most information can be found quickly and the information is down there clear and that makes it quite easy to pass on to the patient.” (CB7_NA)

“... and they have got the library which is quite a good one, the library's got quite a lot of information, quite a few good books and we are getting the idea of some things just for a wee browse, a lot of leaflets and things like that, you can always read up things like that.” (CB14_CH)

“... if you've got a caller that's wanting to identify a rash or something like that, or a particular poison or something, we've got things like *ToxBase* that we can go into, we've got Knowledge Web, we've got *Patient Direct*, we've got lots of different ways where we can access further information, should we, you know, should we require that.” (AB19_NA)

“It's not necessarily better information, but it may be that one site has quite a lot of medical terminology, or jargon, and the other site will be just basically laymen's terms that everybody can understand or judging on how I feel the level that the caller or the user could deal with... then that may determine from which site the information that we are sending out may come from.” (CB2_HIA)

“For things that you are looking more specific you've got your *ToxBase*, you've got your doctor thing, you know, *NHS Direct*... You've also got a number of things that you can access for more information if you're looking for specifics when it comes to pregnancy, what drugs you can take safely in pregnancy, there is a site that you can access for that too, to give pregnant women advise as to what medication are... you know things like that.” (AB19_NA)

“... a lot of the health information advisor websites are fantastic for a lot of diseases so, you know, I am no expert, I know a little bit about a lot of things and that gives me the information, the confidence to back up what I am saying. So I use a lot of websites, a lot of quality assured websites that we've got and part of that is that the information on this websites is easy to read, easy to understand and in a language that you can communicate to the patients. So I find the websites very helpful.” (CB6_NA)

Awareness of peers' specialist knowledge is another very important aspect of the information landscape as they often provide a more immediate means of access than going through documental databases. Also, peers provide knowledge and experience which is richer than a documental information source:

“And also speaking to nurse advisors who have been here for a long time, because they will then advise you ‘There's this site you can use or there's that site' and then just marking that down so that you will use it as a future reference, that certainly does help.” (CB7_NA)

“I've usually got basic knowledge of everything, usually, there's obviously things I probably will be using more, so I use the midwives. Being here you tend to sort of recognize faces, you can ask questions and rely on...” (AB1_NA)

“Yeah, and we use each other's knowledge, you know. As I say, renal is very specialized, midwifery is very specialized, and you get to know your colleagues and who's come from what backgrounds, you can have a discussion... you know, tell me a little bit more about... and that can help your decision making as you go through a call.” (AB3_NA)

“We’ve got people who have got some... specialist knowledge if you like, we’ve got those who have come in from nursing and midwifery, so you can approach your colleague and you know that they maybe have a mental health background, or they’ve got a midwifery background. So you can pull your knowledge that way...” (AB19_NA)

“If you don't find what you're looking for in your websites, then there are plenty of leaflets, but then we could also get the information from people that perhaps are like... colleagues that are working with us, who have maybe been doing it a lot longer than we have...” (AB18_HIA)

“... if there is a midwife sitting right next to me I would have to know she's a midwife and if there is a midwifery question I may just ask her advice very briefly.” (CB21_NA)

“One of the things I've not done is midwifery. So, that's an area where if I get a call through and there is so little bit of ‘Ohhh’, ‘This could be... it might not be’, so quite often one of the things I'm bound to do is look around for a midwife, right?” (CB3_NA)

“You can consult a call handler who has been there longer than you, for things where the protocols or the processes do not necessarily solve or cover everything.” (AB9_CH)

““Because of my background in headache, people do come and ask me a lot of questions about headache calls if there's anything that they are confused about or anything that they are not too sure of the significance of...” (CB21_NA)

“Obviously, your peers, everyone here's got their, I think, their own specialty where they come from. I was a (Burns ICU) sister. The girl sitting next to me was a community nurse, there are midwives in situ and learning for me, who's been here less than a year I rely on my peers roundabout.” (AB1_NA)

“... my learning anyway, is just done by myself... using the knowledge of other people in different specialist areas, other colleagues that I work with or using the library, the e-library, or the library, books and databases...” (AB12_NA)

Awareness of new professional knowledge is particularly important for the continuous development of the nursing staff, as there is constant publication of developments in all aspects of medicine, nursing and health care that are relevant to their jobs. Awareness comes both from the organization, which often offers talks by GPs or other training sessions, and from personal scanning and contact with colleagues:

"Surgical things... maybe a couple of times a year I go back into that to see if there's anything new, or... my husband will come and say things have changed in whatever field and I go back and look at that. Or my colleagues will tell me, you know, 'Things have changed', or... 'Have you seen these authors, there's a good course on here and it doesn't take long to do.'" (AB2_NA)

"I mean, outside here, I certainly get the Nursing Times on a weekly basis, and that certainly will let you know of new things that are coming out onto the floor." (CB7_NA)

"Using journals, keeping up-to-date with journals, using e-learning, BMJ learning modules on clinical issues. I study... I just finished a neurolinguistic programming course to give me the skills I need for coaching... so I've been into that and I'm starting a coaching course in September, so that is really how I keep up-to-date with information and for my skills" (CB19_TL)

"GPs come here and they do personal development talks, we do in-house training sessions, we have updates in meningitis and I've been to one in chest pain as well, minor ailments, vomit and diarrhoea, GPs are coming in to discuss those. Also, self learning, so it's keeping up-to-date with current research in Midwives Magazine which comes out of the RCN and our union once a month and also the Nursing Times and Nursing Standard has up-to-date research that's going on within areas that you are working in. Reading on the internet, reading on the quality assured websites, access to Athens, you know the learning package for the British Medical Journal I use a lot, for reading and updating..." (CB9_NA)

"One is like, for instance, Nursing Standard, that gives you a kind of general overview of current trends and things, and then form there... I'm guided very much by what's interesting me or what the job's related to, so if for instance it's white papers, I'll go into the Scottish Executive web site and have a look to see what they are saying. And for directly, a lot of it as you say it's kind of what's current, what's new, and following that up in the most appropriate way, and it often means two or three visits to various places to get what you want, or visit down to the library and just have a flick through some of their journals you maybe don't look at so often. My husband is a nurse as well, so he gets different journals to me, so I can have a kind of look through his ones as well. So it's kind of just nibbling in it to see what's new, and it's important to keep current, not just for here, you know, because time in the future I may want to go back to the acute side, so it's important to keep those skills and knowledge up to date. I might go back to renal yet." (AB3_NA)

Awareness of training opportunities is an important aspect of developing the knowledge base. Some training activities are compulsory, but others are just available affordances that staff take up according to their own personal interest, including CPD. NHS Scotland is a large organization, so not all training opportunities are pushed to people, but rather are discovered. An important aspect of pursuing these opportunities is also awareness of the means of access, including requesting organizational support (e.g. bursaries):

“There is the e-learning part of... e-learning websites where... there is the opportunity to do an SVQ (Scottish Vocational Qualification) as a call centre professional, and there is all the things you can do in terms of progress within the organisation such as studying and learning to be a coach... that's what I am aware of, anyway... I know there is also... you can put in for bursaries to do other things as well ...” (AB9_CH)

“... we also have a variety of organized teaching evenings. Initially when we started we used to have a GP, what they call GP coaching sessions, and one of the GPs would come in and take a topic, say for example chest pain, abdominal pain, that kind of thing. So that would be, you know, that would be one way. So, reading, GP coaching sessions, we also have team leader sessions, they all arrange a day they call a team development day. There's actually one tonight, there's a lecture at the Southern General tonight on chest pain. There's a whole range if you're interested, there's a list of monthly meetings for the junior doctors and we are allowed to go a long to them. There's also a variety of courses that you can keep up with in literally just about every university and college that you can think of at the moment, so it's a variety of ways really.” (CB3_NA)

“We've got... there's lots of... continual practice development sessions and CPDs...there would be various diseases, disease processes that come up the previous one was actually a meningitis session... lots of different things. We also get the Nursing Standard and there is various e-mails and e-learning systems as well... that you can go in to update your knowledge.” (AB15_NA)

“I do *Nursing Standard* and I do log online and added tuition. I'm hoping to work toward my masters at RGU, so I'm kept up to date with what's going on that's kind of getting back into academic writing and things, so it's actively looking for courses that relate to the job that I'm doing, and that's been the biggest way that I keep up to date, and obviously here we get so much information... which is excellent, you can kind of look into it or it will put you in the right direction, this paper's come out or the Executive has got the newsletter that you can tap into and if there's something there of particular interest then

you can go online and have a quick look at it. So, I use various options, you know, both journals on line, peers outwith here to keep up to date with what's going on like the acute sector, and also formal CPD.” (AB3_NA)

“My personal preference with this is I usually use the BMJ. The BMJ has a learning section, and you can do modules... each module is written by a specialist to that particular area. The one I was doing on Monday was an update on tuberculosis, for example. And they're fantastic modules, they're small, easy to digest, probably take on average 30 to 40 minutes... it's a fantastic way... and there's a wee test at the end of it, so you do it all and you do your test and then I've got it all stored on the computer so it's accessible for anyone who needs to see I've updated, and I probably do about three of those a month. I really enjoy them, I find them really interesting, easy to learn and that would be my principal way of updating myself. Of course, at the moment I've got a couple of journals sitting on my desk, I like to flick through those as well...” (CB6_NA)

5.2.3. Sourcing appropriate information for decision making.

- Probing and questioning the caller
- Obtaining enough and relevant information
- Interpreting information
- Using documental information bases
- Sourcing information from peers

This conception of effective information use is centered on the process of obtaining information for making decisions. The most basic stage in the provision of the service is obtaining from the caller relevant and sufficient information to establish: who they are; where they are; what their main reason for calling is; what their main symptoms are; what their situation is; and arrive at an outcome which may be a decision for care or just giving them health-related information. The information which is required for decisions will vary according to the type of call and the stage the call is at. For example, a call handler will ask for some basic demographic information and the call reason, while the nurse advisor would look for additional description of symptoms to do a clinical assessment. Sourcing this

information is embedded in the process of communication with the caller. Therefore, this conception relates to appropriate communication and skills such as listening and focusing. Team Leaders use other sources of information (e.g. statistics of service) in making decisions related to staff management and support.

Probing and questioning implies making sure that all key information is obtained and that this is done in the shortest time possible. Doing this implies following procedures and fixed lines of questioning. It also implies focusing on the most central needs of patients. But doing this requires abilities and skills and is often not straightforward.

“You depend on the patients... Absolutely, for them telling you what is happening... if they don't tell you, if they don't give you correct information, then you can't get the correct help to the person.” (AB9_CH)

“... you have to find out what their main... why did they pick up the telephone to phone us today?, what caused them to do that?, and that is the main part of the job, is getting that information, exactly why did they pick up the phone and phoned us today, so that we've got an exact and accurate reflection of what their concerns are, not what their whole medical history is.” (CB11_CH)

“... ‘Right, so you’re calling about this spot. How long have you had the spot? What made you call about that today if you’ve had it for three months? What’s different today’ ‘Well, because I have been worrying about it and my husband died recently’ and then it all comes pouring out and then, end with your open questioning, ‘So, how long have you been feeling like this?’ ‘Has this changed?’ ‘What made you call today?’ so, open questions are a great way of exchanging information with the patients.” (CB6_NA)

“... as a call handler you have to have get very well practiced at getting the information from the person as quickly as possible. I found at first... hard at first because I felt I was being rude, and I was remembering, you know, we have to get the help as quickly as possible and sometimes you have to get people... it's not rude to get somebody help, basically.” (AB9_CH)

“... we do the sort of gathering of information at the beginning... to as complete a level as I feel I need to have. And then, once I’ve gathered all the information I repeat it back to them so that they are aware of whether what I've gathered from them is correct, and ‘Is there anything that I missed?’ (AB16_NA)

“... you have to question around, what they are actually looking for, what outcome they are hoping for, why they’ve called us, and then, you know, you can look for the information you need.” (AB13_HIA)

“...the complexity, whether it's a single point of question that they have or whether they come on with multi-information, and it's trying to locate what to focus down on, what the problem is at that point in time that they need a response to, or an answer to, while still retaining all the information that they’ve also given, because that might affect your decision as well.” (AB16_NA)

Interpreting information given by the callers is a key sense making activity. Obtaining relevant information to create a picture of the caller’s situation that is useful in helping them is not just a matter of ‘receiving’ information from them. Information is often ambiguous, partial or contradictory, and a central aspect is the identification of what the main problem is about so that staff can act on it quickly and effectively.

“... You have to be very attuned to the patient’s tone of voice, what they are telling you, how are they telling you and... it is a process of listening, it's hearing, it's not just... letting them wax over you and ticking boxes. You have to try and put yourself into the patient's position. And then, once you’ve listened hopefully that will give you a clear idea of what is happening and put together with the patient history and the resources available hopefully you will be able to come up with the most appropriate outcome.” (CB21_NA)

“... You get a 15 year old coming on the phone who wants to know where they can get the morning after pill, for example, you are going to probe that a wee bit more, because that is... that could be a child protection issue, that could be sexual abuse, that could be any number of things, so you are not just going to... you know there is something more to that. So it’s calls like that when you know there’s... what they have asked you, there is more to that, you need to try...” (CB2_HIA)

“... basically what you're having to do is you're having to listen to what they are telling you is happening, then you have to get a picture of what is going on. So, for me it is a building of pictures. ‘Tell me what their colour’s like’, you know, because you can base a lot on what their colour is like. ‘Tell me what their breathing is like’, Is it noisy? Is it quiet? Is it fast? Is it slow? ...” (CB3_NA)

“I’ll get the mum to say the child, right, ‘Can you ask them to look up to the ceiling?’ and then ‘Can you ask them to look down to the floor touching their chin into their chest?’, and ‘Can you just make sure they can do that?’ and they’ll come back on and say, ‘Yeah, they can do that no problem’. ‘Are they

watching TV?', 'Yeah, they are watching TV'. OK, they are not photophobic. So you... It's things like that that you ask them rather than, you know, 'Are they annoyed with the light?'" (CB3_NA)

"You've really got to probe and find out that you are getting the picture that the patient is trying to present, because some are not communicators and some even expect you, 'You're a nurse, you should know what I'm calling about', you know, so you're trying then to gain a picture from someone who doesn't give you a good picture" (AB19_NA)

"... you begin to get a feel when they come on just how the child... you know, if I hear a child laughing in the background, making a lot of noise in the background, I think she is not that ill. Whereas if they're silent in the background, and they are in the same room as the child, 'Mmmm...', so you do a much more in-depth..." (CB3_NA)

Obtaining enough and relevant information is an aim of the structured conversation between the caller and the member of the frontline staff that is handling the call. Some aspects of this are well defined, for example in the case of call handlers. But for nurses to come to a point where they feel they have enough information this is less clearly cut out, and comes down to a process of sense making where a stage is achieved that the information gap is felt to be bridged. Nurses often used the word 'picture' in describing how they represent to themselves the caller's situation and needs and assessing that enough information has been obtained:

"RT: How do you know when you have enough information from the patient to come to a decision?

CB6_NA: That is quite difficult to answer that... because... when I've... I've asked all the questions I need to ask so I have an idea in my mind of... 'This person's got chest pain, they need an ambulance' 'This person has possibly urinary infection' it is urgent but they are not bleeding, these things can wait till the next day ... when the questions have all been answered I'm gonna have a picture in my head of what is going on with the patients and... because I'm not a doctor if there's no picture of what's going and I have no idea, then the people are going to see the doctor, because it would be unsafe to leave them when you have no idea what is happening with them. That's quite difficult to answer... when I have a picture of what I think is going on, I think." (CB6_NA)

“I am trying to find out exactly what is going on without having to... you know, a whole lot of information they are giving to us is totally irrelevant to what the problem is, so part of the job is actually guiding the callers in the direction that you want them to go and to get the exact and accurate information that you require, I mean, it's no use listening to their whole life story, I mean some people want to give you that over the phone.” (CB11_CH)

“... not everybody's got a medical background, not everybody's good at expressing themselves, and if that is the case it makes it very, very difficult to get information and its a case sometimes that we just don't get enough information and we do just have to say to them 'I'm going to organise for the doctor to see you' because sometimes that is the only thing you can do.” (CB7_NA)

“...for instance, if someone calls up they may not call up and say, 'My husband has breathing difficulties just now and he has chest pain'. You know, the ones we should be worried about the most. But then, you know, as you further question it, what they first call up about me not be what actually makes a serious and urgent call. They may call up and say, 'Oh, he's very hot and very sweaty', but if you probed further you may find he is also having trouble breathing, therefore, that would become a serious and urgent call, whereas it may not have been in the first place, but it's your job to probe further and gather information about what state the patient is at the moment in time... and therefore from that point put them through to the appropriate nurse.” (AB7_CH)

“My experience is that I'd probably ask more than I need to know, which is one of the changes that over these five years. The organisation wants to have appropriate questioning, and don't go into anything else that you don't need to go into, but you have to know what you don't need to go into, you have to ask first before you think 'I really don't need that information, so I don't have to ask any more', so my call control is... better than it ever has been, but I routinely ask for more information than others possibly expect I need to know, that is because I feel I need to acquire information to a level that I think, that I personally feel, I am clinically able to be reassured about the decision I am going to make with that person” (AB16_NA)

Using documental information from information systems to support decision making is another important aspect in arriving to appropriate decision making. Health information advisors will use this as their main tool for providing service to callers. Nurse advisors will use them as additional information sources, for example about: location of places of care or pharmacies; admission procedures; illnesses, drugs and treatments; etc.

Team Leaders make use of statistical information about the service from decision support systems.

“So what we have is a system called the Dashboard, and what that will do is it will tell us is what is on, staff members, talk time, rap time, how many of their calls have gone to a certain place, for example accident and emergency, primary carer centres, how many people have been seen at home. But these statistics on their own as a method of information are practically useless, because they have to be combined and used effectively with the () work and that means through listening to calls, reviewing calls and only then would I use that information with a staff member. Because what I need to know is... a statistic might tell me that you have very good talk time but if I listened to that call you may not be using that time effectively. So it's about using the information that we have but combining it so it's an effective tool for learning.” (CB15_TL)

“If I have questions around that either in what I've been told or whether it's something beyond that I can't think of an answer around that or a solution, or there is a query, a gap in my knowledge, that's when I use... I will speak to a colleague next to me if they're not on a call, or I'll ask the team leader for additional support or information, or I will use some of the systems that are there for patient information, you know, websites that can give additional information to support that.” (AB16_NA)

Sourcing information from peers for decision making is something that all staff tend to do for a variety of reasons. Other people's knowledge can often be effectively tapped for specific consultation and support on decision making, while consulting documental resources would be more complicated and even insufficient, considering the short times that staff usually have to arrive at outcomes:

“If at that point you think: I still don't know and I don't know if that disease, for example, is impacting on the symptoms that they've given me, I'll ask one of the team leaders, or a colleague, you know, 'Have you heard of this?', 'This is what this person's telling me, and I'm not very sure, have you got any input that you can add to that?'. And quite often that will give you enough, between the person and team leader or peer you'll get enough information to make that decision...” (AB3_NA)

“Yeah, and we use each other's knowledge, you know. As I say, renal is very specialized, midwifery is very specialized, and you get to know your colleagues and who's come from what backgrounds, you can have a discussion... you

know, tell me a little bit more about... and that can help your decision making as you go through a call.” (AB3_NA)

“Yeah, if you’re next door to somebody, and you’ve got something you’re not quite sure of, you always converse with them or you ask the team leaders, you put your hand up and say if there’s something you’re not quite sure of to get advice.” (AB4_NA)

“... maybe I'm using the routing tool and it's telling me I need to put him down the consult line which is the lowest one, but something that I have learnt in the past from a nurse or a team leader has made me think 'No, that's more urgent' then it prompts me to check with the team leader, who would then say 'Oh no, we'll get you someone right away for that'... so I think it's important that you should interact.” (CB8_CH)

“... nurses raise their hands for various different reasons and it is also very dependent on what stage the nurse is at. Very often the nurse is very new, they will put their hand up very often, it will be more a reassurance of the decision they have come to and they kind of talk it through with you, 'Do you agree with what I'm doing?'” (CB15_TL)

5.2.4. Giving appropriate advice and information to callers.

- Giving advice and instructions for health care
- Giving health information
- Putting information together
- Signposting
- Recapping

An important aspect of most outcomes is giving information to callers. This conception of effective information use focuses on providing callers with adequate information in appropriate ways. This can mean different things according to the stage a call is at. It can be signposting by the call handler, clinical care advice resulting from triage, or health information provided in response to a query. In the case of Health Information Advisors this is the main outcome of their calls.

Giving advice and instructions for self-care is often the outcome of the nursing role. This is important in that in these cases the nurse will probably have more information to give out than if she's just arranging an appointment with a partner or sending an ambulance. However, it is also important to give appropriate directions and instructions to people who are going to be seen outside their own homes.

"If you cannot impart that information to the patient, then... that's half your job not done. You've got to be able to tell them, specially when it's a young mum, and they've got nobody to turn to apart from us, you've got to be able to tell them that they're doing everything correct or, if their toddler's got a temperature and they need to give them Calpol, you need to be able to tell them how much, and when, and you need to be sure that they've heard and understood."
(AB2_NA)

"... I would kind of meter who I was talking to, if it was some young girl with a new baby you want to keep it... you know, if her knowledge seems really basic from the initial sort of consultation, I would keep it very basic. The same information would be given, but I would watch the language that I use, how it is coming across, you know, simple, simplify, whereas if somebody was very well educated you'd pick that up with their communication first of all, what they were saying, the words they would use, the context you would sense it, you could... same information but you would use... the proper names for things, shall we say, instead of using colloquial terms you could use proper and I mean, physiology, you could... same information, just in a different context, different wording..." (AB1_NA)

"The advice and information I will then provide... if it's within and out of hours period, which is the busy period, if they are going to be seen we don't tend to get too involved in giving advice and information because that is potentially going to be given from the professional they are going to go and see, but if they are not going to see anybody that's when I give them more information"
(AB16_NA)

"... if you're giving somebody self-care advise, what you want them to do, I usually... if it's going to be complex, I usually ask them to get paper and a pen and I'd probably only give them three points of information maximum to write down, rather than a whole list of different things and possibly repeat it... just to reinforce that they understand what it is I'm asking them to do. So, it really depends on what kind of information you give. (AB15_NA)

"Self-care yes... I would give... if there is a lot of information to be given, for instance if it is about a child who's had a head injury, you know, they've fallen, and you are giving them monitoring advice, sometimes I ask them to write it

down because there's a lot of information... or they will... if it's only a few little bits of information they can then remember, I will ask them if they are satisfied with that information, or is there anything that they want to ask.” (AB16_NA)

“I list to them, so ‘If this, this or this happens, do this’ ‘If this, this or this happens, call back’ ‘If this, this or this happens dial an ambulance’ So I will leave them with very specific instructions. I don't leave that open-ended, I leave it specific to why they are calling, and that helps me wrap the call as well, that leaves me feeling satisfied, feeling that I have imparted all the information I can to them, and they're left knowing that if this, this or this happens this is where they need to go with that.” (CB6_NA)

The outcome of health information advisors role consists mainly of giving information to callers. This involves selecting appropriate information and sometimes avoiding giving some information, for example on undiagnosed illnesses. It is considered inappropriate to give caller's information over the phone on matters that should be seen by a GP, for example cancer symptoms. In addition to giving callers information directly, HIAs can also signpost callers to online information sources or send them leaflets over the mail.

“With things like cancer, if someone phones up and says, ‘Can you give me some information on breast cancer?’ you will always ask them, ‘Can I ask you why you want that information?’, ‘What kind of information are you looking for?’, ‘What do you need the information for?’ ‘Can you tell me a little bit more fully about the kind of information you're looking for?’ And then they will usually let you know that it's ‘I have a lump and I am a bit worried.’ We won't encourage them by giving them information. We'll say, ‘If you have a lump, go see your GP, get it examined. If we give you information you're going to worry yourself sick, there is no point in doing that. Go see your GP.’” (AB20_HIA)

“... you may not necessarily give out the same information to somebody who lives in the middle of a big city as somebody who lives somewhere up the country and invite someone to maybe think about a self help group, who lives in the middle of nowhere which you would if it was somebody who lives in the big city.” (CB2_HIA)

“... you cannot presume that because you understand the information you've given your service user at the other end of the phone is going to be equally as... just equally... they get the information, they may not understand... so, to sort of

stop and say like is there any part that you want me to go over again? Do you understand what I've told you? The information I've told you?" (CB2_HIA)

"... some of the calls you have to use your own judgment depending, you know, if it is maybe not such a good diagnosis they've had, use your own judgment as to how much information you would give the caller ... 'How much information do you know yourself?' or 'How much information has their consultant or the doctor provided you with?'. If they say well, you know, 'All I know is I have been diagnosed with something' you would then suggest, well, you know, give them the basic information, whatever the basic information may be, but advise them to get back to the consultant or the GP maybe to get a bigger picture..." (CB16_HIA)

Putting information together is part of effective information use, as information is collected from variety of sources. The information has to be assessed in terms of relevancy and quantity (the problem of quality is discounted to a large extent as all information sources used by NHS24 staff are screened and approved by the Knowledge Team):

"... often with a query, you might find snippets, snippets in one website, some bits in another website, or they might have two or three different questions relating to the same type of query... you might find the answer, or part of an answer, in one website and part of an answer in another. You have to communicate, you're not reading verbatim the information, you have to communicate... in another way, obviously, taking all these different elements..." (AB14_HIA)

"I really want to be able to give people the correct information and pulling their information from the people and from the websites and putting it together... is very important, that is the biggest part of the job, I think." (AB18_HIA)

"... we do what is easiest for the caller to take in rather than give them too medical information, you know, we would source that from different websites or what meets the caller's needs basically." (CB17_HIA)

Signposting to other sources of information is another aspect of providing services to callers. Sometimes the inquiries are not about specific pieces of information that are in a leaflet or a particular website. Examples of other needs are getting in touch with social services or other NHS partners:

"And it is effective because if you are signposting people... towards the social work department, towards... a helpline or support group, the caller is getting what they are looking for after the call. They are seeking assistance; we are telling them how to go about accessing that assistance. That's the long and short of it." (AB20_HIA)

"... we might not be able to find the answer they are looking for because it is quite a specific query that they've given us, but what we may do is more signposting. We might make an assumption that the Multiple Sclerosis Trust would have an answer, so we might give them that number for a more specialised support group or organization." (AB14_HIA)

"We can also signpost them to, if they phone and they are looking for information say on diabetes, they may have been diagnosed with type 1 diabetes and they want some dietary advice, we can offer them some general health information, we can put them in the direction of our dietician here, and what we tend to do as well as that is give them the telephone number for Diabetes UK, who are the experts in that field..." (CB1_HIA)

Recapping is an important aspect of giving information to callers, especially for the nurses as they need to make sure that the caller has understood all indications.

"I want to make sure that what I am giving them is clear and thorough information as I can, I want to make sure that they thoroughly understand, and if that means repeating it two or three times, then that means repeating it two or three times, getting them, the patient to tell you back what exactly you said, that certainly helps, that way at least you know that the patient fully understands." (CB7_NA)

"... we'll recap so that they know the information that they... they know the symptoms, I take on board the symptoms that they've given me, I'll recap and read the information that they've given me, just a quick summary, so they're aware of it, make sure they're happy with it." (AB1_NA)

"Once you've come to a conclusion you then recap with the patient to ensure that you both... you've understood what the patient is saying and that the patient agrees with your assessment of what's happening with them. And once that's been done you can then give your advice as to whether they are to see a GP now, or they need a home visit, or the out of hours doctors, or whether they go to a pharmacy." (CB21_NA)

“... often times I will repeat back and say to them, you know, ‘Did I understand you correctly?’, ‘Did you say that’, and finally, at the end of the call you kind of recap with them that you have got the complete picture, you know... of the issues or the concerns that they have.” (AB19_NA)

5.2.5. Controlling information.

- Using quality assured information
- Controlling patient information
- Controlling information sourced from callers
- Controlling information given to callers
- Controlling information overload

Information is controlled in several ways at NHS24:

- One aspect is quality of information and in this regard frontline staff are limited to using information sources which have been approved by the organization and considered safe and appropriate. This relates to clinical governance and quality of information. For the most part information sources are screened and approved upstream by the Knowledge Team at NHS 24 or by NHS Education Scotland, who act as gate keepers.
- Another aspect is controlling the flow and the focus of the information sourced from callers. Information is controlled in the process of the call by steering the conversation towards obtaining the required information in a prescribed timeframe, leaving out irrelevant items. This relates to appropriate process and communication.
- Also information given out to patients is controlled in its amount (so as not to overload them) and in the specific elements provided. For example, HIAs will not give out information on undiagnosed diseases when there is a concern that the caller may have that disease and it is instead considered advisable that they should visit a GP.

- Another aspect of controlling information relates to the handling of patient information and information records within the service. This is again guided by procedures and guidelines and has to do with Information Governance, which covers aspects such as confidentiality of patient information.
- Controlling information is also related to institutional communication. There is the perception of an excessive use of email which results in information overload and creates difficulties sorting out the relevant messages.

Controlling quality of information used is basically taken care of by NES and the Knowledge Team at NHS24, who screen websites and other information sources for quality of content:

“... obviously, being NHS we could... information we give out, it’s supposed to be documentary backed up by at least three pieces of research before we give it out, you know, it can’t be folklore or like something that somebody’s told us ... most things that you do give over the phone, they’ve got to be documented, they’ve got to be backed up, approved by the NHS before we give information” (AB1_NA)

“There’s the quality assured websites that we can use and they have information on absolutely anything. But they have been looked up by NHS 24 and deemed that this is fine for us to use.” (AB4_NA)

“Our website is... validated we can use them because they’re evidence based on such thing, I can actually read information off an information website or whatever for that person, I can actually provide the web site address for them if they want to.” (AB16_NA)

“... we have only access to certain databases, only databases that have... that have been quality assured through the quality assurance team. So we don’t use any information just off the Internet or just off a book that we happened to pick up or from a magazine. We only use specific information that we are allowed to use and which has been provided by the organisation and those are various types of different database information...” (AB12_NA)

“These websites have been checked by health professionals to ensure that they are current, accurate and that they are... that we’re not misinforming people, so

they've been checked by the appropriate people. So we have access to quality assured websites for a lot of our information" (AB20_HIA)

"The only advice you have to give is evidenced-based and all the access that we have to evidenced-based information is within the algorithms or within HIS. And within HIS there's quality assured websites for loads of different subject headings, so if patients are calling for very specific reasons we can access the web pages and they're quality assured, so you know that the advice that you are giving patients is quality assured, and it's not just something anecdotal which has been passed on, passed on, that is definitely evidenced-based practice that you are giving to the patients." (CB9_NA)

"But if you use information, that's only if I use it within what they call the PRM system, which is... it's like a box... if you think a box of files, everything is in there... if I go outside, outside my boxy system and flick on to different pages, different applications, and look for information, it won't be documented there, it won't be recorded to me, so I can really look for anything, I'll need to be able to say what I used, when I used it, why did I use it... And is it an accredited site, has it been...?" (AB1_NA)

"... if I couldn't find it within my little box basically, you know, the computer box, all the accredited sites, then I'd be very weary, and I'd be trying to confirm with my team leader the information that I'd be given because if it's not approved, if it's not been backed up by research, then I'm not supposed to be getting that at all, cause it may be off." (AB1_NA)

Controlling patient records is important due to information governance regulations that ensure patient information confidentiality. Also, it is a matter of clinical safety that all patient information is correctly recorded:

"First of all is the information that the patients provide us. We ask... we've got set questions that we've got to ask them such as name, date of birth, address, contact telephone number, and which GPs surgery they're registered with. All this allows us to make sure that we have the right patient record in front of us." (AB8_CH)

"It's just a case of making sure you that you have the correct patient record in front of you, you're putting in the appropriate information, and then you're getting it to a nurse as quickly and effectively as possible." (AB7_CH)

"If it is somebody phoning for somebody else, quite often happens, 'I am phoning about my wife' 'I'm phoning about my daughter', then, we also have to confirm the relationship between the caller and the patient and what their name

is and also their motivation at the moment as well and if the patient knows this person is calling for them.” (AB11_CH)

“We are creating a record at that time, which is then going to be added to their doctor's notes. So it's important that we have the correct patient and correct information in front of us, and pass to the nurse, because any information that we are recording at that point is going to be added to their doctor's notes, to their medical notes for good.” (AB7_CH)

“The nurse will also double check the telephone number with us. And all of these are safety procedures just to insure that there are no glitches in the system when I close the record, and they open it. It's to make sure that the right record, and the right patient are going through to them, the same nurse.” (AB8_CH)

“The first information that you come across is the demographics. And you have to be absolutely certain that you are speaking to the right person and you know exactly where that person is, and that you will be able to get in touch with that person if there was to be a problem with the telephone system, I think that is the first priority because until you've done that you are not really in a safe position to carry out asking people, you know, interviewing people and trying to triage the symptoms.” (CB21_NA)

“During the handover between myself and the nurse advisor we would exchange, you know, the information required to pass over the record, so we pass on usually the PRM number and the patient's name and the call reason and the nurse would then confirm the telephone number and just transfer the record over before connecting the patients through. We also document any additional information that the callers may be mentioned that could be relevant to the problem that they are phoning about...” (CB14_CH)

Controlling information sourced from callers is important in terms of relevance, quantity and timeliness. There is some essential information that has to be obtained necessarily. Beyond a certain point, the amount of information has to be controlled in terms of balancing its potential relevance versus the amount of time it takes to get it:

“You have to guide the patient, to ensure that all the necessary details are taken. And that's where you... you would gain control of the telephone conversation, be more dominant with them, say ‘sorry to interrupt you there, but I really need to ask you these questions, we can come back to what you were speaking about in a moment’, that kind of thing.” (AB8_CH)

“‘If I could just stop you there...’ ‘What is your main concern just now?’ ‘What is the symptom you are most worried about just now?’” (AB9_CH)

“... there’s no use telling me what happened in July, really, if it’s got nothing to do with what’s going on... tell me what’s happening today or tell me what’s happened at this moment in time... keep it quite precise and then you can always expand if you need to, like did this happen last week? Then I can start pulling in information if I need it... ‘Have you had this before?’... That may be appropriate...” (AB1_NA)

Also subject to control is the information given to callers. There is the issue of information overload in how much information can be reliably given to a caller that he or she will be able to handle adequately. Also, there is the issue of the caller making sense of the information given. In this regard the language used is important. Some callers will be able to handle more technical explanations, while in other cases these need to be simplified. Finally, information should not be given in some cases, typically when a HIA is being asked about an undiagnosed illness and the caller should rather be speaking to a GP about his or her symptoms.

“I’ll try not to give too many... again, it’s assessing the call... who’s on the call, how much information I think they’re retaining, and you gather that from the answers they’ve given and what you have repeated back. But there’s no use giving them twenty pieces of information or things to do... pick four or five really good ones that are the most important and give it to them, so that sticks in, cause I think that’s probably as much as people will probably retain... five bits of information, roughly... maybe a bit less, maybe a bit more, but that would be my sort of judgement.” (AB1_NA)

“You know, that’s five things already, so that’s when I get them to write it down. Because if you’ve given them a lot, get them to write it at least they can look at it and say, right, ‘So, the nurse said that, and she said that, she also said that...’, so everything...” (AB2_NA)

“Self-care yes... I would give... if there is a lot of information to be given, for instance if it is about a child who’s had a head injury, you know, they’ve fallen, and you are giving them monitoring advice, sometimes I ask them to write it down because there’s a lot of information...” (AB16_NA)

“...two or three bits of information they can remember, more they would have to record... things like children with... parents who are going to be giving them

medication, *Paracetamol* and *Ibuprofen*, they are giving it in different timeframes.” (AB16_NA)

“... a grey area for us is that we are only supposed to be giving information if they have been diagnosed. We do not encourage people to do self-diagnosis, so if a chap phones up from Edinburgh, saying ‘I want some information on gonorrhoea or syphilis’ the first question ahead of any other question is ‘Have you been diagnosed with it?’ If they’ve been diagnosed with that, we’ll give them the information. If they had not been diagnosed with it, we’ll say ‘It’s not appropriate for us to give you that information because that will encourage you to do self-diagnosis’ ‘You need... If you’ve got a query you go and get it seen to’.” (AB20_HIA)

Finally, information exchanged through institutional communication systems needs to be controlled. There is a sense that these systems are often overloading staff with a lot of irrelevant information which makes it harder to identify important items. Controlling information in this sense implies sifting through the relevant bits effectively, so as not to miss out on important information:

“You have to... you know... because of the amount of information that we’ve been given, the amount of changes, you do have to take stock and say ‘Well, this is worth knowing. This is worth dealing with. This can wait’. Because there have been things that you’ve sat and you’ve changed it on, you’ve got it in your head and then it all just changes again.” (CB20_TL)

“... you have to become very selective about what information you process. And as I said, there’s 64,000 e-mails. You have to select which ones you are going to read. That’s the only way to go about getting the vital information you need. And inevitably you will miss something ... But you can’t read every single e-mail. If you did that, you would do nothing else. The team leaders get... 60 to 100 e-mails a day sometimes during the week when the HR staff are in they will send e-mails, just fire them off to all the team leaders most of which will not be relevant to my team, but you have to read it to see if it’s relevant for your team, because they don’t bother to select a team leader.” (CB18_TL)

5.2.6. Sharing information and knowledge.

- Sharing information with peers
- Openness to others

This conception of effective information use is related to the conception of effectiveness in the job labeled “Support and collaboration” (section 5.1.5). Sharing information involves attitudes and activities that are supported and encouraged organizationally by the existing culture, the leadership and by the needs of the job itself. Frontline staff report sharing information with peers as an aspect of their everyday work life:

“It's a chain, definitely, so I need to be able to gather concrete, good, usable information for the nurse” (AB5_CH)

“Yeah, if you're next door to somebody, and you've got something you're not quite sure of, you always converse with them or you ask the team leaders, you put your hand up and say if there's something you're not quite sure of to get advice.” (AB4_NA)

‘What can you tell me?’, or ‘Where is it good to look for it?’ And they'll put you in the right direction. And I can do that likewise back, you know, for someone renal is very specialized, so if we get someone with a renal call they say to me, ‘What's appropriate?’ ... or ‘How relevant is that to the bigger picture?’, ‘What's going on?’” (AB3_NA)

““I have benefited from the same information and I know it will help you as well yes, so I just pass it on. Same thing, you know, like I had the team leader nurse advisor give me some information today. If I come in tomorrow before six o'clock, or if I come in another day before we actually go live, which is from six during the week, then I won't need to ask that information any more...” (AB5_CH)

“... there's multiple different backgrounds for... which is one of the advantages of this organisation, because usually somebody somewhere knows what you want, so if I'm speaking to my colleague, somebody will be able to hand in some information, but when you are on the... when there is a high services demand, you're limited to, you have a limited opportunity to speak to colleagues, because everybody is busy.” (AB16_NA)

“... no person can... store, you know, you can't know about every subject, and... as good as our system is, sometimes you have to have an inkling as to where to start looking... before you can go looking for the thing, and that's

where, you know, even just, you know, saying to someone else, 'What do you think?' they might not know about it either, but they might have an idea or 'Why don't you try this?'" (AB13_HIA)

"... if you get a call that is a bit more complicated and you have to do research into it... in between calls other guys in the team will look up and say 'Well, I got this and that and I've got this and it's great' we work very, very closely together and I think that's an important part of our role because, you know, you are learning all the time from one another, which is good too... and obviously passing it on." (CB16_HIA)

Openness to others and keeping an open communication within a 'no-blame' framework for quality assurance and workforce development is a particular aspect of the organizational culture that fosters sharing information and knowledge:

"You know, it's a friendly environment, and when you do come in as a new starter, it is... You know, I don't think many people would have any problem with turning to whoever is sitting around them and saying, 'I just want to make sure I'm doing the right thing with this call'. So it's not a problem and you will have to do that for the first few days or even weeks, I guess it depends on, you know, the individual who is doing it. But even the people who are the most confident throughout the training process, when they begin are always happy to know that there are others, lots of others around them, that they can ask about things." (AB7_CH)

"My motivation for sharing is to make sure that we are all being as effective and safe and appropriate as possible. And also I have motivation to share to... staff members in my team in order for them to be able to develop themselves within the service." (CB15_TL)

"It's really important that we have an open communication and information channels with others team leaders, and we are all... that's very informal but we are always talking to each other. For example if I am team leader one and I am managing the business, and there is another team leader on who gets some information, say one of the other systems has gone down, we have a communication system where by that would be fed back to team leader one who is managing the service. Otherwise you can't effectively manage." (CB15_TL)

"If it wasn't something that I was certain about where the information is and what they needed, it would be through my peers... I would get information from wherever, 'Would you go have gone there?', 'Would you have used somewhere different?' We constantly share... knowledge and discuss, you know, especially

if it is a complex call, discuss it as we go through the call, or discuss it afterwards with a colleague.” (AB13_HIA)

“I have no problem at all with going to a nurse or a call handler and saying ‘Can you help me please? I don't remember how to do this’ or ‘How do you do that?’ You know, there’s no point in being dignified if you don't know, and nobody can know everything. So, sharing information is important...” (CB18_TL)

“You’ve seen the pods that we sit in. There’s usually four nurses to a pod, and if someone... certainly through the day, out of hours it’s a bit more difficult to do, but through the day because there’s a few of us on, if somebody has a bad call or someone is not happy with something, then they will turn and discuss it with everybody and because we all come from different backgrounds and we can all bring different perspectives to the call ... we have different ways of looking at things because their experiences are all different. We do share things.” (AB2_NA)

“I think NHS24 is completely unique... from any other NHS environment. If we had an environment where there was no sharing and no openness I don't think NHS24 could effectively work in any way. I think from day one it was kind of driven out that the structure of NHS24 was flat and it was a shared environment and I think that makes it quite unique, and I think that's something that NHS24 has delivered on is being open, through information sharing and the... partnership Forum, staff are always invited on to any committee, any development groups, anything like that, it's not a top-down it's very much a shared network... in my perspective.” (CB15_TL)

5.2.7. Using information to learn.

- Using documental knowledge sources
- Accessing peers’ specialist knowledge
- Using feedback

This conception of effective information use focuses the use of information for learning, from addressing specific knowledge gaps to developing the knowledge base in a more continuous way. An example of the first case is when a nurse takes a challenging call where she becomes aware of something she ignores and needs to ask about or look up information. The second case is illustrated by the nurse regularly reading a publication such

as a nursing journal, where she is made aware of new professional knowledge not in response to a specific need. Using information to learn involves both documental sources and peers.

“If it is a call that has brought up something I've not heard of before, or brought up something I haven't come across before, I will probably after I have wrapped up the call take a few minutes just to have a look on some websites like *Patient.uk*, that kind of thing, just to get some background information so that next time I have to deal with a call like that, you know, I'll have the information more to hand and that has been something that has gone on continuously since I started here.” (CB21_NA)

“I suppose what I tend to do is I tend to do my speciality, which is cardiology and I like to keep up to date on that, and anything medical wise. Actually, medicine itself, I like to keep up to date on that...” (AB2_NA)

“Quite often, during a call something will come up and you think ‘Well, I don't really know very much about that’ so I'll either look up some information on the internet or I'll see what I can find here. Just to update my knowledge.” (AB15_NA)

“I use it quite a lot because maybe somebody mentioned a condition that is just foreign to me, I've not heard of it and I would maybe ask another nurse ‘Oh, what is that?’ or I may be would have a look up about it just to see ‘Oh, that is more serious than I thought’ or it's just that, you know, you don't know what it is. So I find that quite good on the Internet and there is the intranet as well and it's just if somebody's mentioned something, just a way of saying ‘Oh, I wonder what that is?’ ‘What is that about?’ so you get that knowledge to hand” (CB13_CH)

“If it is a call that has brought up something I've not heard of before, or brought up something I haven't come across before, I will probably after I have wrapped up the call take a few minutes just to have a look on some websites like *patient.uk*, that kind of thing, just to get some background information so that next time I have to deal with a call like that, you know, I'll have the information more to hand ... I spent a lot of time looking up chickenpox (laughs) for instance, I read a lot about chickenpox. Now I don't have to go way to the website to know what to... tell the patient about chickenpox.” (CB21_NA)

“What I tend to do is just take a note in my pad and think: ‘I need to look up more about that’. And then you can access it and I usually move to the hardback books you can access. I find it easier to read in between calls and flick between that and the Internet. Other than that you can go on and explore that further and expand your knowledge...” (AB3_NA)

We don't automatically learn just by accessing information. It has to be meaningful and connected to other knowledge. Knowledge development in the workplace is related to performance in situation, rather than simple accumulation, and this implies developing new understandings and changes in behavior:

“But what we try to do is not to give the answer, because that very often that is not the information... although that may be the information that the nurse is looking for, or the call handler is looking for, it is not the learning, there is no learning involved there. So it is about trimming things back. Let's say somebody puts her hand up, say ‘I've got a patient with X, Y and Z, what will I do?’. The easy thing for us is to say ‘Do A, B and C and then close the call’ but there is no learning for them, so it is about coming back and saying ‘Have you got information A, B and C?’ ‘How can you best give her?’ ‘Have you run an algorithm? How has that been able to help you?’ ‘How does your other literature help you?’ ‘How do the electronic systems help you?’ ‘How are you best going to come to a decision here?’ ‘How can I facilitate or give you the skills to help yourself?’ “ (AB15_TL)

Using information to learn implies developing abilities for accessing documental information more effectively:

“... you can find anything, obviously we can have access to the medical libraries which I know... And I think from being a student obviously you learn how to research, how to back things up, where to go search and who to ask... you know, to use these resources...” (AB1_NA)

““For me I suppose the difference is in how I use it, and the confidence in how I would use it now... that I'd have nowhere to look but research. My horizons have sort of been changed and expanded now I know where I can get information from, and you develop more and more resources as you go through life, don't you? So you can reflect back and think, ‘Well, I got that from there, I wonder if they'll be able to...’ (AB1_NA)

“... beside learning how to find the information, you're also learning about maybe a condition itself, as well as learning where to find information you're also learning about meningitis or about the query they were asking...” (AB14_HIA)

“Being knowledgeable about the system in order to access it, yes, because if you don't have that information, then you're... within the confines of your own knowledge, whereas there is a wider knowledge available that you can access, you know, with these systems.” (AB19_NA)

“It is very much learning from experience, about which is the best website for which type of query and it is very much not... I don't know what I can say about it... you learn by experience... say for the health benefits, you learn by experience that this is the best website for that particular type of query... what gives you effective information.” (AB14_HIA)

Another aspect is that we are not using only information from documental sources, but also from people. This brings in the question of the differences between information and knowledge. For example, feedback derived from coaching is a form of information that frontline staff at NHS24 use in order to learn.

“Coaches, they listen to our calls twice a month, I think... yeah two calls a month minimum they listen to, and sometimes they sit beside us and plug-in and listen as we are doing the call... and then they feedback, they take notes of how we are managing the call and they feedback to us ‘Yeah, you're doing this good’ and ‘You're doing this not so good’, and ‘You need to build up on this’” (AB12_NA)

“... if you get feedback, either the compliment or that wasn't done as well, that can then be looked at, you can listen to it and, ‘Yeah, I could have done that slightly differently’. So, it's very proactive and it's a nice way that it's open so you can see what's going on.” (AB3_NA)

“Colleagues are... excellent about, if you have the opportunity to talk to them, about gathering information, knowledge about things, experience, it is about experience supporting their background knowledge.” (AB16_NA)

“I've usually got basic knowledge of everything, usually, there's obviously things I probably will be using more, so I use the midwives. Being here you tend to sort of recognize faces, you can ask questions and rely on...” (AB1_NA)

“Yeah, if you're next door to somebody, and you've got something you're not quite sure of, you always converse with them or you ask the team leaders, you put your hand up and say if there's something you're not quite sure of to get advice.” (AB4_NA)

“Yes, I think everybody interacts in this job. I think that's part of doing this job and I think it's good that you should interact with the nurses, because nurses can

teach you... not in a clinical way but in a safe way, we learn things from them, you know.” (CB8_CH)

Looking up information in information systems is a frequent source for knowledge updates:

“I’d never heard about how to take ticks out of the skin or, you know, ticks could potentially cause Lyme’s disease, I didn’t know about this, so what I did was I dealt with the call, spoke to them, read the evidence about it, hang the phone and then I read everything I could find on tick bites and I know exactly how to treat them should they come on again, you know...” (CB9_NA)

“Is just a case of, I mean, when you're not on a call, you have a free five minutes, you just go in and looking through and seeing what is available, you know, they are always adding new things to it, and it's just trying to keep yourself up to date. But depending on when you are here, I mean, during the week, during the day it is a wee bit quieter, so you have a lot of time to go through. If you are here at the weekend, it's pretty non-stop from the minute you come in, so you don't then get the same time to read up, so it's just trying to take advantage of five minutes when you've got them and actually look through.” (CB7_NA)

“And if there’s things for instance that come up in a call, a medical condition that I’m unfamiliar take a note of it and when we have a pause between calls, it’ll give you time to look that up, and you can either look that up on any of the quality assured websites we’ve got, or there are text books available.” (AB3_NA)

“... just going in through the Internet, and just... keywords you hear or conditions, you know, and I would just go into, you can do it between your calls, just if you are interested, you don’t have to do it. But I feel like doing it is something I have not heard of, or if you’re hearing somebody with something ‘I wonder what that is?’ and have a look. Because you may just hear the label and known nothing about it, so I would just go into the Internet and just look that up.” (CB13_CH)

Developing the knowledge base in a continuous way appears as a strong feature in many of the interviews, particularly of nurse advisors and health information advisors:

“... every day you go home with knowing one bit of information that you didn't know the day before, you know, and I think that will probably continuously keep you learning like that.” (CB7_NA)

“... and it is not always easy, specially if you have been on a long shift and you're tired you don't always want to go home and read up on new things, but it is important that you read as much as possible to try and keep, you know, on top of things. Even if its... for instance, my Nursing Times magazine that I get every week, even if that's the only thing I do in the week, I am still learning new things that are coming out...” (CB7_NA)

“A lot of it's reading, a lot of it is on the Internet as well just trying to keep up with the guidelines and things like that. We also have a library here so there is a lot of reading stuff...” (CB3_NA)

“... my learning anyway, is just done by myself... using the knowledge of other people in different specialist areas, other colleagues that I work with or using the library, the e-library, or the library, books and databases... just information that is available to us. I would use that and also the algorithms, a lot of information.” (AB12_NA)

“... if anything changes I would read up and learn about it and if there is anything that I am not sure about that I will ask. I think communication is a huge thing and if you go and ask someone you'll learn more, if you're not sure go and check, because you will learn more if there is a person who is dealing with it specifically go and speak to them ... so for me... continually developing myself and learning is about reading and listening and going to any training sessions that are available.” (CB8_CH)

“...self learning, so it's keeping up-to-date with current research in Midwives Magazine which comes out of the RCN and our union once a month and also the Nursing Times and Nursing Standard has up-to-date research that's going on within areas that you are working in. Reading on the internet, reading on the quality assured websites, access to Athens, you know the learning package for the British Medical Journal I use a lot, for reading and updating.” (CB9_NA)

“In the sense that you're growing on the job, you're getting more information, which means you sort of have to put up your hand less, you understand? So, I need to ask for help less and less because I don't need to come tomorrow and ask again, ‘What do I do before six?’, because I learnt that today. And then if someone else need that information I can pass it on... So, you do the feel like you are learning something, the information that you are gathering is helping you become better at the job, you're becoming less dependent on... I am going to say that with a little bit of reservation because things change, so there's no way you're going to know so much that you will never have to ask again...” (AB5_CH)

“... the more information you have it helps you do your job better, so you feel I’m going at the job. It's not the call centre were you're just patting people through, ‘Hello, who you want to speak to? Pass you through’ You know, you need information to do the job properly, and the more information you get the more you can do the job, I mean the better you do the job and the better you feel about it.” (CB5_CH)

“I'm still not fully medically trained, but I've learnt so much medically, medical information that I didn't know before... that, again it's something that I find really interesting and it's just nice to know and the added responsibility to be given the opportunity to do calls such as chest pain calls... just the added responsibility, it's nice to know I can... It's kind of reassuring me that I am doing the job correctly.” (AB8_CH)

5.2.8. Using information systems.

- Using transaction processing systems (PRM)
- Using decision support systems (Algorithms)
- Using knowledge support bases (Knowledge web and Intranet)

All frontline staff use information systems of various types, and using them appropriately implies knowing their general functionality and application.

“You have seen the PRM system whereby all... we hold records on every patient in Scotland, and a record of all calls into the service, which is a purely clinical side of it and probably covers 99.9 per cent of all the clinical information that we hold, is within the PRM database. Whereas then probably... the supporting information, if you like, the information that we need to do our jobs, the clinical processes, the operational processes, the policies and procedures are held in various places across the organisation. One is the intranet, we have a purely Intranet website with holds all the organisational policies, and then we have a website that holds the clinical support information like, where the nearest pharmacy is, what the opening times of the pharmacies, what GPs are on cover and where the local out of hours services are. Also, we find of value to have the operational processes and the clinical processes for the day to day running of the business ... So that's really the three main areas where information is stored...” (AB10_TL)

All staff are given initial training and thereafter they learn through practice, often with the help of peers. Using the systems after some time becomes automatic and recedes to the background. Using these systems implies awareness of information and knowledge sources and skills to navigate them, and to find and retrieve information. Very often these aspects of information behavior are not reflected upon in great detail by the interviewees and appear as tacit knowledge. The general impression is that they are well trained and capable of accessing the information they need, and they tended to talk about this matter-of-factly.

“Well, you'll need to know how to access your systems for a start, you know, the information that you are drawing up from your screen. I'll say *ToxBase* again is another one, and... you have to know how to access your systems, you have to know your way around the system in order to get the best from it, in order to give the best advice and information for your patient.” (AB19_NA)

“Once I worked my way around the system, once I knew where to access the information that I needed, generally I can find what I need now. There are very few occasions where I can honestly say that ‘Never heard of that, wouldn't know where to find out at least some information on it’. (CB6_NA)

“I mean, a lot of it is practice. It starts off with your eight weeks of training and thereafter it's just practice.” (CB7_NA)

“I think you have to have for a start the right training, on how to search for different things and all the different places that there is to search, and also after that you have on-the-job training all the time, and also just the ability to be quite patient and be willing to search for an answer to someone's question.” (AB21_HIA)

“It comes down, a lot of the time it comes down to... experience... and questioning the caller ... once you establish what they are looking for, you have been trained to know that information can be found at a particular place and you quite simply access that place, get the information and give it to the caller.” (AB20_HIA)

“I think it's familiarity, it's that you use it all the time. It's the way the organization provides courses or support to take you through that. Certainly when we did our very first training it was very lengthy, and they taught you how to search, and you know that someone has actually quality-assured the websites that you're looking at to get information.” (AB3_NA)

“Before even five years ago when I started, I would be loath to go onto the Internet to look things up, you think I'll just get swamped before I funnel it

down to what's relevant, to what I want. Now you become much more adept at it because you use it every day.” (AB3_NA)

Transaction processing systems are the backbone of service provision as their main purpose is handling the information about the caller (e.g. patient record), about the call itself (e.g. duration, who handles it, speaking time, etc.), and about the care outcomes. The main system used by the frontline staff is called Patient Record Management (PRM). At the time when these interviews were collected there was training going on for the new version which is called 'CONNECT'. The transaction processing systems are linked to telephony and to the intranet. Another secondary system is called 'ADASTRA', and it's used to send information to partners, for example appointments for patients. The Team Leaders use a system called 'DASHBOARD' which provides real-time information on the queue and all the workstations, showing which people are online taking calls and statistics about the calls:

“*Adastra* is used to send down records to the local primary care emergency centres and also the A&E, so that the... if I refer someone to the A&E for a simple broken bone, a broken arm or such like, then by the time that they arrive within ten minutes they will be able to say 'Oh, Mr. Smith has arrived, fantastic'. They won't treat you any different but they will have a record, a clinical summary from me or a nurse adviser. So, *Adastra* is the system by which that is sent, an electronic fax system if you like. Records of course can be used by the fax manager where if there is a simple query to the service for advice and such like, and advice is given over the phone by a nurse adviser she can use that for an A&E as well then a clinical summary can be sent using the fax manager.” (CB12_CH)

“The information that I use for my job... it is primarily the records that the GPs have for all of their patients, they are like all collated onto one central system, and that is the database that we would generally use for obtaining information. So, all the information that GPs hold about addresses and names and this kind of thing we have access to here, at NHS24. Because it's just general patient information, and that is primarily what we would face, that is the information that we would primarily use as call handlers before passing it on to a nurse. Also, we have other tools that are available. Like the knowledge... we have a knowledge web, and the intranets and the GIS screens, all of these have got a lot of information that we can draw on as well.” (AB11_CH)

“So what we have is a system called the Dashboard, and what that will do is it will tell us is what is on, staff members, talk time, rap time, how many of their calls have gone to a certain place, for example accident and emergency, primary carer centres, how many people have been seen at home.” (CB15_TL)

“All the team leaders get as... a management a report every Monday, that we can use to assess performance, that will look at the number of calls, how quickly we dealt with the calls, ok, how long was our time down, how long people have... we get that, we also get on an individual basis, like teams how... every month a dashboard telling me my nurses, what percentage of the nurses outcomes of the nurses were home visits or or there were no further actions. Giving their talk time and their listening time, that can be used as the basis for coaching (AB10_TL)

Nurse advisors use decision support systems (algorithms) for triage. However, they are used mainly in a supporting fashion, rather than leading the process of triage. Nurses use them to corroborate their own assessment of the patient's situation and needs, and to make sure that some key questions are not overlooked. The algorithms branch according to the previous answers, presenting new relevant questions for the nurse to ask. For example, if there was a positive answer to the presence of headache the algorithm will present the nurse with a set of follow-up questions such as whether the person feels sensitive to light or has a head injury.

“... at the beginning of the call with the patient we are on our own, without any tools until we get a kind of a robust assessment of what's really the main concern and how serious it is, and then we go and use the algorithm to... just to get a full picture really, to make sure we haven't missed anything in our initial assessment and to check... just as a checklist almost, to check off that there's nothing missing.” (AB12_NA)

“... the computer system that we use is what we call a decision support tool, and we run algorithms on the computer where we ask various questions and it is really just to back up your decision. It will prompt you with information but, you know, basically we usually have an idea of what's going on with the person so, we run the algo and... you know, if you've made your decision about what is wrong with the person and what you want to happen with them, and the algo comes at the same decision, you know, that's quite satisfying because it reinforces that you've got the information correctly and you have that confidence that, you know, that your knowledge is relevant.” (AB15_NA)

“... you have to be able to work the system with the algorithms, you have to know how to work that, but the information is only as good as how you get the information out of the patient, and I think it's by the various questions that you ask and how you ask them... they're phoning with a headache, you know, you could just launch the headache algorithm, but if you questioned them in a bit more of detail before you launch your algorithm, you might find that, you know, the headache is just one of the symptoms that they have, they may have high temperature, they may have been vomiting, they may have... various other symptoms, so if you just run with headache, without getting the whole picture... then, you know, you wouldn't be applying the information effectively...” (AB15_NA)

“Because we are quite new, for every single call we use the algorithms. And that is part of how we come out of our training, for the first six months you are on the floor we must use algorithms for every patient. And that is certainly... I mean I don't... there is the odd call where you don't... maybe it's an advice for some medication but you know the answer off the top of your head, but for most of the calls, you know, having that algorithm in front of you, you know, prompting you of what questions to ask... because maybe you don't always remember every question you should ask and that is certainly for me, it is a big, big help.” (CB7_NA)

“... when the patient phones up first I will assess the patient, and take their history and know in my own head what that outcome should be for them and then use the algorithm as a backup to make sure I've not missed anything to make sure it agrees with my outcome and if they're very, very different then I know I probably missed something or else it's a clinical judgement that is needed at that point to override what the algorithm is saying.” (CB9_NA)

“I have a knowledge base from my experience as a teacher and my experience as a nurse, a lot of years of experience, so I've got this kind of a knowledge base. That is supplemented by the knowledge that is in the IT systems that allows me to make decisions” (CB19_TL)

“So we question in a certain way to find out... how much of an emergency the situation is, and then we pick out the main concerns of the patient, or our main concerns, and we use our algorithm. So we put this symptom, the main concern or the main symptom into the algorithm and use that information to guide us through the triage.” (AB12 NA)

“What's involved there (in being effective) is your knowledge. The algorithms are there to back you up. They're not there to be the Bible as such. They're only there to challenge what you're thinking.” (AB2_NA)

Staff also access knowledge support systems such as the Knowledge Web and the Health Information System (HIS), mainly through the Intranet:

“The information is all on the computer, so... we don’t know where every centre is in Scotland, we are relying on the information from the computer” (AB15_NA)

“Yes, the HIS, checking there for the nearest out of hours, and it tells you exactly what to do, whether you just tell them to go there within four hours, or whether I need to phone them, make an appointment. I keep the patient on the line, I phone through to get an appointment, and relay that back to the patient. You can give them the time, such and such place, ‘Is that okay?’ ‘That’s fine’, and just fax all the information down to the centre.” (CB10_CH)

“We use the knowledge Web on occasion as call handler... If you do advice and refer calls then you would more use the knowledge Web and the HIS system where we would find out locations of where the nearest places that they go to, the nearest A&E or the nearest PCEC... We would use it more in advice and refer than we would in everyday if you're just call handling.” (CB8_CH)

“The knowledge Web is very good, is not really a problem... because it will tell you the facilities that are there in that patient’s area... whether they are looking for dentists or maternity services, it is all in there...” (CB4_NA)

“So I can do that and it can use the topic information for that as well and give them specific guidance on how to do things... because we can't route in all the knowledge in our head. So we have to refer to make sure we get it right every time.” (AB16_NA)

Chapter 7 presents the author’s discussion of these conceptions along with the other data set, which is the documentation on NHS Scotland’s and NHS24’s KM initiatives (Chapter 6).

Chapter 6. Review of documentation on NHS Scotland's and NHS24's initiatives for KM.

"Few would dispute that the NHS is a knowledge-based service. It employs more professionals than any other sector of the economy. Outside the Service, there is a massive investment in this country and world-wide in research directed to improve clinical care, both publicly and privately funded, and a large range of other activities designed to disseminate what has been discovered or established" (Harrison and Dixon 2000, p. 222)

This chapter presents information about NHS Scotland and NHS24's KM initiatives from the review of institutional documentation, which is an aspect of data collection for this study (Chapter 4, section 4.5.4). This review has the purpose of identifying the perspectives and the actions taken by the organization in relation to KM. These findings will be discussed in chapter 7, along with the findings from the phenomenographic study presented in chapter 5.

NHS Scotland is a large national organization responsible for provision of health services across Scotland, depending from the Scottish Executive Health Department (SEHD). It is the largest employer in Scotland. Its basic structure consists of 14 regional health boards and three special boards: NHS Education for Scotland (NES); NHS Quality Improvement Scotland (NHS QIS); and NHS24.

This section overviews the main policies, strategies and initiatives that NHS Scotland has developed and which are consistent with broad definitions of knowledge management. A particular focus is put on NHS Education Scotland as the Special Board with the main responsibility for supporting knowledge development and information services for all branches of the service, including NHS24. Also, NHS24's particular KM initiatives will be reviewed.

NHS Scotland is an organization that has been for a long time concerned with quality improvement, not least because of mounting expectations of the public and pressures from the government but also because of scientific and technological advancements in health care. This has also been associated with the idea of 'modernization' of the service. Ovretveit (1992, p. 2) defined quality in health services as "fully meeting the needs of those who need the service most, at the lowest cost to the organization, within limits and directives set by higher authorities and purchasers". Over the past two decades NHS has been strongly influenced by management ideas applied in business organizations. Total Quality Management (TQM) has exerted influence over the general approach taken to quality improvement at NHS (Baggot 2004, p. 214).

One focus in this drive for quality has been to put the improvement of the patient experience, and what is called the patient journey, at the centre of the service.

"By improve, we mean improving the experience of patients while they are in the care of NHS Scotland and improving the outcomes of their treatment." (NHS QIS 2006)

Another important concern of quality in health care has been the emphasis on evidence-based practice (EBP), founded on several concerns:

- That clinical practice was not informed by accurate and updated research findings.
- That ineffective and inappropriate interventions wasted resources that could be better used otherwise.
- That variation in the use of effective treatments created unacceptable inequities, with some people failing to get the best care (Baggot 2004, p. 216)

The emphasis on evidence-based practice has led to several initiatives:

- A new approach to research and development, based on more specific priorities (e.g. cancer, coronary disease and mental health).

- Continuing professional development.
- Dissemination of information and guidelines about effective practice to health professionals and managers.

The last two aspects are directly related to KM initiatives in NHS Scotland from about 1999. The term 'knowledge management' has been used more frequently since around 2004. However, the earlier references to organizational learning and continuous learning, along with a specific focus on using information to support practice, are taken as aspects of an inchoate KM perspective.

Other strands of quality improvement have been the prevention of adverse incidents and research into understanding errors and their causes. This has led into developing systems for reporting and keeping track of adverse incidents and 'near-misses' and also into developing a system of standards and guidelines. NHS Quality Improvement Scotland (NHS QIS) is a special board which produces audits, quality standards, guidelines, best practice statements, and adverse incident research. It is branded as a knowledge-based service within NHS Scotland.

"NHS QIS leads the use of knowledge to promote improvement in the quality of healthcare for the people of Scotland." (NHS QIS Website)

Another important strand of quality improvement has been collaboration and networking as ways of leveraging expertise, reducing errors and making better use of resources (NHS Scotland 2005).

The connection between the development of the service in terms of quality assurance and the development of a skilled and knowledgeable workforce has taken a central role in NHS Scotland's strategy. In this regard, several consistent themes relevant from the point of view of this dissertation are evident from the review of NHS Scotland documentation:

- Quality improvement
- Development of the workforce

- Lifelong learning
- Career development
- Development of a learning organization
- Collaboration through networks
- Performance management
- Knowledge management

These themes criss-cross each other, with the concept of knowledge management becoming more central and encompassing several of the support strategies in later years, from about 2004. These strategies can be grouped into three main categories:

- Information support (intranets, portals, databases, algorithms, etc.)
- Support for learning (training, coaching, mentoring, e-learning, degrees courses)
- Support for collaboration (developing communities of practice)

6.1 Development of a learning organization

The SEDH (1999) development plan entitled *Learning Together: A Strategy for Education, Training and Lifelong Learning for all the NHS in Scotland*, set the key aims of the strategy to modernize the NHS in Scotland:

- Fitness for purpose - to ensure that all NHS staff are equipped with the skills, knowledge and attitudes to deliver the services patients and their families expect.
- Improved access and opportunity - to ensure that all NHS staff in Scotland are supported and encouraged to develop and maintain their skills.
- A flexible workforce - that is capable of responding efficiently to changing clinical practice and new models of service delivery.

- Effective team working - encouraging methods of working and learning which promote an integrated approach to patient care.
- Recruitment and retention - career progression and job satisfaction which fulfils the needs and aspirations of all NHS staff in Scotland regardless of their social, academic or ethnic backgrounds.
- Staff development as an investment in quality - by raising awareness among NHS Boards, managers and service planners of the value of education, training and lifelong learning in delivering quality services.

The development strategy champions the concepts of lifelong learning, applicable to the employees, and developing a learning organization, as an aim of the institution. The definition of a learning organization provided by the SEHD states that:

“A learning organisation promotes and supports learning by all its staff, as part of a continuous process of development. It encourages self-development at all levels of the organisation, giving staff the opportunity to develop their potential and have their achievements recognised. It places staff at the heart of its organisational development strategy and plans investment in its people.” (SEHD 1999, para. 3.2)

A follow-up document, almost by the same name (*Working together-Learning together*) states that:

“The framework covers all aspects of learning and development for health care staff from basic induction, adult literacy and numeracy skills and vocational training, through to pre and post registration education, continuing personal and professional development, management and leadership development. Education, training and development form a continuum and comprise a wide range of formal and informal learning activities - everything from private study to workplace learning to electronic forms of learning (e learning) and to formal academic courses.” (SEHD 2001, p. 2)

Building a learning organisation is seen as the responsibility of NHS as employers, who will then:

- Be better able to recruit and retain a highly motivated workforce with the skills, knowledge and attitudes to respond flexibly to changing service needs;
- Be supporting staff who are committed to their own personal and professional development and who recognise the potential benefits of working and learning in teams;
- Ensure that new service improvements are supported by a coherent plan which covers the education and training and workforce implications;
- Reduce the risks associated with service failures;
- Be recognized as a good employer that promotes quality through investing in its people. (SEHD 2001)

These statements more or less convey the idea of developing capabilities, with an emphasis on quality, stability and development of the workforce. *Working Together – Learning Together* (SEHD 2001) further describes the characteristics of a learning organization as it is understood by NHS Scotland:

- A coherent, well resourced learning strategy;
- A system of appraisal and personal development planning for all staff – linked to organisational and individual needs, regularly reviewed;
- Demonstration that education and training, and access to learning and library resources, is available on an equitable, non-discriminatory and increasingly flexible basis to all staff groups;
- Provision of a learning infrastructure that is accessible in terms of time and location – with adequate space within the workplace for study and sharing of knowledge with others,

access to personal computers with facilities for web browsing and internet access.

- Demonstration of strong links between education, training and development, career progression and reward for all staff;
- Use of a variety of development methods - coaching on the job, mentorship, learning sets, job rotation, secondments, project work, sabbaticals, as well as formal education and training – aimed at enabling staff to progress their careers and build on their skills and expertise;
- Regular publication, evaluation and monitoring of learning activity.

The idea of a learning organization presented by these documents is explicitly centred on supporting learning and development of the workforce to provide better services to the population, rather than on conceptions of competitiveness or innovation.

6.2 Lifelong learning

The idea of lifelong learning is a centerpiece of the development strategy of NHS Scotland:

“Part of building a learning organization involves encouraging individuals to view learning not just as a means of acquiring qualifications, but as a way of life. The NHS in Scotland is committed to the concept of lifelong learning ... The concept of lifelong learning reflects the fact that, in the midst of change, we need to update continually the skills in the workforce and better equip people to manage their own future. Learning is a broad term encompassing a wide range of activities including initial and adult education, training, skills development and leisure activities. Lifelong learning is particularly concerned with improving access to learning opportunities and encouraging people to take greater responsibility for their own learning.” (SEHD 1999, Chapter 5):

The idea of lifelong learning has been connected with performance review and career development within NHS Scotland. The *Working Together-Learning Together* scheme (SEHD 2001) clearly links the three aspects together:

“Staff throughout the NHS will be encouraged to take greater responsibility for their own learning. In return, they can expect:

- support from their employer in helping them keep up-to-date and acquire new skills, including access to appropriate learning resources and to induction training;
- the opportunity to sit down with their managers/senior professional colleagues at regular intervals, to discuss their development needs and identify learning opportunities;
- help in preparing personal development plans and/or learning portfolios which support their career development;
- local decisions about investment in education and training activities, including access to funding, based on a reasoned assessment of learning needs and the service development objectives of the NHS;
- to take part in team based learning as well as self development activities;
- to have their skills and competencies recognised as part of the continuous process of lifelong learning.”

This is furthered by the *Knowledge and Skills Framework* (SEHD 2004), which has been a large-scale effort of the Scottish Executive to establish methods and standards for developing the knowledge and skills needed, reviewing performance, and generating consequences for promotion and career development. The aims of this framework are to:

- Facilitate the development of services so that they better meet the needs of users and the public through investing in the development of all members of staff.
- Support the effective learning and development of individuals and teams.

- Support the development of individuals in the post in which they are employed so that they can be effective at work, and managers enabling staff to develop within their post.
- Promote equality for and diversity of all staff – with every member of staff using the same framework, having the same opportunities for learning and development open to them. (SEHD 2004)

The framework places Continuing Professional Development (CPD) and Personal Development Plans (PDP) as essential aspects of the development and review cycle. A PDP identifies the individual's learning and development needs and interests and how these will be taken forward. The PDP is the outcome of the planning stage of the development review process. Initially, the PDP should focus on enabling individuals to develop and apply their knowledge and skills to meet the demands of their current post – as described in the NHS KSF post outline. As an individual gradually develops their knowledge and skills and applies them consistently to meet the demands of the post, the emphasis is likely to shift towards career development.

“The NHS Knowledge and Skills Framework (KSF) defines and describes the knowledge and skills which NHS staff need to apply in their work in order to deliver quality services. It provides a single, consistent, comprehensive and explicit framework on which to base review and development for all staff. The NHS KSF and its associated development review process lie at the heart of the career and pay progression strand of Agenda for Change.” (SEHD 2004)

The NHS KSF is designed to form the basis of a development review process. This is an ongoing cycle of review, planning, development and evaluation for all staff in the NHS which links organisational and individual development needs:

- Reviewing how individuals are applying their knowledge and skills to meet the demands of their current post and identifying whether they have any development needs.

- Developing a Personal Development Plan for that individual detailing the learning and development to take place in the coming months and the date of the next review.
- Learning and development for the individual supported by their reviewer.
- Evaluating learning and development and reflecting on how it has been applied to work.

This framework is associated with lifelong learning as much as performance management, and the National Agreement includes a commitment to annual development reviews for all staff and a commitment to the development of all staff. Everyone will have their own personal development plan – developed jointly in discussion with their reviewer. Everyone is expected to progress and develop throughout their time working in the NHS.

6.3 Knowledge management strategies and initiatives

Learning Together (SEHD 1999) emphasizes the importance of access to a sound knowledge base as part of the resources of information, skills and facilities needed to support learning:

“The Management Executive is currently working on the policy objectives and information technology needed to support a coherent national information network for health care in Scotland ... to ensure that within five years all staff groups in the NHS in Scotland have ready access to comprehensive and improved library and information services designed and resourced to meet their learning needs. (SEHD 1999, para. 3.21)

Most of the strategies and initiatives to develop the above discussed ideas have been implemented by NHS Scotland through the creation of NHS Education Scotland (NES) as a Special Board. *Working Together - Learning Together* (SEHD 2001) already introduced many of the aims that would be taken up by NES later:

“The NHS and its partner organizations, particularly across social care and education, need effective strategies to use the knowledge assets available to them. They need to be able to:

- identify knowledge needs;
- find evidence based resources to meet them;
- ensure knowledge is widely available using information systems and networks;
- equip staff with skills to use the resources and systems effectively; and develop a culture conducive to sharing knowledge and learning both by electronic means and from person to person.

To support this, NHS library services offer access to a wide range of electronic and print learning and to knowledge resources ... Developing e-learning awareness and capability covering the use of new (electronic) technologies will be essential to support open and on-line learning processes ... with the technical support structure to ensure this happens.” (SEHD 2001, p. 55)

On 1 April 2002, NHS Education for Scotland (NES) was established as a Special Health Board to provide an integrated and coherent means of supporting education for employees in the NHS in Scotland, capable of taking a multi-disciplinary approach to ensuring fitness for purpose. It is a large organization with a headcount of 540 people working 393 WTE (NES 2006, p.14). The organisation combines the resources of three previous organizations, which were abolished on 31 March 2002, namely:

- The National Board for Nursing Midwifery and Health Visiting for Scotland.
- The Post-Qualification Education Board for Pharmacists.
- The Scottish Council for Postgraduate Medical and Dental Education.

Its aim is to contribute to the highest quality of health care in NHS Scotland by promoting best practice in the education and lifelong learning of all its staff.

“NES helps to provide better patient care by designing, commissioning, quality assuring and, where appropriate,

providing education, training and lifelong learning for the NHS workforce in Scotland. Everything we do and plan is based on eight fundamental principles:

- Patient-centred outcomes for all our work streams.
- Equity of access to educational support for all NHS Scotland staff.
- Appropriate balance between uni-/multi-disciplinary approaches to education.
- Responses to service needs that are speedy and effective.
- Working in partnership.
- Evidence-based and quality assured frameworks for all developments.
- A value-added dimension to all our initiatives.
- Valuing diversity and striving for a culturally competent workforce." (NES Website)

The *2005-2008 Strategic Work Development Plan* (NES 2005b) lays out some of the core functions of NES:

- Determining the educational needs of NHS staff.
- Providing an evidence base for effective approaches to learning and teaching through systematic evaluation.
- Identifying valid and reliable methods of assessment.
- Supporting and developing effective learning environments.
- Promoting a learning and questioning culture in the NHS.
- Informing educational development, delivery and implementation.
- Engaging in collaborative and partnership working to deliver the highest quality research and development.
- Seeking to become a centre of excellence for educational research and development, within NHS Scotland, the UK and internationally.

6.4 Support for learning

Several initiatives for supporting learning and access to learning have been developed through time, initially by the Scottish Executive and later by NES, for example (SEHD 1999, Chapter 4):

- Scottish Vocational Qualifications (SVQs) and Modern Apprenticeships.
- NHS Scotland Branded Learning Centres - 19 of these branded centres were established throughout Scotland, validated and endorsed by the Scottish University for Industry (SUFI), to enable all staff to access 'on line' learning material, as well as class based or paper based learning.
- European Computer Driving Licence (ECDL) - As with many other UK health services, NHS Scotland has adopted ECDL as a base level of competence with Information Technology for its staff.
- Return to Learn (R2L) is a Communication and Study Skills program, developed by UNISON (the worker's unions) that prepares staff for the achievement of nationally recognized units accredited by the Scottish Qualification Authority.

The Scottish Executive Health Department went so far as to consider the creation of a corporate university:

"We are committed to establishing NHSU by 2003. Our vision is to seek, over time, full awarding body powers so that NHSU can achieve the same status as other Universities. Although detailed work is needed to make this a reality, NHSU will be central to supporting delivery of this strategy and to developing staff education, training and development more widely." (SEHD 2001 p. 8)

This initiative was later rolled back and instead NHS Education Scotland took charge of outsourcing and commissioning educational projects from

universities and other partners. For example, the *2005-2008 NES Strategic Work Plan* (NES 2005b, p. 10-12) states that NES is working in postgraduate medical and dental training to fulfill increased targets for the numbers of trainees in General Practice and in training for hospital specialties. It has also commissioned and supported the education and training of 300 pharmacists in supplementary prescribing and over 1,500 pharmacists throughout Scotland received NES education and support through direct and distant learning initiatives for SEHD Pharmaceutical Care Model schemes in both Asthma and Epilepsy. NES has also been involved in designing and commissioning new educational programs. Working with the Audiology Modernisation Board, NES commissioned the provision of an undergraduate BSc (Hons) course in Audiology, a Graduate Diploma Conversion Course and related CPD training from Queen Margaret's University College. NES also commissioned a diploma programme for operating department practitioners which was validated by Glasgow Caledonian University and is franchised to NHS Lothian for delivery.

The role of information technologies in supporting new modalities of learning has been recognized at least since 1999:

“Information technology has greatly increased the flexibility for staff to learn when and where they want. IT networks offer enormous potential for NHS staff to access new learning methods and developmental opportunities. This potential is hugely enhanced if the facility is available to all staff groups (not just clinicians), if there is appropriate training in how to make the best use of the technology, and if it is networked with other learning and reference centres. (SEHD 1999, para. 3.1)

In recent times, NHS Education Scotland has given quite a lot of attention to e-learning:

“E-Learning offers an innovative means of providing education that can be tailored to the requirements of all different staff groups. NES wishes to develop its capability in this area by working with the Service and other educational organisations to devise a unified and practical e-Learning strategy, reflecting the requirements of NHS Scotland.” (NES 2005b, p. 27)

For example, the North of Scotland Tele-Education Project (NoSTEP), which completed its development phase in March 2005, contributes to the development of healthcare workers across Grampian, Tayside, Highland, Orkney and Shetland. Another e-learning project which has had quite a lot of success is the British Medical Journal (BMJ) new broadband learning service for junior foundation doctors and their clinical tutors. The BMJ Learning Foundation Program is the first service aimed at helping foundation level 1 and 2 junior doctors with meeting the curriculum requirements of the Academy of Medical Royal Colleges and Department of Health syllabus. This service is also used by nurses at NHS 24.

6.5 Support for collaboration and networks

Fostering formalized communities of practice (under the names of *Managed Clinical Networks* and later *Managed Knowledge Networks*) was seen early on as one of the key strategies in developing a learning organization:

“The development of managed clinical networks provides the potential for a whole new approach to team-based learning and peer review. In establishing these networks, Trusts and Health Boards will want to take account of the learning opportunities they offer.” (SEHD 1999, para. 3.19)

“The changes in the pattern of education and training, the working time directives, the difficulty with recruiting skilled staff and increasing clinical subspecialisation make it difficult for health-care organisations to maintain comprehensive local services that cover all medical specialties. By becoming part of a managed clinical network, a service can maintain access to the whole range of subspecialties and thus improve the quality of patient care.” (Lugon 2003)

Managed Clinical Networks (MCNs) are linked groups of health professionals and organisations from primary, secondary and tertiary care, working together in a co-ordinated manner, unconstrained by professional and NHS Board boundaries, to ensure equitable provision of high quality, clinically effective services throughout Scotland (SEHD 1999b).

Key objectives of MCNs are to:

- Involve patients and their carers;
- Set and demonstrate evidence-based standards of service;
- Ensure that patients are managed in the right setting at the right time;
- Ensure that appropriate management is available to sort out difficulties arising in the care of individuals and the network as a whole;
- Underpin the network with an information infrastructure that informs service planning and redesign; and
- Regularly report on the network performance to the public. (NHS QIS 2007)

Among the core principles of an MCN are:

- Each Network must have clarity about its management arrangements.
- Each Network must have a defined structure which sets out the points at which the service is to be delivered, and the connections between them.
- Each Network must have a clear statement of the specific clinical and service improvements which patients can expect as a result of the establishment of the Network.
- Each Network must be committed to the expansion of the evidence base through appropriate research and development.
- Each Network must be truly multi-disciplinary/multi-professional. Each Network should include patient representation in its management arrangements.
- Each Network must have a clear policy on the dissemination of information to patients, and the nature of that information. (NHS QIS 2007)

Delivering for Health (NHS Scotland 2005, p. 39) states that "Managed Clinical Networks (MCNs) are now a well-established part of NHS Scotland's approach to the management of long-term conditions, promoting integration of services and patient focus through the strong involvement of patients and clinicians ... Many NHS Boards have established (or are setting up) a MCN office as a generic administrative resource to support a number of networks."

A study by Burnett, Webster and Williams (2005) of current practice and use of information in MCN's found that:

- The interdisciplinary, collaborative working practices of MCNs involves a two-way flow of information between health professionals, patients and other organizations involved in patient care.
- MCNs are committed to evidence based practice.
- Staff involved are aware of the importance of information and that the quality of decisions is dependent on how easily it can be accessed.
- How information is used depends on the role of the individual.
- Participants represented a variety of roles within MCNs.

Information use included both documental and personal modalities, as colleagues were often valuable sources of knowledge and information. It was also found that the provision of information to patients sometimes involved a quality control process to ensure information is suitable and, where possible, evidence based. It is expected that new ways of working offered by MCNs will assist in making the patient the focus and keeping him or her informed throughout the care journey, as the culture of MCNs appears to foster a feeling of ownership and responsibility and a commitment to providing patients with the best possible information, as well as other aspects of health care.

An interesting finding was that some of the participants in this study showed awareness of knowledge management and how it could be applied in the context of their roles. That they showed more awareness than participants in a previous study is perhaps attributable to their involvement in a MCNs or similar networks which involves them in sharing information and knowledge with a wider group.

Knowledge Portals are associated to MCNs and offer the technical infrastructure to support knowledge sharing across disciplines and sectors, creating 'Managed Knowledge Networks' (MKNs) which link staff involved in the patient journey within a particular condition. The first MKNs were launched in May 2004, with new ones added every year. Currently there exist several MKNs around the main illnesses: cancer, coronary heart disease, stroke, diabetes, dermatology, etc. there are also some networks formed around a staff group or context of delivery, such as GPs or remote rural Scotland (Caldwell et al 2008, p. 125)

A MKN is defined as "self-directed, extended communities of health care practitioners and managers, operating across boundaries of discipline, organization and sector, linked by the need to access and share knowledge to support a common area of interest or practice" (Caldwell et al 2008, p. 133).

6.6 Information support and knowledge services

An important branch of NES is the e-Library and Knowledge Services Management, which NES aims to develop around the principle of knowledge support throughout all stages of the patient journey. Key areas of focus are:

- The extension of managed knowledge networks in clinical priority areas, such as cancer, coronary heart disease (CHD) and stroke.

- The development of local NHS knowledge infrastructure in collaboration with managers and service providers at local and regional levels. This will facilitate implementation of integrated cross-boundary knowledge management strategies.

Exploiting the Power of Knowledge in NHS Scotland (NES 2004), reports two user needs analysis studies which focused on opinions of different NHS staff groups and the other on the needs of Managed Clinical Networks and new primary care configurations. Key findings of these surveys were that (p. 3):

- Remote access to the knowledge base is now considered essential for all NHS staff.
- Integration of knowledge sources and links with patient record systems are required to simplify access and ensure application of knowledge to delivery of patient care.
- Services have to be tailored to the needs of individuals and staff groups to address the problem of information overload.
- A proactive approach to service provision uses “push” mechanisms to alert users to new information in their field of interest.
- There are gaps in existing services, particularly in relation to evaluated evidence, the needs of non-clinical staff, and the new staff roles created by modernization of the NHS.
- New, cross-boundary health service models and emerging new roles for NHS staff create a need for a knowledge management culture that facilitates sharing of knowledge.
- Users recognize that the role of the librarian needs to change from an emphasis on administering print repositories to becoming an educator, knowledge navigator and expert searcher.

The document states a vision for the future that centrally focuses on developing Knowledge Services that are:

- Transformed and modernized by the application of technology
- Capable of delivering knowledge to point of need on an equitable basis to all staff groups and all geographic areas
- Facilitated by skilled information practitioners and managers who can match the use of the technology to the information needs of staff

(NES 2004, foreword)

Exploiting the Power of Knowledge (NES 2004) defines six major development themes for 2004–2007, reflecting the NHS strategic context and the needs identified by user consultation:

- Consolidation of e-library content
- Development of cross-organizational knowledge networks
- Development of managed knowledge networks
- Provision of information skills training and outreach programmes
- Provision of training and development for the librarian workforce.
- Development of a quality assurance framework for NES knowledge services

'Knowledge Services' covers the range of activities, resources, tools, skills, values and attitudes which support the knowledge management cycle illustrated below, (NES 2007):

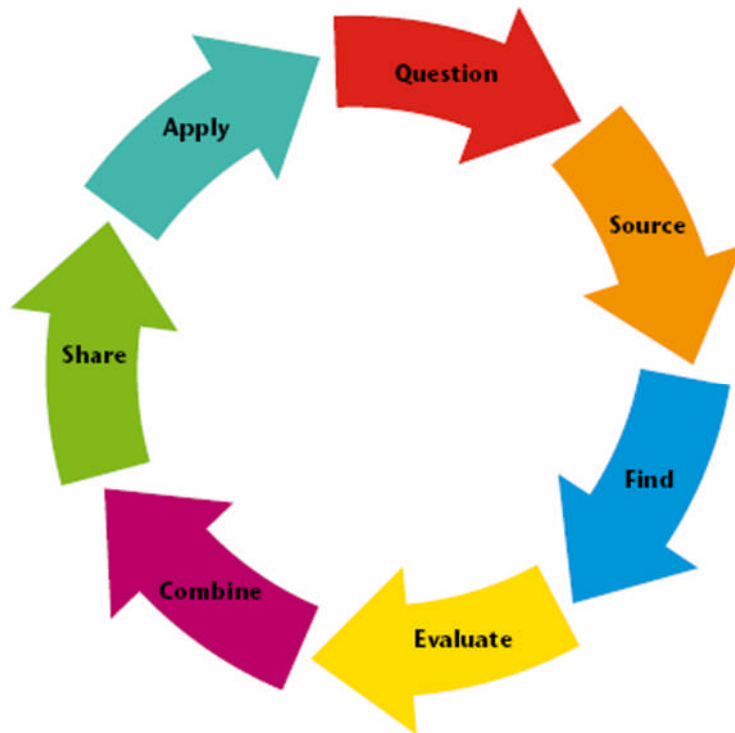


Figure 21. NHS Education Scotland knowledge management cycle

Knowledge services support includes the following activities:

- the analysis of knowledge needs;
- the identification of appropriate knowledge sources - both explicit (published) and tacit (personal);
- retrieval and capture of knowledge;
- evaluation and synthesis to create new knowledge;
- sharing and communication of knowledge; and
- application of knowledge to practice.

(NES 2004, p. 8)

NES provides the following specific support through the Knowledge Services Group (NES 2007):

- General and specialized E-Libraries
- Library management systems, including metadata management.

- E-Learning repositories and contracts with external providers
- Learning partnerships with education providers
- Websites for health practitioners
- Websites for the general public
- Support of MCN through groupware (e.g. *Shared Space*)
- Alerting services, e.g., current awareness bulletins, selective dissemination of information, print and electronic newsletters, contents page services.
- Dissemination of evidence-based guidelines and policies.
- Support for information literacy development (competency framework) through an Information Literacy Portal:

www.infoliteracy.scot.nhs.uk

“... Providing guidance, resources and tools to support users in developing their skills in defining their information needs, finding and evaluating information, sharing it with others and transforming it into practice (post-beta in May 2008)”

The e-Library is considered a key component of the modernized Knowledge Service. Within the e-library there is a family of specialist e-Libraries which provide knowledge resources and knowledge-sharing tools for defined subjects and audiences. There is an MKN associated with each of the specialist libraries and there are tools for helping people share experience and practice. These tools are called Knowledge Exchanges and Shared Spaces, launched in 2006. Shared Spaces are portals into the community information (Caldwell et al 2008, p. 126)

The patient journey model links e-Library technology to the day-to-day human interactions and practical work of healthcare teams. The patient journey model means that knowledge services for NHS Scotland can be designed first and foremost around healthcare conditions and ultimately around the patient experience, rather than around demarcated professions, sectors or organizational units (Wales 2005)

From Knowing to Doing: Transforming knowledge into practice in NHS Scotland (NES 2005a) is basically a strategic and development plan for 2005-2008 which re-states many of the already discussed themes (p. 6):

- Applying knowledge to patient care
- Patient Focus and Public Involvement
- Sharing knowledge through consolidation and development of existing MCNs
- A knowledge-competent workforce

While introducing a few new items:

- The strengthening of collaborative models of care.
- The growing emphasis on the role of the patient and carer within self-care and shared decision-making, with its implications for widening access to good quality health information
- Fostering development of the information literacy skills of all staff to help underpin service modernization and organizational development.
- Further systems integration to enhance information exchange and facilitate sharing of information resources and technology tools across organizational boundaries

Implementation of the strategy is based on four interdependent development themes (NES 2005a, p. 7-12):

- *Applying knowledge to patient care.* This involves designing the e-Library in such a way as to integrate knowledge support with key stages of the patient journey..
- *Health inequalities and patient/public involvement.* Involves patient focus and public involvement work strands aiming to empower patients, carers and the general public to take good care of their health and become involved in decision making.
- *Sharing knowledge.* To make an impact on healthcare practice, knowledge needs to be shared openly across

boundaries of geography, discipline, organisation and sector. The Communities of Practice model is an educational and knowledge management framework which helps us to understand how explicit knowledge resources can be shared and interpreted in the light of personal and professional experience.

- *Building a knowledge-competent workforce.* Moving from knowing to doing means equipping healthcare staff with the skills and values required to define their information needs; identify and search suitable information sources; evaluate and communicate the information retrieved; and apply it to the practice context. It also means linking knowledge support with specific personal and professional learning needs.

These themes manifest a concern with using information to support the main focus on patients and echo some of the main tenets of information literacy frameworks, albeit with a strong focus on application of information in the work context.

6.7 Knowledge management at NHS24

While the above exposed already introduced the wider strategies and initiatives for knowledge management and learning within NHS Scotland, and all of that applies to NHS24, some specific aspects related to this organization will be focused in this section.

In this regard it is appropriate to focus some of the problems and changes that the service has experienced since its roll-out, as these have defined the development of the organization and are reflected in the interviews to frontline staff. Of particular importance is the constant nature of changes and the impact this has had on developing service processes, training staff and managing information to operate the service.

NHS24 started with a mixed remit to “simplify access to care across Scotland and give people access to health advice, information and help, when they need it and, as far as possible, in one call”. The service was to offer the public access to health care and advice, clinical assessment through nurse consultation and direct referral to other NHS services. To achieve this it underwent a program of integration with out-of-hours (OOH) services across Scotland. Initially, NHS 24 was expected to support GP practices during their open hours, and it was estimated they would only get 60% of their calls in out-of-hours periods. However, the introduction of the General Medical Contract in 2004 allowed GPs to opt out of out-of-hours care, the responsibility for which was taken up by local Health Boards with the percentage of calls made OOH to NHS 24 increasing to the point where 90% of the calls were made in these OOH periods. It became clear that NHS 24’s role was changing. Due to increase in demand, shift in call times and lack of staff, access began to be problematic and a call-back system put in place, which meant some people had to wait too long (NHS24 2006)

An Independent Review Team looked at the situation of NHS 24 in 2005:

“NHS 24 is now an essential service provider partner within the NHS in Scotland. Following the introduction in 2004 of the General Medical Services contract, when GPs were given the right to opt out of responsibility for providing out-of-hours (OOH) patient care, it assumed a central role in the Scottish Executive’s plans for providing OOH care throughout Scotland.” (NHS 24 Review Team 2005, p. iv)

The Review Team concentrated on looking at the main problems and challenges that had arisen and highlighted:

- The difficulties in recruitment and retention of nurses;
- The way calls were taken and subsequently handled;
- The particular problems for people in remote and rural areas;
- The relationships between NHS 24 and other NHS partners;
- Staff and staffing issues;

- The impact on NHS 24 of the General Medical Services contract in 2003 and 2004;
- Problems facing patients transferring from NHS 24 to other parts of the NHS in Scotland ;
- The risks and the many problems caused by the persistent and reactive use of call-back;
- The fact that NHS 24, in enthusiastically promoting its existence, had failed to explain to the public at large that during out-of-hours periods its main service was intended primarily for callers who felt they had an urgent need for help or advice. (NHS Review Team 2005)

Amongst the problems identified, call-back was considered the most problematic issue. NHS 24 had set a target of picking up 90% of incoming calls within 30 seconds. In normal hours during the day it generally achieved or came close to that. But at busier times, over weekends for example, a caller may have to wait longer to be connected. At particularly busy times the caller received a pre-recorded message to that effect. This meant that lack of nurses made it necessary to call-back the less urgent cases, but was something that the service was not designed for doing. The Review Team made some recommendations:

“The only practical way to manage down call-back to the minimum is to change, always in consultation and always following rigorous assessment of risk, the ways in which the job is done. We make a number of suggestions and recommendations along those lines in this report. For NHS 24 these include:

- limited and monitored empowerment of experienced call-handlers;
- encouraging highly experienced qualified nurses and experienced call-handlers to break away from an almost pre-determined length of call time and to take the time appropriate for each call;
- encouraging experienced nurses to use the extensive clinical software as they themselves require on a call by call basis and not comprehensively as a matter of course;

- more efficient management in the technological and telephonic aspects of the operational handling of calls in all 3 contact centres;
- using the new volume predictive technology to ensure the best match possible of supply to demand;
- giving response priority to callers from remote and rural parts of Scotland.

(NHS 24 Review Team 2005, p. v)

The changes suggested by the Independent Review Team later gave rise in time to important modifications in the handling of calls: giving a larger role to call handlers through the 'Advise and refer' function; playing down the role of algorithms as the centerpiece of the nurse consultation; and shortening the overall duration of calls through a much more streamlined 'Service Design' and call management.

Other changes through time have been imposed by the complex nature of the shifts, as there have been continuous problems with recruitment of nurses and the complicated working hours.

"With service demand of 90% in the out-of-hours period and the consequences of this for staff shift patterns and the developing complexity of the delivery model involving an increasing number of sites and skill sets, innovative employee resourcing options will be required which can also deliver work-life balance for employees." (NHS24 Strategic Workforce Plan 2006)

One of the consequences has been the virtual dismantling of the formal teams that existed around a Team Leader. Nowadays, these teams remain but the people are in fact working different shifts and the Team Leader's relation to them is restricted to a supervisory role of their performance. On a day to day basis people work together around a pod on the basis of their changing rotas, with the Team Leader in turn. Thus, there are teams of which a Team Leader is nominally in charge and there are teams actually working together on the floor, changing on a daily basis.

Other important and continuous sources of changes have been the modifications to clinical guidelines and standards which are frequently adjusted as the evidence of mistakes and near-misses has made the service adjust to safer procedures, and also because of developments in guidelines outside NHS 24.

Finally, the service has been influenced by external challenges ensuing from the relationships with public and the NHS partners. This has involved, for example, a growing role beyond out-of-hours clinical advisory to providing more general health information and pharmacy services. The patient journey has required multiple adjustments in the relations with other NHS partners to be able to provide streamlined services that agree with the need of the patient and the conditions at the health care locations. For example, there is a developing role for medics in unscheduled care, which is different from the traditional role of the general practitioner. An increase in part-time and salaried practitioners in out-of-hours services creates challenges for joint working with partner NHS Boards (NHS24 Strategic Workforce Plan 2006, p. 23)

Working for a Healthier Scotland (NHS24 2006) presents the 2006-2009 strategy for the service and reports some key performance improvements (as of Feb 2006) compared with the previous year:

- An increase in service level (calls answered within 30 seconds) from 73% to 99%
- A reduction in the average time to answer calls from 52 seconds to 3 seconds
- A reduction in the average number of call-backs from 46% of total volume call to 13%.(p. 7)

Some statistics of the service (from the Chief Executive's operational performance report of July 2007) can give a better idea of the size of the service (NHS24 2007):

	Current Staff	
	01- Aug-07	
	WTE	Heads
Nurse Managers/CSMs	18	19
Nurse Team Leaders	83.4	90
Nurse Team Leaders-Satellites	13.2	16
Nurse Advisors	230.6	379
Nurse Advisors - Satellites	48.0	89
Band 5 Nurse Advisors	-	-
Breathing Space SHAs	10.5	21
Pharmacy Advisors	4.0	11
Regional Pharmacy Advisors	5.2	7
Dental Nurses	2.3	34
Total Clinical Frontline	415	666
HIAs	18.3	27
Senior Call Handlers	8.0	9
Call Handlers	280.8	458
Total Call Handling Frontline	307	494
Total Frontline	723	1160
Total Non-Frontline	218	232
Total Staffing	941	1392

Table 26. NHS24 staff 2007 (head count and whole time equivalent)

	July 07	July 06
Calls Answered		
Overall	117,922	123,834
Core Service	112,473	117,935
Helpline (incl. Healthy Living)	2,323	2,894
Breathing Space	3,126	3,005
Internet Visits	34,848	N/A

Table 27. NHS24 July calls answered (yearly comparison)

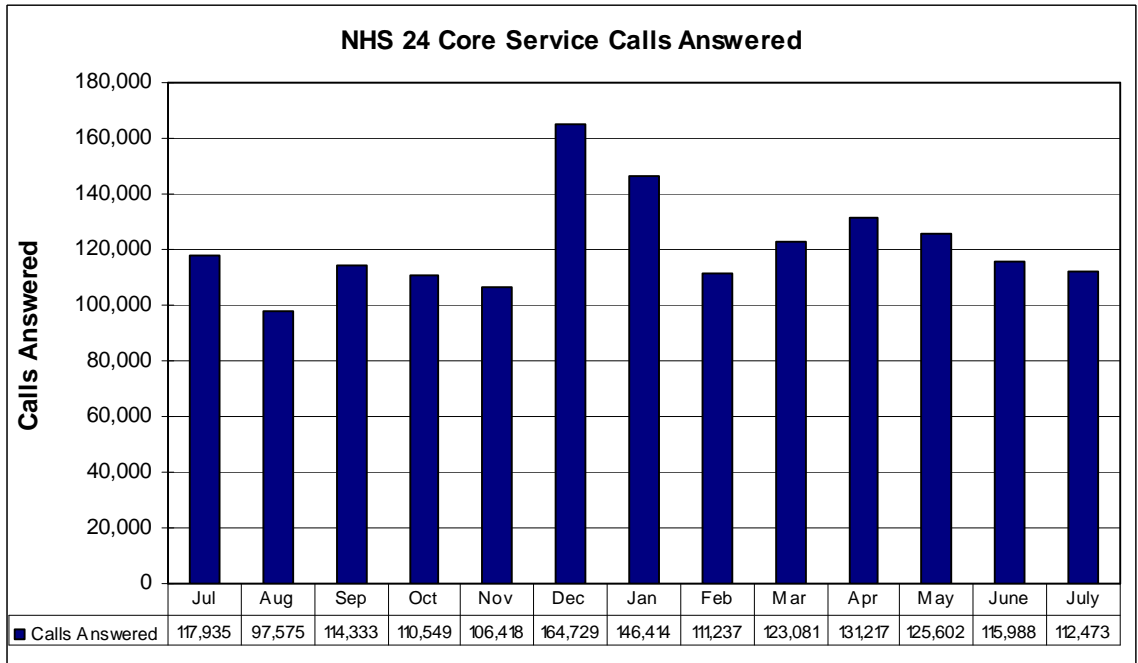


Table 28. NHS24 total monthly calls answered 2006-2007

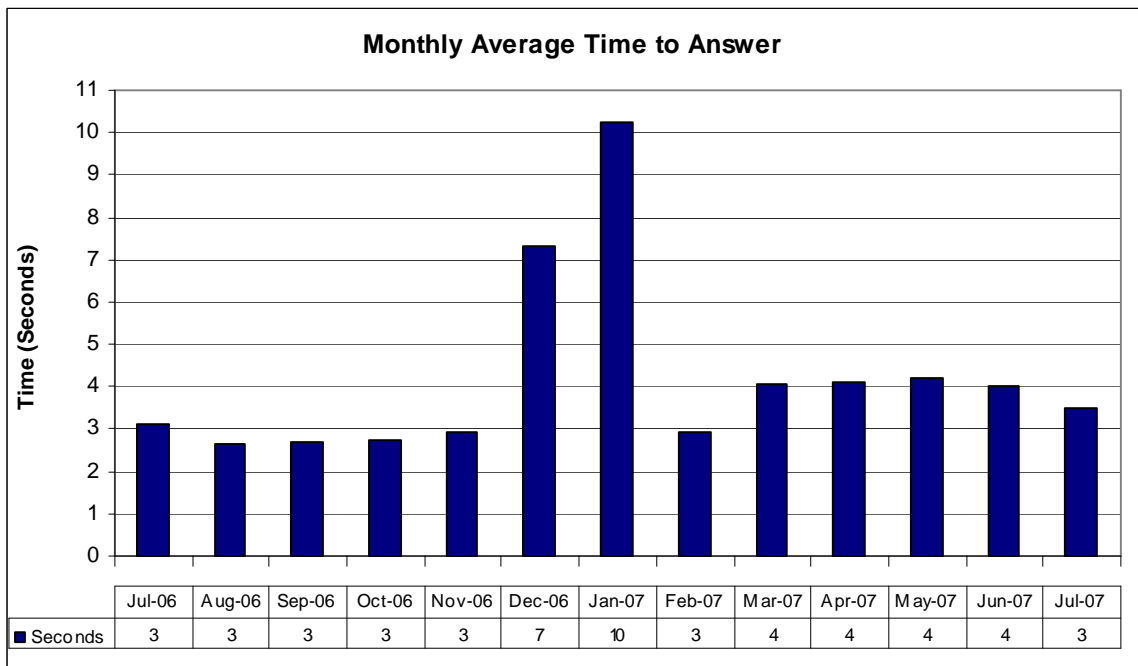


Table 29. NHS24 average time to answer 2006-2007

(NHS24 2007)

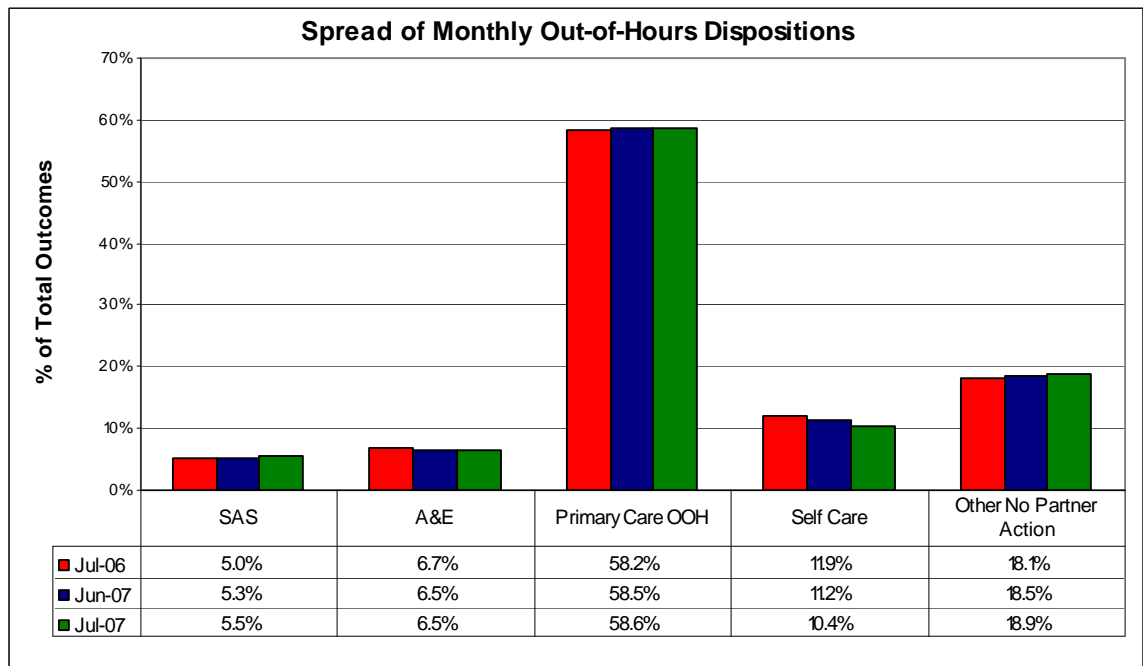


Table 30. NHS24 dispositions by type (yearly comparison)

<u>Volume of calls</u>	SAS	A&E	Primary Care OOH	Self Care	Other No Partner Action
July-06	4,901	6,545	56,568	11,566	17,536
July-07	4,961	5,915	52,057	9,449	17,100

Table 31. NHS24 calls answered by type of disposition (yearly comparison)

(NHS24 2007)

SAS = Scottish Ambulance Service

A & E = Accident and Emergency

Among the strategic priorities for the 2006-2009 periods are (NHS24 2006):

- New pharmacy developments. 10% of calls are about medicines, and some questions can be complex, so pharmacists provide specialist advice and support to

nurses. Also, a liaison with community pharmacists has allowed for prescriptions for repeat medication over the festive periods, reducing the pressure on OOH services

- Public Health Helplines. When public health concerns arise, the information to the public is streamlined in more efficient ways, reducing the pressure on GP practices.
- Health Information Service. More effort is being put on online resources, in addition to the role of HIAs.
- Hiring, developing and retaining a highly trained workforce. The role of the Call Handler is being developed to the 'Advise and Refer' role in some cases.
- Increasing operational effectiveness and efficiency through improving: knowledge management technology; workforce management; patient record systems; new pharmacy services that streamline self-care.
- Contributing to health improvement by encouraging and supporting users to take responsibility for their own health, offering more health information.

The development of the service delivered by NHS 24 offers many opportunities for clinical and non-clinical staff to enhance patient care through (NHS24 2006):

- Robust clinical assessment that identifies and meets patients needs;
- Focusing on the patient's journey as the key to the planning and delivery of clinical and support service rather than these being determined by traditional professional and geographical boundaries;
- Sharing best practice;
- Enhancing opportunities for continuing professional development;
- Making best use of resources.

For example, nursing role developments in the last years include (NHS24 Strategic Workforce Plan 2006, p. 22):

- Higher level critical thinking and decision-making;
- Structured clinical assessment;
- Call consultation review;
- Coaching in clinical practice;
- Practice educators and practice facilitators;
- Child protection in tele-health;
- Nurse consultant unscheduled care/tele-health.

Opportunities for continued professional development are supported by a comprehensive strategy for competency-based education from induction to postgraduate qualifications. NHS 24 continues to work in partnership with academic departments and NHS Education for Scotland (NES) to offer a wide range of accredited education programmes that address both clinical and individual development needs in terms of undergraduate and post-graduate education and research in order to improve the quality of patient care (NHS24 2006).

To support the development of NHS 24's workforce, the following principles underpin the work of the Learning and Development Team (NHS24 Strategic Workforce Plan 2006, p. 30):

- "All interventions, where possible, will be integrated within the performance management and development processes, with reference to and supporting the implementation of the knowledge and skills framework;
- We will develop interventions on a multi-disciplinary basis where possible, including the appropriate involvement of our partners;
- We will ensure that development includes focus on values, attitudes and behaviours and provides opportunities for individuals and teams to gain insight into their own styles, behaviours and personal effectiveness;
- We will ensure that a range of learning interventions are available which meets individual learning styles and fits around organisational service requirements;
- We will fully utilise technological developments to support learning;

- We will use validated programmes where appropriate, or achieve validation when required.”

The service has developed under a lot of pressure from increased demand, mounting pressures for effectiveness and safety, shortage of nursing staff, continuous changes in procedures and heavy workloads which have prevented the realization of some of the training and development targets. This is an aspect that came through the interviews and is acknowledged by NHS 24:

“Significant financial investment has been made in learning and development - however, the reality of the current situation is that, induction aside, it has been reactive and somewhat fragmented. The challenge for those responsible for Learning and Development has been in supporting the set-up of the organisation, whilst developing staff to meet the necessary organisational improvements required. That said, staff currently have access to a range of development opportunities supported through professional coaching, e-learning, study leave and bursary support, as well as the recent expansion of NHS 24’s library services.” (NHS24 Strategic Workforce Plan 2006, p. 31)

The Knowledge Team at NHS24

As an independent Board, NHS 24 has its own team in charge of supporting information systems and training in respect to their use. The mission of the Knowledge Management Team within NHS 24 is:

- Sourcing, developing, updating, maintaining information
 - Making that information accessible
 - Supporting internal and external knowledge sharing
 - Assisting staff to develop the skills they need to access and use information
 - Delivering library services
- (NHS24 2007b)

The Knowledge Team’s role encompasses:

- Knowledge management efforts to improve NHS 24's performance by creating, sharing and enabling the use and re-use of knowledge and experience from internal and external sources.
- Information/content management in a systematic way which allows data to be collected, created, updated, maintained, stored, disseminated and accessed.
- Training, support and development of information literacy, which includes assisting staff to develop the skills to effectively access, use and manage information and the systems it is delivered in.

The Knowledge Management Team consists of 9 staff – 3 Health Information Managers; 3 Information Officers; 3 Information Assistants. The Team supports approximately 1,000 NHS 24 staff across four sites, in the delivery and management of two core national services – nurse assessment and health information.

Information Officers develop and maintain a variety of quality assured information resources, such as data records, leaflets, books, websites and user-friendly tools and systems to deliver these. They offer guidance and mentorship to NHS 24 staff and encourage the development of sound information seeking skills and champion organizational use of electronic knowledge tools. They collaborate in the design and deliver training to NHS 24 staff on information content, systems and skills, individually and in groups. They also develop and manage library services over 3 contact centres, and undertake literature searching to fulfill staff enquiries.

The work of the Knowledge Team has focused on building the NHS 24 service and providing information management of resources for frontline staff. The tasks have been focused mainly on the following areas:

- Collection and maintenance of local knowledge for service integration, roll-out and operation
- Quality assurance of information resources

- Information skills training for frontline staff
- Development of library services
- Creation and dissemination of news and awareness bulletins
- Development of specialist clinical information pages

Among the achievements identified in the *Knowledge Management Delivery Plan 2006-2007* (NHS24 2006b) were:

Content

- Collection and maintenance of location of care data, maps and directions, and local service delivery details;
- Development and publication of specialist clinical information pages, e.g. health and drug alerts, enquiry support resources, Healthy Living resources, clinical processes, pharmacy/medicines information, and child protection;
- Quality assurance of websites and leaflets;
- Weekly knowledge bulletins for staff awareness of knowledge issues and new content;

Library Services

- Delivery of library services, including book, journal and leaflet collections, self-issue and postal loans, inter-library loans, literature searches;

Information systems & information skills

- Knowledge Management System development and implementation;
- Information skills/literacy training for front-line staff, including NHS Scotland e-Library, database and literature searching, bi-monthly HIA knowledge awareness sessions, HIA core induction, BMJ Learning sessions for nurse advisors.

- Information systems training for frontline staff, including developing user guides, Knowledge Web, library self-issue;

Online

- Development of the Patient Information Strategy; scoping and analysis, architecture & design, and business case for the eHealth Online Service;
- Launch of self-help guide and encyclopedia on nhs24.com, development of recommended objectives for online health information, development of an online enquiry service, recommendations for internal governance and website management, and strategic development of the website for service delivery.

The challenges identified in the 2005/06 KM strategy were (NHS24 2005, p. 8):

- Communications within and across four main sites and over 1000 staff
- Reluctance to leave comfort zone of paper-based resources
- Lack of staff education and awareness of value of KM
- Lack of supporting technology
- Motivation for people to share and collaborate
- Ability to understand and exploit the many knowledge resources available
- Lack of information retrieval skills
- Recognizing information and knowledge gaps within the organization
- Ability to keep information up to date
- Consistency of information architecture

“We need to work towards supporting an even more knowledge focused organization. Managing knowledge is fundamental to NHS 24. This knowledge may be clinical algorithms, databases for locations of care, intranet pages, project team documentation or advice offered from one colleague to another” (P. 10)

There are three comparatively small paper-based libraries in the main NHS24 centres, and their usage is growing with the average weekly visitor numbers for the Clyde Contact Centre Library standing at 534, and 200 at

the Norseman Library. There is much greater access to the NHS Scotland e-Library, and promotion of this service has been a key priority. A significant increase in the total e-Library accesses were recorded in 2006 – a total of 3,760 individual sessions or a 73% increase on the figures for 2005. Library staff have particularly favoured BMJ e-Learning modules having recognised the potential of this resource for continuous professional development. Usage figures for this resource have been consistently high with over 1200 accesses in 2006 (NHS24 2007c).

An important milestone was the roll-out of a new version of the PRM and KMS systems called "CONNECT" during the second half of 2007. This was a very complicated endeavor as this is a complex system with new functionality. CONNECT is not only a portal to information sources, but provides functionality to access patient records, advanced telephony, record transactions including voice, use of clinical algorithms and information exchanges with partners. For example, after a consultation an A&E partner will be advised that a particular patient will be calling in shortly, so they know what to expect. The system also provides advanced real-time reporting functionality that is related to the management of the queue. It is also connected with the telephony and electronic faxing systems.

There are no operating MCNs within NHS 24. This may be in part due to the fact that nurses at NHS 24 don't exercise a specialty, although they may be personally trained in one and have worked for years in it, because calls at NHS 24 deal with all sorts of illnesses. Another reason is that nurses don't participate fully in the patient treatment, but are only responsible for advising the callers and arranging, if necessary, for them to be seen elsewhere.

Other aspects of the knowledge management strategy fall under the already discussed learning and development programs which are generic to NHS Scotland.

6.8 Conclusions

NHS Scotland is an organization that has clearly recognized some of the most important challenges which typically are behind knowledge management initiatives. These include: performance management, quality management and personnel development. These challenges are tackled by three general lines of action:

- Information support
- Support for learning
- Support for collaboration

All of these have been pursued in systematic ways, mainly by the Special Board NHS Education Scotland but also by NHS Quality Improvement Scotland. There is a palpable concern with quality and performance improvement, putting the patient as the central focus, as the main drivers of the KM efforts. For example, a project on Integrated Care Records which was part of the *National eHealth/ IM&T Strategy 2004 - 2008* (NHS Scotland 2004) is expected to bring benefits to patients, carers and healthcare professionals by enabling:

- Greater patient involvement in their own care;
- Service redesign and the shift in the balance of care provided in different settings;
- Quicker exchange of information between professionals;
- Quicker access to patient records (with built-in patient confidentiality); and
- Continuous improvement by providing routine monitoring of quality standards.

Information support has been directed at the management of large databases of NHS documents, journal articles, e-books, guidelines, etc. The main point of access is the e-library, and a number of specialist libraries have been created that focus particular communities. In the case of NHS 24, the knowledge team has been responsible of integrating a specialized

collection of relevant information, along with many other items that are not library-related, such as the systems related to the management of calls. Some aspects of these systems and support of their operation could be considered knowledge management. For example, they are responsible for supporting information 'pushed' on the intranet related to health advisories, changes in procedures, events that affect the service, etc., which in the case of NHS 24 is very important as the service uses very short response times.

Support for learning has been developed under a comprehensive framework for lifelong learning that links targets for development and the review process with promotion and career development. There seem to be in place a number of specific initiatives to support learning at various levels. The concept of learning organization seems to be understood basically as being an organization that supports employee learning, although the creation of the Special Board for Quality Improvement can be associated with the idea of an organization that strives to adjust itself and improve in a systematic way based on the knowledge derived from organizational experience. Within NHS 24 formal support for learning occurs mainly through the induction process and later through coaching, although this process is also linked to performance management. Some people are enrolled in college degrees and the e-learning BMJ modules seem to be attractive to the clinical staff. There are also occasional talks by specialists brought in.

Support for collaboration has produced an important and visible result in the Managed Knowledge Networks of health care specialists, which are supported through specialized portals and e-libraries where members can both access documents and share personal experience and knowledge. Collaboration most certainly occurs also at less formalized levels, and is therefore difficult to account for and to manage. The study by Burnett, Webster and Williams (2005) showed the importance of people as information providers within MKNs. Within NHS 24 there is evidence from the present study that frontline staff often collaborate to source

information, get help in making decisions and make sense of changes to the procedures and other events that affect the service.

It seems clear that NHS Scotland and NHS 24 are knowledge-managed organizations. There is the documental evidence of policies, strategies and initiatives that clearly refer to KM. There is also evidence that these initiatives have been put in place to some extent, through the visible existence of information systems, electronic libraries, training programs, etc. However, knowledge management is a broad concept and there are many interpretations and applications. Snowden (2002) has identified three main waves in the development of the concept. NHS Scotland clearly has developed extensively the information management focus associated with the first wave. This basically involves the application of information systems and process reengineering to the problems of quality improvement and performance management.

The second wave has a focus on innovation and on converting tacit to explicit knowledge, with Nonaka's (1994) SECI model being more or less the archetype. There is not so much evidence (from the review of institutional documents) of this happening in NHS Scotland, apart from the effort to foster exchanges through the MKN portals. Rather, there seems to be a focus on acquiring and developing knowledge, for example through the implementation of evidence-based practice, fostering continuous learning, and extensive use of health information. The main challenges related to using it are developing absorptive capacity in the workforce and raising awareness of its value. It is certainly problematic for health services to develop applicable new knowledge as the process of validating and accepting new ways of working or the use of new substances, technologies or methods normally is very structured and protracted. The concept of evidence-based practice in health care, and the general institutional safeguards in relation to medical knowledge, are limiting in regard to easily adopting any new idea or practice, especially home-grown.

Some aspects of the third wave, which focuses more on sharing tacit knowledge under a relational model, seem to be addressed by the initiatives for creating (or just formalizing or supporting) networks of practitioners, and certainly the philosophy and values of this wave are evident in some documents.

NHS 24 has struggled during the last six years more than the other boards to set up its service in the midst of operating problems and mounting demand. Continuous changes have been necessary to put in place a new service with no prior experience. Information systems as well as the service processes themselves have been continuously updated. Also, the complex working hours along with some very intensive days when the service has to cope with the almost full demand for health services (such as the Christmas holidays) has put strains on the management of human resources.

The discussion of findings (Chapter 7) will focus on relating the outcome spaces obtained from the phenomenographic analysis (Chapter 5) with the documental information on NHS Scotland's KM initiatives presented in this chapter and the broader overview of KM concepts presented in Chapter 3.

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Chapter 7. Discussion of findings.

This chapter discusses the findings of the phenomenographic study of NHS24 frontline staff's conceptions of effectiveness in the job and effective information use (presented in chapter 5) in relation to NHS Scotland's and NHS24's initiatives for KM (presented in chapter 6) and the literature review presented in chapters 2 and 3. The discussion addresses the following three research questions (presented in Chapters 1 and 4):

- How are NHS24 frontline staff's conceptions of effectiveness and effective information use related to NHS Scotland's institutional strategies for knowledge management?
- How are NHS24 frontline staff's conceptions of effective information use related to relevant aspects of their workplace practice?
- What is the relevance and applicability of current IL frameworks to the workplace environment of NHS24?

This chapter also discusses implications for the three main fields of study involved in this research, IL, IBS and KM:

- IL institutional frameworks and other research into workplace IL which were presented in Chapter 2 are discussed in relation to how they fit with the picture of IL at NHS24 emerging from this research.
- It is also discussed how the findings of this study feedback to IB research, and how they support the argument for stronger relationships between IBS, IL and KM. Although exploring IB as such was not a focus in the research aims, this study has found important relationships with IL and KM.
- The basis of KM is the optimization of the processes of information and knowledge conducive to organizational success. However, the KM literature has not incorporated relevant contributions from LIS. Both IBS and IL provide

concepts, models and frameworks that can be applied to KM, and it is discussed here how the findings of this study support these connections.

This chapter re-examines some key concepts introduced in chapters 2 and 3 and discusses their relevance in relation to the findings presented in chapters 5 and 6:

- The progressive acknowledgement of the socio-constructivist theories of learning in the three main fields related to this study.
- The concept of situated practice as a theoretically strong understanding of context in relation to learning and information behaviour.
- The central role of people as information and knowledge sources and the importance of collaboration and sharing for effective information use in organizations.
- The interactions within a community of practice as a central aspect of producing meaning and sense making in the workplace.
- The importance of the relatively informal and experiential aspects of workplace learning, and how they are related to collaboration, reflection and organizational culture.
- The tacit nature of skilled performance and its implications for: awareness and meta-cognition; transferability and assessment of skills; and for processes of learning through apprenticeship.
- The multimodality of literacy and the need to support a continuum of literacy practices from school to workplaces.
- The organizational support for using information, collaboration and learning through the development of KM initiatives which involve values, discourses and practical actions.

The discussion also examines aspects of the methodological approach presented in chapter 4, particularly how this study links phenomenography to other evidence in order to relate conceptions to relevant aspects of the practice of the interviewees.

Even though conceptions are understood as relationships, most phenomenographic studies have not explicitly linked them to the practice whence they emerge. However, these relationships do not just belong in a mental realm; they are not only relationships to abstract concepts, but they develop from the interaction of the individual with others in a specific setting and within a historical perspective. The concept of situated practice involves a strong theoretical understanding of 'context', and in this study two main aspects of it are considered. The first one comprises the KM initiatives at NHS Scotland and NHS24, which involve values, discourses and actions of the organization, and has been researched from institutional documentation. The second comprises activities, relationships and sense making of NHS24 frontline staff related to effective information use, about which the interview material offers evidence.

Frontline staff's conceptions of effectiveness in the job and effective information use exhibit a structure of meaning (i.e. different aspects of what it means to be effective) as well as a structure of awareness (i.e. what is focused in each conception) which are related to the above mentioned aspects of their situated practice. It is from the analysis of the conceptions in the light of their relationships to the interviewees' practice that a picture of information literacy emerges from this particular workplace.

The discussion aims to show how this picture of information literacy challenges current conceptions of IL and contributes to our understanding of effective information use in a knowledge-managed organization. The discussion identifies limitations of the mainstream IL frameworks and suggests ways in which IL frameworks better suited to address information use in knowledge-managed organizations can be developed. Also, suggestions are made as to how to bolster the interactions between IL and IBS and increase their relevance for KM models.

7.1 Staff's conceptions of effectiveness and effective information use, and their relationships to NHS Scotland's institutional strategies for KM.

This section addresses the first research question outlined at the beginning of this chapter.

The review of institutional documentation on NHS Scotland and NHS24's strategies and initiatives for KM (presented in chapter 6) clearly shows that these organizations have paid more than lip service to the concept. There are a number of strategies and programs rolled out that give evidence of significant steps toward a 'management' of knowledge, mainly through support activities. This has involved the creation of NHS Education Scotland (NES) as a special health board with specific responsibilities for:

- Supporting the delivery of information at point of need through KM systems such as intranets, portals, and the e-library;
- Supporting the development of the workforce through continuous learning;
- Supporting collaboration and information sharing through the creation of Managed Knowledge Networks.

Additionally NHS24 has developed its own KM initiatives, which include information systems and support for learning, suited to the specific needs of service provision and workforce development of that organization.

NHS24 frontline staff's conceptions of effectiveness overall clearly reflect a structure of awareness focused on the processes and activities of service provision, as well as on important aspects of the organizational discourse and values related to KM, for example: focusing on the patients' needs; achieving outcomes based on clinical safety and the best patient journey; continuously developing the knowledge and skills base; and sharing information and knowledge.

For the purposes of this discussion, service provision at NHS24 can be analyzed as consisting of two tiers or groups of activities, analogous to the division between front- and back-office processes. The 'front office' activities at NHS24 deal with handling a call. Four conceptions of effectiveness reflect a focus on them (see corresponding sections in chapter 5):

- Conducting an appropriate process (5.1.1)
- Engaging in appropriate communication with the caller (5.1.2)
- Making appropriate decisions (5.1.3)
- Achieving appropriate outcomes (5.1.4)

These processes, and the related activities, are backed by the knowledge and skills base that frontline staff employ in their engagements with callers, along with the support and supervision of team leaders, coaches and peers. The conceptions that reflect this 'back-office' tier are:

- Support and collaboration (5.1.5)
- Developing an appropriate knowledge and skills base (5.1.6)
- Managing performance (5.1.7)

In both groups of activities there is information behavior involved and this general aspect of the frontline staff's work is focused in the parallel outcome space of conceptions of effective information use, which is discussed below.

The distinction between two tiers of activities and processes is important because KM can be considered to involve aspects of a 'back office' that supports performance through fostering collaboration, supporting knowledge and skills development, and facilitating access to information. Information literacy is also involved in all aspects of this 'back-office' as it is an aspect of supporting personal performance. KM occurs at the organizational level, while IL is individual (although exercised in social interaction, as the findings of this study show). In this analogy, KM can also be conceived of as a form of supply chain of information and knowledge.

This conceptualization is important in understanding how IL is perceived and enacted by frontline staff at NHS24. Information use is perceived by the interviewees as part of a background of subsidiary particulars, and information behavior appears largely based on implicit or tacit knowledge. This is consistent with the propositions of Polanyi (Tsoukas 2003) related to how expert performance has a focus of awareness that is centred on a main action (e.g. deciding on the best care outcome for a patient) which is supported by a number of 'subsidiary particulars' of which the person is much less aware, as they consist of semi-automatic actions (e.g. using an information system to find the patient record and log details of the call). This has the implication for IL and IBS that some aspects of skilled performance can be difficult to research, as people will often need to make a conscious effort to recall how they perform some actions. In this research it was found that information use, of itself, is not a central focus of attention of frontline staff and it was often difficult to get participants to reflect on how using information is implied in the main actions they perform.

The fact that frontline staff's conceptions of effectiveness in the job reflect a focus on the main aspects of service provision and the main discourses and values of the organization is not altogether surprising, but it is significant in two ways. Firstly, it shows that the organizational strategies and initiatives are a focus of awareness of the frontline staff at NHS24; that they are perceived and 'taken on board' (although this study is not assessing the degree to which they are actually enacted), and that there is a good alignment between the organizational discourses and initiatives and what the people perceive and do on the floor at NHS24. Secondly, it shows that staff's conceptions are influenced by the material aspects, discourses and values of the organization. This relationship is not seen as causality, but as correspondence. Attention is not just 'placed' on certain aspects of work but also 'drawn' to them by institutional discourses and values and by the sense making and interpretation made of them within the community of practice.

Institutional communication, the use of information systems, training and coaching activities are processes ensuing from the KM initiatives which engage people's attention to particular aspects of their workplace activity

and influence how these are understood and enacted. Figure 22 (based on figure 9, presented in chapter 2) shows how the phenomenological level of sense making, which involves the individual knower, is influenced by the social levels of sense making (participation in a community of practice and the wider values and discourses that constitute the organizational culture). In time, structural aspects will also be influenced by changes of conceptions and new agreements as to how things should be, as well as by external influences (Wikgren 2005). The diagram emphasizes the dynamic relationships between the phenomenological level of conceptions and the cultural and community levels of sense making that influence them:

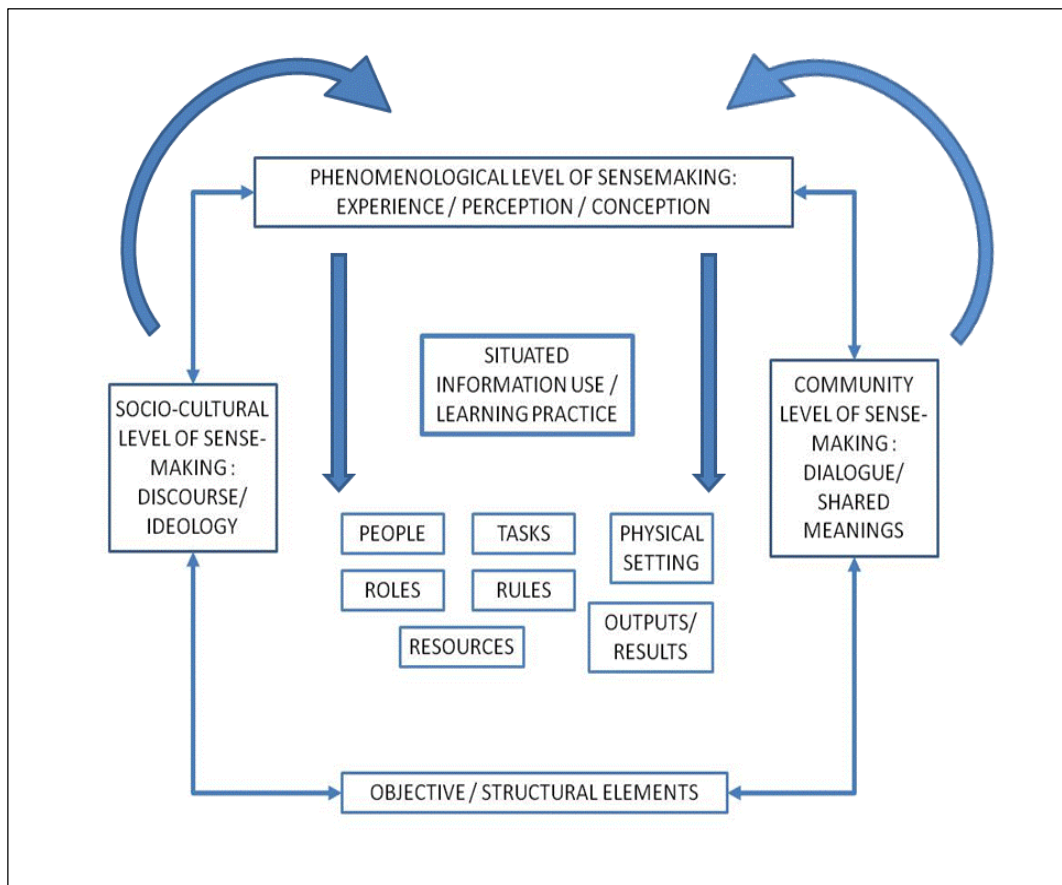


Figure 22. Conceptions are focused on aspects of service provision, but are influenced by the social sense making in the organization.

Wenger (1999) refers in almost poetical terms to this correspondence between experience (phenomenological level) and participation in situated practice (socio-constructive level) in the negotiation of meaning:

“In this interplay, our experience and our world shape each other through a reciprocal relation that goes to the very essence of who we are. The world as we shape it, and our experience as the world shapes it, are like the mountain and river. They shape each other, but they have their own shape.”
(p. 71)

Conceptions have focuses of awareness placed on concrete aspects of the staff's practice. The conception of effectiveness as conducting an appropriate process (section 5.1.1), for example, is not an abstract notion. Frontline staff are aware of established guidelines and procedures, and of potential problems derived from breaching them in handling a call: risking patient safety; lowering efficiency; incurring in legal responsibilities; etc. However, all these elements defining appropriate processes are individually experienced, perceived, and conceived of in a personal sense-making process. They thus lose the positive character of objectivity, e.g. a task or a role is interpreted and enacted in a subjective way; the use of resources is selective; an information system can be regarded as more or less useful; etc. The interpretation of meaning is however not individualistic, but social and situational. It is generated through working in a particular department in an organization; belonging to a professional community; living in a specific locality; etc.

Conceptions are not static, and the way they change shows a relationship to changes in organizational sense making. In the interviews, participants acknowledged the historicity of changes to how the notion of 'appropriate' process has been understood at NHS24 through time. For example, modifying service design to lower the average call time was a change that resulted from an organizational sense making process of what it means to handle a call effectively. And there is evidence in the interview material that conceptions of what it means to deal effectively with a call have changed in the past five years (see quote of AB10_TL in section 5.1.1). Conceptions therefore are related to organizational sense making and learning.

Of particular importance for this study is the fact that frontline staff's conceptions of effectiveness in the job clearly reflect two central aspects of NHS Scotland's KM strategies and initiatives: support and collaboration; and developing an appropriate knowledge and skills base through continuous learning. A third key aspect of KM, which relates to the use of documental information and information systems, is not focused directly as an aspect of effectiveness on the job but appears in the outcome space of effective information use (section 5.2.8).

Support and collaboration

The conception of effectiveness as support and collaboration involves four main focuses:

- Formal organizational support provided by Team Leaders and coaches (section 5.1.5).
- 'Informal' support and collaboration between members of staff (section 5.1.5).
- Sharing information and knowledge (sections 5.1.5 and 5.2.8)
- Organizational culture (section 5.1.5).

The second item, i.e. the focus on 'informal' support and collaboration, is considered key in most of the KM literature. The word 'informal' is placed between quotation marks here to indicate that from the point of view of KM this process cannot be completely informal (i.e. not following any rules of how to behave or do something), as it would then be meaningless to consider it managed (or manageable) in any way. Informal collaboration and support in organizations can be expected to happen spontaneously to some degree (Hislop 2005, p. 44). However, the data from the interviews and the institutional documentation clearly suggests that at NHS Scotland this aspect is intentionally fostered and supported. This ensues partly from the organizational culture, which the institutional documentation shows to purposefully promote the value of collaboration, and the attitudes and behaviours conducive to it.

This, correspondingly, involves a particular perception of the organization on the part of the interviewees. The structure of awareness in this conception of effectiveness focuses aspects of NHS24's organizational culture described as: 'an open environment'; a 'no-blame culture'; or a place where 'you can say you do not know something'. There is also evidence in the interview material (see quotes of CB3_NA and CB18_TL in section 5.1.5) that a particular 'ethos' of collaboration was developed at NHS24 from the beginning as a way of facing the challenges of launching a new and complex service from scratch. The need for collaboration was recognized and explicitly fostered, not only in a 'top-down' way by the management of the organization, but also within the communities of practice. There are also indications in the interviews that this 'ethos' is eroding as the service has become larger and the pressure on performance management has stressed the organization (see second quote of CB18_TL in section 5.1.7).

Thus 'informal' collaboration is not just a spontaneous phenomenon; it has some structure and support given to it. There are indeed some norms, albeit implicit ones, stemming from the value system put forward in the organizational discourse that guide collaboration and also specific organizational actions that foster its occurrence. An example of these actions are the 'leveling sessions' which periodically put people together in a semi-structured situation to talk about how a call is handled. Examples of even less structured activity are the interactions on the floor asking for help and giving it, which are nevertheless based on an understanding that it is permitted, accepted and even encouraged that you go to someone with a question on any aspect of your work, at any time. The layout of the seating around open pods is another element showing how informal communication is supported indirectly.

The main way in which support and collaboration work on the floor is through asking peers or Team Leaders for help or advice. The interview material shows that this is a very common behavior, along with its counterpart which is giving help or advice. That people have to ask for help could be seen in some environments as evidence of problems, such as lack

of training. At NHS24 the complexity of service provision is recognized, along with the overarching importance of maintaining clinical safety. The service is complex because calls can be about all sorts of problems and situations, the range of possible outcomes is quite varied, and there are often risks involved in the decisions made. When someone asks for help at NHS24 this is seen as responsible behaviour, rather than as evidence of incompetence, and it is encouraged. There is also going to others to expand the knowledge base, tapping into peers' experience and obtaining pointers to information sources or training opportunities. Sometimes the stressful nature of the job and the need to just 'blow some steam' or talk with a peer about something that happened in a call motivate exchanges. This is also part of support and collaboration at NHS24.

The exchanges between frontline staff and Team Leaders and coaches show various degrees of formality and structure. Some activities, such as the Team Leader listening to staff's calls and reviewing performance, are established organizational routines which have the aim of assessing and supporting safe performance, sometimes through corrective action. But there are also less formalized exchanges happening everyday as frontline staff raise their hands to ask for the Team Leader's support. The activity of coaches is quite formalized. All call reviews with coaches are conducted under a structured process that aims to assess and support performance through reflection on practice and development of skills.

Support and collaboration are important aspects of decision making and developing the knowledge base, through the sharing of information and knowledge (which is further discussed below as a conception of effective information use with several focuses of awareness). There are important elements of information behavior involved in these exchanges:

- Using people as information sources.
- Awareness of who has relevant knowledge.
- Gaining access to people.
- The actual processes of information and knowledge exchanges between people.

These aspects have been addressed to some extent in IB research (Leckie et al 1996; Kirk 2004; Widen-Wulff 2007) but they have hardly been given consideration in the institutional IL frameworks. The interactions between people in the organization have large implications for IL which not only include the consideration of people as information sources, but also of the processes of effective collaboration and mutual support for learning, which involve specific values, abilities and skills. As Lloyd's (2007) research has shown, developing them is not just a matter of 'induction' training but of relationships of apprenticeship within a community of practice. These considerations seem difficult to accommodate in school-based IL, and they point at the need to develop specific workplace-based IL frameworks which contemplate these kinds of processes.

KM, on the other hand, has recognized the central importance of people and the processes of collaboration and sharing, but there is little recognition in the literature of the contributions of IBS and IL to the study of these processes. In the case of IL, the limitations of school-based approaches partly account for this lack of recognition, but there is also a more general disconnection between disciplines, such as librarianship and management, that seems to account for it and which should be addressed by LIS. Research into information behaviour and IL has large potential for contributing to these aspects of KM.

Developing the knowledge and skills base

The conception of effectiveness as developing an appropriate knowledge and skills base (see section 5.1.6) involves four main focuses of awareness, all related to learning:

- Learning on the job (induction training; learning from calls; learning with peers)
- Updating personal knowledge (recognizing knowledge gaps; looking up information; e-learning and further training)

- Developing skills (communication; information use; 'people' skills)
- Effective learning (motivation to learn; keeping updated; reflecting on performance)

These focuses reflect NHS Scotland's institutional discourse on lifelong learning and the initiatives to support it, of which the following key elements were identified in the review of documentation (chapter 6):

- A clear strategic perspective of the importance of developing knowledge through continuous learning.
- A clear strategic perspective of the importance of making health-related information available to NHS staff and to the general population of Scotland.
- The development of information systems to: deliver information at point of need to staff and to the public at large; deliver more flexible training through e-learning; facilitate sharing of information and knowledge (e.g. best practices and lessons learnt) amongst people in the organization, particularly through portals specific to MKNs.
- The development of training processes in closer alignment with quality management, performance management and continuous learning.
- The development of reflective practice as part of continuous learning and professional development.

In relation to this conception we can also distinguish formal and informal aspects, or different degrees of structure, in learning activities. The development of knowledge in the organization has many informal aspects, such as learning with peers on the floor, which can be linked up with the informal collaboration discussed above. It is important to highlight the relevance of these (relatively) informal learning processes. The interview material provides evidence that a large proportion of the learning at NHS24 happens through semi-structured engagements with peers and personal knowledge updates.

Formal training is central in the induction period of all staff, and afterwards training sessions are offered on a continuous basis, but only a few are mandatory (e.g. training for the rollout of a new PRM system; getting information about particular illnesses such as meningitis; learning about health alerts; etc.) and are often widely spaced apart. Additionally, some people go on to do further formal training, for example college degrees or Scottish Vocational Qualifications (SVQ). Altogether, these formal learning opportunities are not focused by the interviewees as the most frequent or important instances of learning. This seems to echo Lloyd's (2007) finding that induction training accounted for a small part of firemen's workplace learning.

The interview material shows that most continuous learning is happening on the job as experiential learning which is linked with collaboration, social sense making, and reflection on practice. For example, the induction training sessions for the roll out of the new PRM "Connect" system were considered by some interviewees as only a first step in learning about it, while actually using it would take the greater part of the learning curve. In some cases, due to delays in the actual roll out of the system, some people were given training months before they actually went live with it, lowering the usefulness of the induction training. And the slack has to be picked up in the live practice. One Team Leader talked about how people requiring assistance with the new system would be an expected additional burden for her when it rolled out, which shows the social sense making aspects of interpreting and applying the new system.

One of the most central aspects of learning at NHS24 is listening to calls and reviewing performance along with peers, Team Leaders and coaches. These activities display varying degrees of structure and also different purposes, shifting between skills development and quality assurance. An example of the more formal aspects is the Team Leader's periodic review of staff's calls, which is an established aspect of performance management and happens regularly as a fixed organizational routine. Listening to calls with a coach is another formalized activity, intended primarily as a development role, but which does not happen quite as regularly mainly due

to lack of personnel. Leveling sessions are a less formalized activity in that they do not happen regularly and the structure of the interactions between participants is rather loose; attending is not mandatory and there is no 'expert' heading the session. There are also the still less structured activities of listening to calls on your own or talking to peers about your calls, which happens very often as the interview material shows. The latter case generally involves commenting on specific aspects of challenging calls, for example after dealing with uncommon cases, aggressive callers or making clinical decisions which fall outside of the nurse's comfort zone.

All of these interactions involve social sense making directed at the interpretation of information and knowledge applied to job performance. It is an important aspect of the findings of this study that people talk to each other as needed, not just to 'transmit' information but to understand what it means in relation to its application to the job activities and problems.

Skills development is an aspect supported only partially through formalized learning activities such as induction training. The interviewees report that most of their skills development beyond initial training is based on experiential learning, for example through practicing the use of the information systems and getting better at communication with callers through repeated experience. An interesting aspect of the findings of this study is that skills tend to recede into tacit knowledge, of which people do not show much awareness, especially as they become more skilled and expert. For example, the skills involved in the use of information systems were not focused directly as an aspect of effectiveness in the job, although people at NHS24 are using information systems all the time. Mention of their use appears in the interviews in a background or subsidiary position, in relation to what it means to be effective. Interviewees often talked matter-of-factly about looking for information and other uses of information systems. This seems consistent with the notion, advanced by Polanyi, that routine skills and the use of tools become part of the 'subsidiary particulars' of a main action (Tsoukas 2003, p. 415-417) which in this case consists of engaging with the caller to arrive at a health care decision, or addressing a knowledge gap through information seeking.

Although a lot of learning at NHS24 happens through experience, the interview data show that an important aspect of experiential learning is reflection on practice. This is in agreement with some authors who suggest that it is not mainly in experience itself that the key of experiential learning lies, but in reflection on experience (Boud et al 2006; Reynolds and Russ 2004). We can sometimes repeat an experience many times without really learning anything new or changing our perception of what is going on. At NHS24 reflection is induced or fostered mainly through coaching and performance reviews. With different approaches (one focusing more on skills development; the other focusing more on quality assurance) reflection is an important aspect of the review of performance with a coach or a Team Leader.

Reflection is also fostered through leveling sessions, where anonymous calls are reviewed. These sessions have the advantage that the focus is not on the performance of anyone in the room, and this facilitates critical assessment. The discussion of the call in a group involves a social sense making of what is right and what is not so good in a call, along with discussing options for doing things differently. Of course, part of the reflective exercise involves interpreting this collective assessment and relating it to one's own practice. Finally, some people review performance on their own, listening to their calls in private. Reflection on practice features prominently in the conception of being an effective learner and in the interviews it is related strongly to personal attitudes and motivation to learn, rather than ensuing from formalized organizational incentives. These examples show that while informal and experiential learning imply an important degree of personal initiative, they are for the most part a matter of exchanges with peers and social sense making rather than an individual endeavor. The criteria for the assessment of performance are developed by the organization as general standards and guidelines, but they are interpreted and applied by the communities of practice, as many aspects of what is considered a good call are subjective.

Keeping updated was focused as an important aspect of being an effective learner, ensuing from a fundamentally personal motivation to learn, which

involves identifying personal knowledge gaps and finding information. But it is also a social activity as peers are often sources of information or pointers to them, as well as being interlocutors in identifying knowledge gaps and in discussing new concepts. Coaches and team leaders are key participants in the performance review processes where knowledge gaps are often identified. Updating knowledge often involves social sense making. For example, information about changes to procedures and events that affect the service is communicated to the frontline staff through the institutional communication channels (e-mail, intranet, plasma screens, handovers, etc.), but the information is often discussed with peers and team leaders to ensure it is understood and applied effectively. If information is received about a change in some procedure, it may be important to discuss: Why it changed? What are some consequences and ramifications which may not be self-evident? Is the change perceived to be useful? Etc.

Knowledge updates often involve looking up information in electronic systems as well as the use of printed sources such as books or journals, sometimes at home. Another aspect of updating personal knowledge is e-learning, which involves flexible distance learning. Nurses in the interviews often referred to the British Medical Journal (BMJ) e-learning modules. All of these activities can be easily related to the mainstream IL frameworks inasmuch as they involve the use of documental information sources.

However, the role of peers in providing information, sign posting to other sources, and sense making (Williams and Wavell 2006), is also an important feature of information behavior at NHS24 which can be related to the concept of social capital (Widden-Wulff and Davenport 2007). In this regard, NHS24 can be described as a 'socialist' organization, as there is relatively easy access to social capital (although this aspect was not focused directly by this study). Staff at NHS24 consistently highlight the importance of accessing peers' knowledge to: learn about and make sense of changes and events (see section 5.2.1); learn about the use of information systems (sections 5.2.2 and 5.2.8); get help in decision making (sections 5.1.3 and 5.1.5); and expand the knowledge base (sections 5.1.6 and 5.2.7). Peers are also helpful in signposting other sources of information or knowledge,

including books, journal articles, internal publications, training opportunities, etc. (sections 5.1.6 and 5.2.2)

In sum, people are used as information sources in all aspects of both the front- and back-office processes. Often help is sought at the moment a call is being taken, raising a hand for the Team Leader or asking the person sitting next. At other times calls are discussed and opinions shared in the quieter moments, after the calls have been dealt with (these instances are less frequent in the busier shifts). Often the knowledge base is enhanced through conversations about general professional topics, such as learning more about illnesses which fall outside of the own nursing specialty.

Developing the knowledge and skills base is an important focus of both staff's conceptions and the institutional discourse of KM initiatives which has several key aspects with important implications for information behavior models and information literacy frameworks:

- Large importance of people as information and knowledge sources.
- Social sense making of the meaning of information and its application.
- Large importance of relatively informal learning activities.
- Large importance of learning with peers.
- Importance of reflection on practice as a central aspect of experiential learning.
- Use of information from performance reviews (feedback).
- 'Tacitness' of skills in expert performance.
- Awareness of learning opportunities as an aspect of the information landscape.
- Use of documental information to learn.

IL frameworks have rightly focused the importance of lifelong learning, and this is a key aspect which links them with KM models. However, the almost exclusive focus on using documental information sources for learning severely handicaps IL frameworks in regard to their workplace application.

The importance of people and interactions between them for information and knowledge exchanges has already been discussed. Another aspect that has to be addressed more clearly as part of workplace IL is the importance of experiential learning and reflection on practice. IL frameworks have addressed some aspects of reflection, but they haven't given much consideration to experiential learning. There is significant evidence to claim that this is an intrinsic aspect of any workplace (Schön 1999; Brown and Duguid 2000; Hislop 2005, p 142-145) and therefore workplace IL should address the values, abilities and skills involved in effectively using information as an aspect of experiential learning in organizations.

IB models have for the most part not focused learning as a general aim of information behaviour and this is probably a significant handicap in their application to KM. Although all IB models imply learning theories of some kind, many of them are based on individual cognitive theories of learning which fail to address the complexity of social interaction and the creation of meaning as a social construction. Activity theory (Wilson 2006; Widen-Wulff and Davenport 2007), domain analysis (Hjørland and Albrechtsen 1995) and constructionist approaches (Talja, Tuominen and Savolainen 2005) are based on socio-constructivist learning theories, but they have not become widespread in LIS and still more needs to be done in regard to applying these theories to models of information behaviour that focus learning in organizational settings.

Performance management

This is the third aspect of the 'back-office' processes which are reflected in the outcome space of effectiveness in the job. It is not an aspect of KM *per se*, but rather an intrinsic element of any management model. Performance management is an important concern at NHS24 as this is a tightly regulated service which is highly scrutinized both internally, as a matter of quality assurance, and externally by the media and the public at large. In the conceptions of staff at NHS24 two complementary (and at the same time conflicting) aspects are focused (see section 5.1.7):

- Supporting performance
- Reviewing performance

The two aspects are intertwined, but supporting performance is more related to skills development and the role of the coach; while the review of performance is more related to quality assurance and the managerial role of the Team Leader. Both aspects, however, complement each other in that learning and development in organizations are often directed at achieving better performance. There is also potential conflict between them in that some activities, such as coaching, can become ambiguous in whether they are mainly directed at one or the other aim. Interviewees often showed disappointment in that they perceived coaching at NHS24 as progressively losing its developmental aim and becoming more and more a tool for corrective action in cases of inadequate performance. It appeared that one cause of this was the lack of enough staff to do coaching, but it was highlighted by several interviewees that coaching was originally intended also for people who perform well.

Performance management has specific implications for KM inasmuch as the role of supporting development is focused. For example, sharing best practices and lessons learnt through the use of information systems is a way of supporting better performance. Portals and groupware applications that allow blogging and sharing personal experience are another way to support better performance. It also has implications for workplace IL inasmuch as reviewing performance involves using information in the feedback process from peers and coaches, as well as the reflective component which is so clearly associated with continuous learning.

For IL this has the main implication that knowledge and skills development in the workplace are most often related to performance in practice, rather than being an aim in itself. IL frameworks seem to consider knowledge development in an abstract and mainly mental way, as something that consists mainly of accumulating information and developing generic skills. Workplace situations involve specific performances and competences, which

may have a base on generic skills but are determined in fact by the characteristics of the situated practice.

7.2 Staff's conceptions of effective information use and their relationships to relevant aspects of their work practice.

This section addresses the second research question outlined at the beginning of this chapter. The discussion focuses more specifically on the outcome space of conceptions of effective information use and how it contributes to an emerging picture of workplace IL at NHS24.

Conceptions of effective information use altogether appear as a layer underlying (or shadowing) effectiveness in the job. For all the importance of information use (and information behavior) in the work of frontline staff at NHS24, its various aspects are seen as subsidiary particulars of the main service provision and support activities. Several examples of this can be provided. Interviewees conceive of engaging with callers as primarily communication. The fact that in this engagement information is exchanged is secondary in their focus of awareness, although it is a central aim of communication in this context. Making a decision on the appropriate disposition of care is likewise seen as a primary focus of awareness, while the process of obtaining the information used to support the decision is an underlying activity. Developing job knowledge is seen as another focus of what it means to be effective, while the use of information to learn is again a subsidiary aspect.

Conceptions of effective information use were at times difficult to explore as this required some conscious effort, a sort of reframing, on the part of the interviewees (and also on the part of the researcher). It appeared that the majority of the participants associated the concept of 'information use' basically with the use of documental information and computers, while the idea that they also used information in their exchanges with peers and callers was not a very intuitive way for them to view these interactions (they tended to view them as simply communication). After a few

interviews, the term 'information exchanges', rather than information use, was introduced when talking about interactions with patients or peers.

Neither was it natural for many of them to associate firsthand the use of information with the concept of effectiveness. For example, possessing nursing knowledge, communicating well with the caller, and achieving patient satisfaction were more easily and directly associated with effectiveness, while little acknowledgement was made of how each of those activities involved using information in different ways. This is understood to be partially a matter of differences between the researcher's and the participants' conceptual frameworks and language; i.e. how things are called. But it was also evident that focusing on information behaviour and reflecting on its relationships to the participants' work practices was not immediately easy, that it was not at the forefront of their perception. The interview process asked participants to intentionally put attention on how using information was involved in several aspects of their work practices.

Within this outcome space, four categories of description are closely associated with the 'front office' aspects of service provision related to call handling:

- Awareness of changes and of events that affect the service (see section 5.2.1)
- Sourcing appropriate information for decision making (section 5.2.3)
- Giving appropriate advice and information to callers (section 5.2.4)
- Controlling information (section 5.2.5)

Three categories are associated with the 'back office' support activities:

- Awareness of information and knowledge sources (section 5.2.2)
- Sharing information and knowledge (section 5.2.6)
- Using information to learn (section 5.2.7)

One category is related to all aspects of service provision:

- Using information systems (section 5.2.8)

The focus of awareness in the 'front-office' conceptions is put on the practical processes involved in handling calls, and the following discussion will look more closely at how these conceptions focus on aspects of information behaviour involved in service provision.

Similarly, the conceptions of effective information use associated with the back-office support activities focus on aspects of information behaviour related to developing the knowledge and skills base through seeking information and by sharing information and knowledge with peers. The discussion will highlight the importance of people as information sources, sharing information and using information coming from feedback for reflection and learning, in addition to the more traditional uses of documental information for keeping updated or fulfilling information needs.

The use of information systems is pervasive in all aspects of the front and the back office. They are used to manage the patient record, log details of each call, look up information, support triage and decision making, communicate with peers and partners, and for institutional communication.

Awareness of information and knowledge sources

Awareness of information sources is a well defined feature of information literacy frameworks and information behavior models (see chapter 2). In the present study two distinct conceptions emerged which variously focused:

- a) awareness of the newsy information items related to changes in procedures and to events that affect the service on a daily basis, which typically are communicated to the staff by the organization; and
- b) awareness of the more stable information and knowledge sources, including textual and people, which were more closely

associated with learning as expanding professional knowledge and often involve information seeking.

Rather than making a theoretical case for why these sources of information are different, the conceptions point at different needs, uses and ways of access. Information about changes and events is important for service provision in a very immediate way. Frontline staff need to know when some procedure has changed or whether there is some event happening that affects the service, for example a health alert or problems accessing a hospital. This information is generally 'pushed' at people through the institutional communication systems such as the plasma screens, the intranet, email, or the shift handover. Sometimes staff become aware of news through peers. This is particularly the case of people who go off the job for a few days or weeks (not an uncommon occurrence at NHS24, which has hundreds of different shift patterns). Catching up through the information systems would be more difficult, slower and even riskier, as something important could easily be overlooked in a long backlog of unread emails.

The relatively more stable information and knowledge sources, on the other hand, are more often the object of an information seeking process aimed at fulfilling knowledge gaps or needs, which may involve using electronic information systems, reading printed sources or tapping peers' knowledge. The use of these sources is more closely related to expanding the knowledge base, ranging from obtaining reference information to developing in-depth knowledge of new medical or health-related topics. In instances when people engage in college degrees, e-learning modules or SVQs, using documental information to learn is involved as a matter of course. The most important and organized sources of this type of information for the frontline staff are the e-library and the Knowledge Web, which facilitates access to many health-related websites. There are also small libraries at the main NHS24 centres, which offer books and printed journals, and these have seen increasing numbers of patrons and issues (see chapter 6).

Another aspect of awareness is related to learning opportunities, both within and without the organization. These appear as part of the 'information landscape' and knowing about them is important at NHS24 because the learning environment is not prescriptive; people are not told what they should learn, and learning opportunities are not pushed right up to everyone's attention but are in part something to be discovered, as NHS Scotland is such a large organization. Often peers, coaches or Team Leaders are important in signposting learning opportunities and this aspect is therefore related to social capital.

Sourcing information for decision making

Information for decision making at NHS24 is primarily sourced from the caller, and this involves querying the person and listening attentively to her answers within a structured process of service design. The interaction is different from everyday conversation and exhibits some traits of information seeking behavior, albeit with the key difference that it is not an information system that is being queried. The exchange with the caller fits well within the gap-bridging metaphor of the sense making model of information behavior (Dervin 1998). However, the questioning and listening process has not been addressed as information behavior in IL frameworks or IB models, but is simply conceived of as 'communication'.

The importance of communication skills in engaging with the caller is focused centrally by NHS24 frontline staff, as well as being recognized in the relevant literature as essential in the nursing process in all contexts (Habermann and Uys 2005). The most important skill in sourcing information at NHS24 is listening, as the main contact with the caller is through the phone, and an interesting aspect of it is that at NHS24 it is exercised as a bodily skill which goes beyond normal listening, as it fills in for missing information normally involved in verbal exchanges with people one is looking at. And communication with the callers at NHS24 is probably more challenging than at other call centres, due to the nature of the service. The majority of the interviewees talked about how the tone of voice

of the caller, the speed and interruptions of speech, the background sounds, and other cues are fundamental for sense making, and are taken in by the nurse or call handler partly as feeling or sensation rather than just by intellectual processing. These cues may alert the nurse or call handler to the need to probe further on some aspect which has not been made explicit.

Nurses actually used the expression 'gut feeling' to speak of how they make sense of some cues which they pick up mainly through their active listening, and which are considered important but are not yet part of a clearly structured and logical picture of the situation and needs of the caller. It is probably only Lloyd (2006) who has addressed similar elements of bodily knowledge and skills as aspects of IL. In her study, bodily knowledge and information accounted for a larger proportion of her findings, as the activities of firemen are much more physical than those of NHS24 staff. On a lesser scale, the present study corroborates the importance of sensation and bodily knowledge as aspects of a practice, which have implications for IBS and IL.

Sourcing information for decision making is often complemented with using information systems, for example looking at the patient's record or looking up information in the Knowledge Web. These uses of documental information are more traditional and well recognized in IL frameworks, and they are evidently important in knowledge-managed environments. Also, asking the Team Leader or peers for help in decision making is a common occurrence, an issue which has been discussed above under the topic of support and collaboration.

Dervin's sense making model seems to apply well to the decision making process of frontline staff at NHS24 which is aimed at, literally, making sense of the caller's situation and needs. This process clearly involves gap-bridging and this aspect is laid out clearly by the service design, which establishes specific items of information needed about the caller at different stages in handling a call. Dervin's model also recognizes the importance of using other information sources, including people, in the sense making process.

Decision making involves critical thinking and a prior knowledge base, and IL frameworks clearly address those aspects. However, these frameworks do not acknowledge the essential (at NHS24) aspect of sourcing information verbally from a person, and the abilities and skills that are involved. It has also been discussed above how using peers for information and knowledge, as a social aspect often involved in decision making at NHS24, is not recognized either.

Giving information to callers.

Giving advice and information to callers is a common element of all outcomes, and it involves three main aspects:

- Putting together information; that is, establishing what information is relevant and gathering it.
- Giving information verbally in a structured way. This involves: delivering information in a way that people are able to understand, including using appropriate language; signposting to ensure callers acknowledge key aspects (for example a worsening statement); and taking care that they are not overloaded with a barrage of items that they will lose track of. HIAs often also send out printed information to callers.
- Obtaining feedback from the callers to ensure that their understanding is sufficient to make the information useful and that there are no important issues outstanding.

The verbal delivery of information at NHS24 involves several skills, for example clear speech and choosing appropriate language. Some callers may be impaired by illness, by anxiety, by age, or by language limitations (including command of English), making it challenging to deliver a clear message in all circumstances. It is also a highly structured activity in that the relevance and the amount of information are carefully controlled. No key items can be left out, but information overload needs to be kept in

check as well. Lastly, obtaining feedback from the caller is necessary to ensure that the information has been acknowledged and understood. The advice people are given often involves things they have to do, such as taking medication, taking someone's temperature or going to a clinic at a specific time.

Most IL frameworks and IB models do not explicitly consider giving information out verbally as information behaviour. Although there is mention in some IL frameworks of using 'appropriate' or 'suitable' means in the delivery of information, e.g. the ACRL (2000) Information Literacy Standard Four, the fact is that in educational environments written communication has supremacy in delivery of information, and generally in the creation of information products. And various aspects of contemporary culture have given written and pictorial communication a much larger role than speech in many areas. Of course, conversation remains at the base of much of human communication, but it has not been treated as information behavior. And it is not suggested here that all conversation should be considered information behavior, but highly structured verbal exchanges whose main purpose is sourcing or giving out information probably should be. The reliance of KM on sharing knowledge through personal exchanges seems to call for this type of approach. However, it seems to be an open question whether these exchanges should simply be considered from the point of view of communication.

Controlling information.

Controlling information has been addressed to some extent in IL frameworks. It is a category of description in Bruce's (1997) study. However, its meaning has been related for the most part to documental information, and particularly to record keeping. At NHS24 this is also an important aspect of information control, for example in the way patient information is handled in the records system. But there is also control of information involved in the verbal exchanges with callers discussed above, and control of the quality of documental information sources that is used in

service provision at NHS24 and which is available through the e-library, the Knowledge Web and the intranet.

Information is controlled in the way it is obtained from callers and this is related to service design and call control. The exchange is steered and limited with the purpose of obtaining the necessary information in the most effective way, minimizing the amount of irrelevant information (which translates to increased call time). This is not just a question of optimizing the resources of the organization but also because it is in the best interest of the caller, who might need a quick response to her needs.

Information control also is exercised in giving out information in a structured way, in specific amounts, and also in determining when some information should not be given out to callers. The prime example of this is when HIAs are asked about information on illnesses that the caller is suspect of having but which have not been diagnosed by a doctor.

Control of documental information has two main aspects at NHS24. One is the control of patients' information in the record management system (PRM), which involves understanding procedural aspects and information governance issues such as confidentiality, as well as inputting relevant information in a concise way. Information added to patient records needs to be short and to the point. This is a feature of nursing literacy that goes back a long way to the hand written patient records kept by nurses in wards (which have later been computerized in many places).

The other aspect of documental information control at NHS24 is the exclusive use of information sources which have been approved by organizational gatekeepers (i.e. NES and the Knowledge Team). This makes for a peculiar information environment and has implications for information behavior and IL in that members of staff do not individually assess the quality of every source of information. While probably not many workplaces have this degree of control of the information used, it highlights the important point that assessing the relevance and quality of information sources is often a matter of sense making by professional groups,

communities of practice or organizations, rather than being a mainly individual activity as it is addressed by institutional IL frameworks. For example, criteria related to the concept of evidence-based practice are used in nursing to evaluate the quality of information sources. But even though it is an individual who applies those criteria to assess a particular piece of research, the criteria come from a professional community at large. It is precisely because the individual belongs to that community that she recognizes and learns to apply such criteria.

Sharing information and knowledge

Sharing information and knowledge is a key aspect of information behavior at NHS24, related to support and collaboration. Its main aspects have already been discussed above. Some key points can be stressed:

- Support and collaboration largely ensue from the values present in the organizational culture and from specific actions that foster its occurrence, rather than being a completely informal and spontaneous phenomenon. While the value of 'water-cooler' informal exchanges in organizations has been recognized in the literature (e.g. Brown and Duguid 2000), KM is about providing structured or semi-structured support to information and knowledge sharing. Examples of this at NHS24 are the leveling sessions where staff listen to calls together and share insights, or the portals created for sharing information within MKNs.
- At NHS24 information sharing is seen as a two-way street, with interviewees perceiving a mutual benefit from sharing rather than feeling drained of valuable knowledge. This ensues from the organizational culture and management strategies that foster collaboration and sharing as generalized practices.

- One of the problems in sharing information at NHS24 is limited availability of time in the busiest shifts. Sometimes staff are just taking call after call for hours on end. This is often the case of part-time staff, who work mainly on busy shifts.
- Social capital is an important aspect of participating in information and knowledge sharing. NHS24 seems to be an organization where this is easily accessible, although exploring this aspect was not a focus of this study.

Sharing information and knowledge is seen mainly as communication by NHS24 frontline staff, just as they also do with regard to giving information to callers. Often exchanges are quite informal, but there are many instances where purposive information seeking behavior is enacted. This poses a challenge to both IB models and IL frameworks in addressing these types of interactions as information behaviour.

Addressing the sharing of information and knowledge from the perspective of workplace IL involves: giving more importance to people as information and knowledge sources; recognizing the importance of social capital in accessing people's knowledge and in knowing about learning opportunities; and fostering the development of skills for interpersonal communication. Workplace IL frameworks should consider these general considerations along with the characteristics of particular organizations and from that point of departure develop more specific definitions of competences.

For IB models and research there could be a greater recognition of verbal information exchanges such as are typical of call centres, and perhaps other workplaces and specific job roles, where talking is highly structured and has the purpose of sourcing or giving information.

Using information to learn.

At NHS24, both gap-bridging and expanding the knowledge base are aspects of the interviewees' conception of using information to learn. Gap bridging can be related to some instances of looking up information or tapping peers' knowledge for specific questions. It has been discussed above how gap-bridging is characteristic of decision making at NHS24. There are, however, other modalities of expanding the knowledge base which are related to more extended processes of learning where there is not clearly a gap to be bridged or a problem to be solved, but rather a more open-ended pursuit such as obtaining a qualification by doing a degree or an SVQ.

Using information to learn is familiar territory for IL frameworks. IB models, however, have not for the most part clearly embraced the notion of learning as the focus of information behavior. Most IB models only address a link between an information need and the process of seeking relevant information to fulfill it. The main exception is Kuhlthau's (2004) model, which addresses learning as a complex process involving stages, mediation and some degree of social construction of meaning. Dervin's sense making model of information behavior also addresses learning, mainly in the sense of gap-bridging, or of moving along a path which may be straight, twisting, blocked or washed-out (Dervin 1998). In this model information use is led by pragmatic intentionality, favoring plausibility and perceived usefulness of information in relation to specific outcomes which are typically related to decision making, problem solving or performing a specific task. Research under this model often focuses on micro-incidents involving information behaviour. The findings of the present study in many aspects agree with Dervin's model, particularly in the way it describes the process of decision making but also where there is a specific question or gap that translates into an information need to update knowledge. This is often the case when frontline staff need to look up information in the electronic systems, printed manuals or ask peers for information. Obviously these instances can run a very wide gamut from needing very specific bits of information to larger and more complex needs related to problem solving.

The conception of developing the knowledge base in the present study also contains a focus on a different aspect of learning that involves extending the knowledge base not necessarily as in bridging a gap or solving a problem, but as expanding borders or increasing the knowledge base without a short term aim such as solving a problem or completing a task. Bruce's (1997) study showed two conceptions of expanding the knowledge base in this way. The findings of the present study mainly show a difference with Bruce's in that expanding the knowledge base is not so centrally based on the use of documental information. Also, Bruce (1997) distinguished between developing the knowledge base as a process of interpretation and construction that she described as "building up a personal knowledge base in a new area of interest" (p. 137) through information use and critical analysis, and a 'knowledge extension' conception which she characterized as "working with knowledge and personal perspectives in such a way that novel insights are gained" (p. 143). This type of distinction was not recognized in the present study.

Again it is necessary to reiterate that apart from the more traditional uses of documental information to learn, staff at NHS24 stressed the importance of sourcing information and knowledge from peers.

Using information systems.

Using information systems is clearly central to all IL, IB and KM models and frameworks. This study has found that using information systems is not a central focus in the conceptions of effectiveness, but rather part of a layer of subsidiary activities implicated in all front- and back-office processes. This highlights the fact that information is used *for something*. This is recognized in IB models in the concept of 'need', but this is often understood in quite restricted ways. For example, information needs may be related to tasks, and at NHS24 one such task may be to collect the caller's location, personal information and symptoms when the call arrives. But tasks in turn are related to aims of the organization and to work roles which go beyond tasks, such as generally helping a patient with a health problem.

The general effect is that information use, when seen holistically from the perspective of a practice rather than through the exploration of micro-incidents, recedes into the background although it is essential at every stage.

Using information systems at NHS24 to a large extent appears as tacit knowledge. This is more so as people become more expert, and the majority of interviewees at NHS24 were very experienced in their respective roles. There is little conscious attention paid to subsidiary processes that are mastered and become automatic. The processes of using information become the focus of awareness mainly when there is a problem that interrupts the automatic flow of actions and the need arises to look more closely at what is happening or to ask for help. In the case of apprentices this occurs more often, of course. Evidence related to this is found in the interview material as nurses often reported using algorithms as an upfront strategy for handling calls when they started doing their job at NHS24, but their use receded to a backup role as they became more expert.

The general impression obtained from the interviews is that frontline staff's use of information systems is matter-of-fact, unproblematic for the most part, and generally not a focus of attention. For example in response to the question of what made them effective information users, nobody answered right away that using information systems was what made them effective. Reflection on the use of information systems happened in the course of conversation and sometimes after more direct questioning. As another example, being able to find information was not seen primarily as a matter of knowing how to use a system, but of having an idea of where information was located and its organization, even of knowing who to ask. This study did not research the use of information systems in detail, so these impressions may be wrong. In fact, it has been reported that user's self assessments of proficiency in using information systems are inaccurate, as they often overrate their capacities (De Saulles 2006, p. 72-73).

However, there was no evidence obtained by the present study to say that anyone at NHS24 identified a problem of any magnitude in frontline staff's

use of information systems. In an interview with a member of the Knowledge Team, which was not part of the phenomenographic study and occurred several months after the main interviews, this person reported problems with the roll out of the new 'Connect' system that replaced the older PRM as of July 2007. This situation, however, was part of an extraordinary event and evidenced the problems characteristic of any big system roll out.

Nurses' use of the expert decision support system ('Algorithms') was mentioned as a specific application to which more attention was paid, and one of the reasons was that with relative frequency nurses found that these algorithms led them down a path that they didn't agree with. For example, a nurse mentioned that in a particular case ticking a box in the algorithm would make the case a '999' (emergency requiring an ambulance immediately), while in fact she knew that was not needed. It has been discussed in chapter 5 (section 5.2.8) how nurses mainly use the algorithms as backup for their own decision making, and when there is disagreement this involves a conscious review of the process so that they confirm or change their decided outcome.

7.3 Relevance and applicability of institutional IL frameworks in the workplace environment of NHS24.

This section addresses the third research question outlined at the beginning of this chapter. It has been discussed in Chapter 2 how most institutional IL frameworks have been developed in educational environments and there has been little research in workplaces. This section will discuss the picture of IL at NHS24 emerging from this study, in relation to those frameworks. Making this comparison is important because of their great influence in education. They provide the working definition of IL, along with a number of standards, to many educational institutions and they are often the basis for instructional programs. Given the uniformity of these frameworks (discussed in chapter 2), references will not be made to all of them. The

ACRL framework will be referenced mainly as it reflects all the key elements found in the others.

The ACRL (2000) states that:

“An information literate individual is able to:

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into one’s knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.”

From this definition, going through every one of its statements, it can be established outright that frontline staff at NHS24 are indeed information literate in the *context of their situated practice*. There is all sort of evidence in the interviews to support this claim. The reflection to be made in relation to this is that while the ACRL statements appear in principle applicable to the workplace environment, this belies the fact that the statements lack contextualization and especially that the IL development strategies derived from them are mostly restricted to literacy practices relevant in educational settings. The evidence obtained about the workplace information literacy of NHS frontline staff can be made to fit the ACRL’s definition, but it does not necessarily work the other way round: we cannot get from the ACRL statements (and the IL development practices typical of educational settings) to the situation at NHS24. For example, to determine the extent of information needed is not the same for a student writing an essay as it is for a call handler taking a call. To access information effectively in one context might mean using a library, while at NHS24 it means questioning the caller. Therefore it does not seem possible that: “Information literacy competency extends learning beyond formal classroom settings and provides practice with self-directed investigations as individuals move into

internships, first professional positions, and increasing responsibilities in all arenas of life (ACRL 2000).”

People as information sources and sharing of knowledge

In regard to accessing the information needed, the ACRL (2000) states that:

“To obtain the information they seek for their investigations, individuals have many options. One is to utilize an information retrieval system, such as may be found in a library or in databases accessible by computer from any location. Another option is to select an appropriate investigative method for observing phenomena directly.”

But this does not address the all important role of people as information sources and the sharing of information and knowledge in the workplace environment as this appears to happen at NHS24. IL frameworks are almost exclusively focused on documental information, and the fact that people are not considered as information and knowledge sources has the consequence that the competences involved in sharing and collaboration are not focused either as part of the IL standards. The findings of the present study point at this as certainly one of the most important shortcomings of IL frameworks in regard to their application within a workplace situation.

The educational IL frameworks should address the importance of people as sources of information and knowledge, to some extent, and also focus on the abilities and skills related to successful collaboration and information sharing. However, the fact that educational and workplace situations are so different seems to call for different guidelines and standards, rather than trying to create a framework that attempts to be valid in all cases. The limitations in the applicability of current IL frameworks to workplaces would not be resolved by simply amending them to include information exchanges between people in addition to the use of documental information sources;

this could be utterly inappropriate in some educational situations and insufficient for particular workplaces.

Rather, it seems more realistic and useful to consider the characteristics of different situated practices, and to develop IL guidelines and standards that apply to those situations, rather than pretending that a single encompassing framework will be able to account for all uses of information, in all situations, all the time. The concept of lifelong learning therefore should be understood as more complex and dependent on shifting pragmatic needs, which involve new challenges and requirements, than it has by the institutional frameworks. Within workplaces, it seems reasonable to assume large differences in IL needs amongst organizations. Although this study alone cannot offer definite evidence in that regard, the small number of workplace IL studies already points in that direction (Bruce 1997; Cheuk 1998; Kuhlthau and Tama 2001; Lloyd 2007). The IL of academics, auditors, firemen and nurses is clearly not the same, although there may be a degree of overlap. A consequence of this reasoning is that IL frameworks aimed at educational settings should exist *alongside* others, developed specifically for particular organizations, professions, etc. covering a continuum of literacy practices from schools to workplaces. The main point would be to recognize their respective limitations, and the ways in which they complement each other, instead of pretending that a single framework will address 'lifelong' learning abilities and skills for all.

Evaluation and application of information: sense making in the community

Standard three of the ACRL curriculum addresses the evaluation of the quality of information sources, and this is mostly discussed as an individual endeavour. Only marginally is it stated that the "student validates understanding and interpretation of the information through discourse with other individuals, subject-area experts, and/or practitioners." The focus on individual validation of information quality runs counter to the evidence obtained from the present study, where it is found that this is mainly managed by organizational gatekeepers and largely dependent on professional and disciplinary criteria. Although the degree of control existing

at NHS24 may not be the norm in all organizational settings, the argument can be made that validation and interpretation of information are not mainly individual activities. This has been argued by Hjørland and Albretchsen (1995) under the concept of relevance as domain analysis.

IL frameworks do not stress the social or disciplinary aspects of quality evaluation, but instead suggest using general and de-contextualized criteria for assessing it. It is stated in Standard Three of the ACRL (2000) framework that the information literate person:

- “Examines and compares information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias.
- Analyzes the structure and logic of supporting arguments or methods.
- Recognizes prejudice, deception or manipulation.
- Recognizes the cultural, physical, or other context within which the information was created and understands the impact of context on interpreting the information.”

The last item may be the most important but it is buried at the bottom and moreover, without a specific educational emphasis put on this it is quite unlikely that a student would fully recognize the impact of culture and context on interpreting information in a particular discipline or context. This is compounded by the fact that ‘context’ is often reduced to attributes of the environment that ‘envelope’ the use of information, rather than involving the consideration of a situated practice, historicity, and the aims and activities of the communities that belong in that practice.

Evaluation of the quality of information is addressed in institutional IL frameworks from the point of view of an autonomous and independent information user, who can tread the world of information equipped with universal criteria that can be applied to whatever items are encountered. The present study shows, perhaps as an extreme case, that evaluation of the quality of information sources is not individual but is based on professional (e.g. evidence based practice, randomized control trials, etc.) and organizational (e.g. in-house quality standards) criteria.

The critical thinking skills involved in the individual assessment of the quality and relevance of information sources should be accompanied by a more explicit recognition of how professional bodies, organizations, and communities of practice influence these assessments. This would lead to the recognition of the social construction of meaning to a larger extent, which has implications for collaboration and sharing in the knowledge-managed workplace and also for developing a more truly critical thinking that reflects on social issues, such as professional guidelines and standards, rather than on isolated attributes of information sources.

This study also shows that information is frequently discussed with peers, coaches and Team Leaders in a sense making process. Interpretation of the applicability of information is often addressed in IL frameworks from the point of view of critical thinking, through a process of individual discernment, analysis and evaluation. The findings of this study do not refute the importance of individual critical thinking, but definitely highlight the importance of sense making from a socio-constructivist point of view which seems particularly important when one considers the application of information in workplace practices.

Expanding the knowledge base

The statements found in the institutional frameworks on the use of information to increase the knowledge base seem to consider the latter as a sort of 'savings account' that grows with new deposits, instead of assessing the expansion of knowledge in relation to *situated performance*. For example, standard three of the ACRL (2000) framework states that "The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system."

At NHS24, frontline staff apply information obtained from diverse sources *in relation to* job aims, objectives, and performance indicators. The information received as feedback from coaches and Team Leaders is incorporated into the knowledge base to change behaviour as necessary,

against the criteria provided by the performance indicators. Of course, in educational environments performance indicators are also used, but often they are related to the creation of information products such as essays, coursework or presentations. Although performing better in creating these products involves behaviour (importantly, IB) the assessments are ordinarily of the finished work. In workplaces behaviour is often focused as it is involved in processes, and not only in finished products. At NHS24 the coaching activities, for example, centre on reviewing the process of handling a call and put attention on many aspects of behaviour such as how staff listen to the caller, how and when they intervene, the tone of voice and the language they use, the way procedures are followed, etc.

The great variety of tasks and problems of the workplace has been compared (in chapter 2) against the relative uniformity of educational tasks. It is very difficult that education addresses the variety of potential workplace scenarios, but this has been attempted to some extent by the focus on problem-based learning and the use of scenario techniques within specific disciplines. The challenge remains, however, to consider the application of information and knowledge to realistic workplace practices.

The present study raises the importance of developing the knowledge base in situation, which involves the consideration of professional knowledge, organizational aims and job roles. It also involves exchanges of information and knowledge with peers, and a social process of sense making in the interpretation and application of information. Finally, awareness of information sources and learning opportunities is often related to social capital.

Independent learning

The Australian and New Zealand information literacy framework states (Bundy 2004, p. 11) as one of its overarching principles that "information literate people engage in independent learning through constructing new meaning, understanding and knowledge". This seemingly worthy aim

centres on the concept of autonomy in learning, but disregards the importance of social learning. The aim of information literacy education from this individual perspective is to “create opportunities for self directed and independent learning where students become engaged in using a wide variety of information sources to expand their knowledge, construct knowledge, ask informed questions, and sharpen their critical thinking.” (Bundy 2004, p. 6)

The almost exclusive focus on documental information sources and on individual learning found in the institutional frameworks misses out on several important developments:

- Leading social and learning theories have argued strongly for the fact that meaning creation ensues largely from social interaction and cultural practices.
- Knowledge management has posited the importance of sharing and collaboration as a central premise of organizational learning and development of capabilities based on knowledge.
- Developments in information systems have been largely directed in recent years at groupware and communication between people, rather than accessing document databases.

The focus on documental information sources also misses the importance of social capital in gaining awareness of, and access to, information and knowledge sources, and this is an important aspect of lifelong learning.

The present study has found evidence that motivation for learning is seen as a fundamentally individual disposition, but also that the actual processes of learning at NHS24 very often involve others, not only as information sources but as agents of interpretation and signposting. Another important social aspect of learning evident in the findings of this study, which can be directly related to the concept of IL, is that awareness of learning needs is often related to exchanges with others. Coaching at NHS24 will have the effect of making people aware of their development needs. Exchanges with

peers will make them aware of knowledge gaps related to illnesses, treatments, medicines, etc., or just of the emergence of new professional knowledge. And often peers will signpost information sources and other opportunities for learning.

Workplace IL that is attuned to the concepts of KM should stress the value of collaboration, the development of skills for working with others, and the social nature of meaning construction.

Delivering information verbally

Verbal communication of information as an outcome or product of information use is hardly covered by any framework. In regard to creating and delivering information products, the ACRL (2000) suggests that the information literate student (Standard Four):

- “Chooses a communication medium and format that best supports the purposes of the product or performance and the intended audience.
- Uses a range of information technology applications in creating the product or performance.
- Incorporates principles of design and communication.
- Communicates clearly and with a style that supports the purposes of the intended audience.”

As stated above, frontline staff at NHS24 do what the framework says (at least in the last item), but this does not mean that the framework, or the associated educational practices, are actually considering situations such as a nurse delivering care advice over the phone to a caller, or other workplace performances in which structured oral delivery of information is important, such as giving reports, instructions or help to others. While written reports are the norm in schools and are indeed very important in many workplaces, the institutional frameworks for IL lack emphasis on information products delivered through verbal communication. As stated above, no single framework can encompass all uses of information, and verbal delivery is

likely to be more important in certain workplaces than others. Educational frameworks should probably recognize the importance of verbal delivery to a larger extent, but not necessarily focus on needs such as those of people in call centres. In those workplaces, however, this important aspect should be included in specific IL frameworks. There is of course recognition of the importance of verbal delivery of information at NHS24, and there is training and coaching to develop appropriate skills, but it is not conceptualized as an aspect of IL.

The issue seems open as to whether structured verbal exchanges should be considered information behavior or simply communication, and this is also a problem for IBS and KM.

Generic skills

All IL frameworks tend to consider the development of generic skills that can be transferred to other settings. This is a logical and valid aim of education, and to a certain degree there exist limitations in going beyond them in educational settings. But most IL frameworks seem to have an over-reliance in how information use or problem solving can be based on generic skills applicable to searching for information, evaluating information sources and applying information to specific products. However, it is questionable that such general concepts can be applied regardless of the situation. The issue of validating information sources and determining the application of information has already been discussed in relation to a social sense making process that is not based on generic skills, but on dialogue.

Training programs developed from these frameworks also often advocate process models of information use that suggest a 'logical' (and generic) sequence of actions, for example: to go from the definition of a problem, to developing questions, to identifying information needs, to looking for information. However, NHS24 frontline staff's use of information did not necessarily follow such a sequence (it followed a different one, determined by service design). Also, they did not generally conceive of information

needs in the way these models address them. Their attention was put on understanding the needs of the caller, and they didn't have awareness of themselves having an information need in consequence of this. Obtaining information from the caller for decision making was not seen by them as fulfilling an 'information need', but just as part of the process of service provision.

Also, the process of service provision at NHS24 is highly structured and tends to narrow the problem down quickly, instead of being open-ended as is the case in other situations. Decision making at NHS24 can be considered in contrast to a student writing an essay on environmental problems (Lupton 2004). The same type of comparison can be made time-wise between the short ten minutes that it takes on average to come to a clinical decision at NHS24, and writing an essay over a period of three months. In other cases it has been shown that problem solving and sense making do not follow a linear path (Cheuk 1998). All this puts into question the applicability of general problem-solving strategies and their use in information behavior models and IL frameworks.

In sum, there are processes and schemes in place at NHS24 to collect, select and apply information, but they do not correspond with generic models, especially not with those which are often used in educational uses of information.

Where generic skills can actually be developed, their scope can be limited. For example, learning to use search engines could be considered a generic skill, but the formulation of queries or the interpretation of information cannot be considered generically. As discussed above, those aspects will be related to aspects of particular practices and the sense making relevant in that situation.

7.4 Workplace information literacy at NHS24 and other workplace IL research.

Two phenomenographic studies have focused on conceptions of IL in educational workplace environments. Bruce's (1997) study engaged workers in higher education (teachers, lecturers, tutors, librarians, etc.). However, the conception of information sources only referred to documental sources and information retrieval; the information process conception mostly addressed a linear process dealing with using documental sources of information (Bruce 1997, p. 130); and the conception of developing the knowledge base was centred on documental information seeking and critical analysis (p. 138). Webber, Boon and Johnston's (2005) study engaged UK academics, obtaining a picture of IL which on the whole seems much aligned with the institutional frameworks, with conceptions focusing mainly on: accessing and retrieving textual information; using IT to access and retrieve information; and possessing basic research skills.

The phenomenographic trend was pioneered by Bruce (1997) when she started focusing on user's conceptions of IL rather than institutional definitions, and it was a breakthrough in IL research. But the single-minded focus on educational workplace environments and the limitations of phenomenography as it has been applied so far seem to have run this line of research into a stalemate.

Cheuk's (1998) study of auditors focused on the process of information use, employing the sense making model. This study provided a closer look at information behavior in the workplace, and it showed a wider range of information sources used by the auditors including "facts, opinions, reports comments, etc." (p. 377). Her study is interesting in that it focused information use in a holistic way, with pragmatic application of information to work problems as the aim of information behavior. Cheuk found that people were a more frequently consulted information source than documents. In this study auditors also assumed the role of information providers, passing on information to others including verbally. This confirms the findings of other studies (e.g. Leckie *et al* 1996; Williams and Coles

2007). Cheuk's study also questions the linearity of the information process (as have others), as she found that stages could happen in different order and sometimes almost simultaneously.

Another important workplace IL study is Lloyd's (2006) doctoral research of fire fighters IL. This study is important in several respects. She studied the processes of apprenticeship under the conceptual framework of situated practice and legitimate participation. She found the firemen's workplace practice contained a 'landscape' of information and learning affordances which comprised of several aspects not focused before in other IL studies. The fire fighters use of information is only partially textual, mainly in the first stages of their training. Afterwards, social learning becomes more important as they gain experience and share in the stories of the experts, from which they learn. She also found that bodily knowledge and skills were an important aspect of their learning. An expert firefighter is someone who has developed bodily skills and is able to gather information from the environment using his body. Apprentices also learnt from the body language of experts, and experts were able to assess the apprentice's progress the same way. She considered these to be aspects of IL, involved in becoming aware of the 'information landscape' and the affordances for learning available in their situated practice.

Lloyd's study is probably the flag bearer of a new line of study into workplace IL that has given centrality to the concepts of situated practice, social learning, apprenticeship and bodily knowledge and skills. The methodological approach has been based on the immersion into the practice of the participants, with a focus on their learning processes and their use of information within a 'landscape' of textual, social and bodily affordances for learning. IL is therefore defined as the capacity to get to know what is in a landscape.

The present study has followed, to some extent, the methodological line of phenomenography. This has been considered a suitable research method, since the conceptualization of situated practice used in this dissertation involves the phenomenological sense making process of individuals as one

of its aspects, and this has been investigated by means of interviews. But there are other aspects of a practice that can be explored from other points of view. However, the aim is not to pile up sources of evidence, but to seek the relationships between them and increase their descriptive (and to a degree explanatory) power. The present study has attempted to show that conceptions of effective information use of frontline staff at NHS24 are related to relevant aspects of their practice, prominently the organizational initiatives for KM and the associated values, discourses, material affordances and actions.

A contextualization of the findings has been attempted with the purpose of obtaining a richer description of IL at NHS24. It should be kept in mind that this study is mainly an exploration of little researched phenomena, and linking conceptions with characteristics of the work environment enhances the descriptive power of this study.

The choice of a knowledge-managed workplace is another aspect in which the present study has attempted to extend the range of prior workplace IL research. It remains necessary to research IL in other workplaces, knowledge-managed or not. But the rising importance of KM has a lot of relevance for LIS as it is strongly related to information management, information behaviour and learning. It also presents interesting challenges and opportunities to both librarianship and IBS in terms of expanding their respective fields of practice and research toward organizational studies. For IBS the greater consideration of learning processes seems important. For IL the consideration of workplace information use, beyond documental sources and individualistic learning, seems like an important new direction to which this study is contributing.

7.5 Workplace IL at NHS24: implications for the main three fields.

NHS Scotland KM initiatives are based on the concepts of organizational learning and development of a learning organization, and reflect the main concerns of KM (at least as they are applicable to non-profit organizations).

However, it is not possible to state whether this is a 'typical' knowledge managed organization. It probably is not, as NHS is the largest employer in Scotland and has gone over and above other organizations in developing a comprehensive strategy and operating structures for KM, making very significant investments in technology and people directly engaged in the KM related support activities. Also, being a public sector organization means that some KM concepts such as competitive advantage and innovation do not have the same meaning they do in the private sector.

Rather than the challenge of developing competitive advantage, the public sector has accountability to the government and to the public and has to measure up to its established targets. It is fair to say that as an organization NHS Scotland faces many challenges and, while measuring its performance is not the object of this study, the data obtained reflects that NHS24 in particular delivers a high standard of service. This is borne out mainly by the statistics of service and the caller satisfaction surveys (Chapter 6), but it is also evidenced from the personal observations of the workplace processes and the meetings with interviewees.

Innovation is a concept that can have different meanings. In the private sector it can be related to inventions, patents, brands, etc. Within NHS24 innovation has meant creating and delivering a new and highly complex service from scratch, and at the same time overhauling it on the go, without a really quiet moment in a period of 6 years. The service has undergone constant adaptations necessary to accommodate unforeseen demand levels, staffing shortages, safety concerns and shifting public perceptions. So, it is fair to say that there has been innovation and creation of new capabilities at NHS24.

The point of these arguments is to establish that NHS24 is in fact, and not just in theory, a knowledge managed workplace and that it has implemented the main concepts of KM successfully in what is, necessarily, a unique way. Because NHS24 is indeed a unique workplace: it is a health care centre, but different to any other in NHS; it is a call centre, but unlike others. It is also important to re-state that the frontline staff at NHS24 are

indeed information literate, inasmuch as people who perform well in a workplace environment can be considered information literate in that context. There is a sort of 'selfsameness' between literacy and effectiveness when these are considered in situation. This is to emphasize that many aspects of IL are contextual and that evaluations of IL should be related to performance in situated practice. It will be possible to assume that some conclusions drawn from this study will be applicable in other settings, but the analysis of findings has stressed their contextualization.

All aspects of KM are related to using information, and the basis of knowledge management is the optimization of the processes of information and knowledge conducive to organizational success. Information behavior studies and information literacy provide concepts, models and frameworks that can be applied to KM. But these fields can also take up important perspectives that KM has brought together.

Both IB and IL have developed in close relationship to documentation and information systems, and people are often referred to as 'users' in these fields. KM has an orientation to people that positions them as information 'actors' in sharing information and knowledge, learning, and applying information to complex problems in real-world organizational situations.

KM is in some ways a broader, more complex and more important discipline than either IBS or IL. It is not a fad or fashion, as it incorporates prior management theory in an evolutionary way (e.g. learning organizations, competitive advantages, business process reengineering, quality management, etc.). It has also sourced broad and strong theoretical groundings in epistemology and learning, communication, social and organizational theories. This is not to say that KM is a unified field, but these perspectives are found within the mainstream models. The general concept is having world-wide application, and the related literature includes books which are read widely, in addition to the specialized journal articles.

Also, KM has had a much larger impact in the real world than either IL or IBS. KM is a comprehensive approach to management, whilst IL and IBS do

not have the same scope of application *on their own*. Information management, for example, although it can trace its theoretical grounds to information science is now being applied extensively as part of KM initiatives. The fact that KM is in the main an applied field and the way it has been taken up by organizations all over the world really points to the question of how IBS and IL are prepared to focus on KM as a key area of development.

KM has incorporated three theoretical bases that give it great scope in relation to how information behavior is considered:

- A focus on *people as actors*, rather than users, in the creation, interpretation and application of information.
- A focus on *learning* that has embraced to a large extent the socio-constructivist perspective.
- An acknowledgement of the importance of information use and knowledge development *applied to performance in organizations*.

The present study has tried to show the connections between these three fields and how their respective contributions to the problems of information use in organizations can be assessed, through compiling an extensive literature review, conducting an empirical study, and discussing the challenges and opportunities for interaction. The three fields of study acknowledge and support in various degrees and ways the following main nuclei of practice at NHS24 as they have emerged from the findings of the present dissertation:

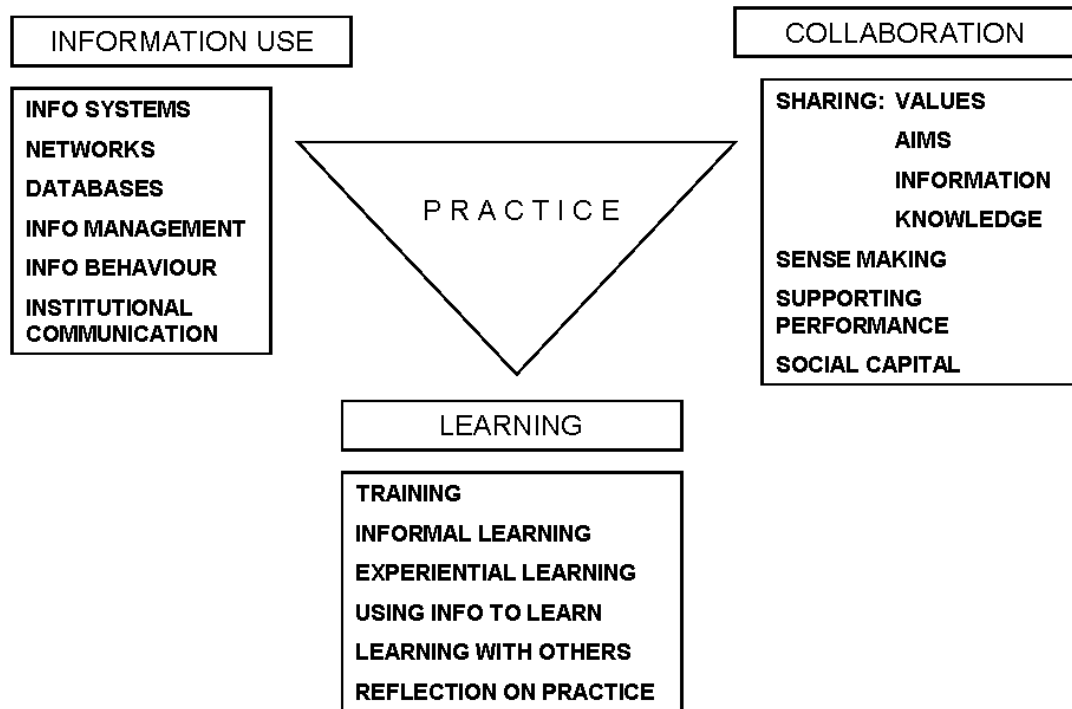


Figure 23. Three main aspects of practice at NHS24 obtained from the findings of this study.

Findings from the empirical study at NHS24 study have shown the importance of the following issues, which can be discussed from this triangular perspective:

- **Information is often sourced from people, mainly from the caller but also from peers.**

Considering people as sources of information, as well as their interactions in sense making and learning, is clearly addressed in the KM literature. IBS models acknowledge people as information sources, but do not go very far into the interactions of people in sharing information and knowledge. IL frameworks hardly consider the role of people as information sources.

- **There are important aims in the use of information related to problem solving and decision making.**

The management literature acknowledges these uses, along with planning, as the main applications of information. IB models also generally address this type of use, Dervin's sense making model being a particularly relevant one. IL frameworks also address this quite clearly, as part of critical thinking, although not usually considering workplace situations. There are models in the three fields which are based on either individual or social constructive cognitive models. IL stresses the importance of individual critical thinking in problem solving and decision making. It has been argued that socio-constructivist models offer the most promise for theoretical development of this aspect.

- **There are important uses of documental information for learning.**

This is clearly recognized in the KM literature and in IL frameworks. However, within IBS only Kuhlthau's model clearly addresses learning, while Dervin's sense making model considers some aspects of learning.

- **The development of the knowledge base is pragmatically related to performance and the requirements of the practice.**

The management literature generally acknowledges pragmatic use of information, conducive to concrete applications including behaviour change (using feedback and reflection). IB models often do not address information use beyond the fulfilling of a 'need' or the bridging of a 'gap', lacking a more holistic approach to situated practice. IL frameworks often consider expansion of the knowledge base as an aim in itself, or related

to the development of information products typical of educational environments.

- **Learning processes are for the most part social.**

This is clearly recognized in most of the KM literature. IB research has not gone very far into studying learning in general, and the consideration of the social dimensions of learning have only been developed by a few authors. IL frameworks mainly address individual learning.

- **Learning processes are often experiential and informal.**

This is clearly recognized in much of the KM literature. IB research has not gone very far into studying learning in general. Experiential and informal information seeking, encountering or 'foraging' has been addressed but it has not been linked explicitly to learning processes. IL frameworks tend to address learning from documental sources in educational settings, rather than experience.

- **The interpretation of information, including assessing quality, relevance and application, often occurs within a community of practice.**

Some authors in the KM and IBS literature have acknowledged this in models that have a socio-constructivist base, although the individual cognitive perspective of information processing is very influential. IL frameworks have stressed the development of individual competencies for interpretation and evaluation based on the concepts of critical thinking and the development of autonomous learners.

- **Listening to the caller, questioning, and giving information verbally are aspects of information behavior at NHS24.**

These exchanges are generally acknowledged as communication, but they have not been addressed as information behavior in the literature of any of the three fields.

- **Information using abilities and skills are highly tacit.**

There is acknowledgement in the KM literature of the importance of tacit knowledge and the fact that some instrumental aspects of action recede to a background role as subsidiary particulars of main actions. IB models have not systematically addressed the development of abilities and skills in information behavior, or acknowledge the extent to which they manifest as tacit knowledge. IL frameworks have made skills development one of their main focuses. The focus on information competences expects skills to be developed with explicit meta-cognition, rather than as tacit knowledge.

This chapter has shown how the main aspects of effective information use at NHS24 appear from the findings of this study, and it has discussed how they can be related, in various ways and degrees, to the contributions of the main three fields involved in the study of the problem in this dissertation: IL, IBS and KM. A particular focus of the discussion has been put on the institutional IL frameworks as these represent the main face of IL for a large number of educational institutions, and some of the main research questions focused on the suitability of these frameworks to workplace situations. The following chapter presents conclusions drawn from this discussion.

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Chapter 8. Conclusions.

This dissertation has presented the development of an investigation which focused on the following research aims:

- To investigate the concept of workplace information literacy theoretically and empirically and to discuss the relevance and applicability of current IL frameworks in workplace environments.
- To discuss the connections between information literacy and knowledge management, exploring the possible contributions of IL to effective information use for knowledge build up and transference in organizations.
- To offer conclusions that can provide relevant feedback into frameworks and practices of information literacy and knowledge management.

This dissertation has explored the connections between information literacy and knowledge management, identifying connections between them and pointing at possibilities of further interaction which basically seem to depend on expanding the borderlines of the respective fields and developing a stronger mutual recognition. Both IL and KM are related to information behaviour, and some of the findings also relate to IBS as an indirect result. This dissertation has produced a picture of effective information use at NHS24 obtained through a phenomenographic study, complemented with evidence about information behavior and learning practices obtained from the same interviews and institutional documentation on the KM initiatives of NHS Scotland and NHS24. This picture has highlighted some important aspects of effective information use at NHS24 which provide important clues as to how the relationship between IL and KM can be further developed:

- The contextualized understanding of effective information use as belonging to a situated practice, involving specific aspects of information behaviour and sense making

influenced by the aims, values, discourses and actions of the organization.

- The importance of people as information and knowledge sources, and of the exchanges between them which contribute to workplace collaboration, sense making and learning.
- The importance of the relatively informal aspects of workplace learning, and of experiential learning and reflection on practice.
- The importance of the application of information and knowledge to the pragmatic aims of the organization.

Understanding context as situated practice is a conceptualization with strong theoretical foundations which is well suited to workplace research as it implies a holistic consideration of the people (as individuals and as members of communities of practice), the activities, and the organizational values, discourses, and initiatives. This goes beyond the isolated study of factors such as tasks or roles, or of the consideration of micro-incident as units of activity. In this research, it also suited well the exploratory character of the study as the aims were to obtain a broad description of effective information use in a specific workplace.

It is not possible to investigate all aspects of a practice at once, so limitations exist in the results from this study, and the main ones seem to be:

- The evidence coming from interviews and documentation has inherent limitations. Actual information behaviour was not focused by this study, and especially some aspects of personal interaction in sharing information and knowledge would have been a valuable complement to the other data.

- Not having a research focus on apprenticeship. The process from entering a new workplace to becoming expert is an important aspect of all practices, and Lloyd's (2006) doctoral study showed that it is an important aspect of IL.
- Not having a research focus on social capital. This aspect has not been focused within the theoretical perspective of the study, but it was found to be relevant inasmuch as it relates to the important issue of people as information sources and their role in signposting learning opportunities and other aspects of the information landscape in an organization.

However, it is considered that valuable insights have been obtained that constitute original contributions to knowledge and show directions for further research.

In relation to the applicability of current IL frameworks in the workplace situation of NHS24 (and to a certain extent in other workplaces), the main limitations of the institutional frameworks appear to be:

- An unwarranted belief that IL in all situations in life can be described by a single encompassing framework of universal application, and developed mainly through abilities and skills of a generic type.
- An unwarranted belief in the unproblematic transferability of information using skills from educational settings to workplaces.
- A general lack of consideration for the challenges which the great variety of workplace contexts can present in contrast to the relative uniformity of educational settings.

- A consideration of knowledge development that does not recognize the pragmatic aims of workplaces, but rather considers knowledge as a mainly mental entity that grows in an abstract way.
- An almost total lack of consideration of people as information sources, along with a lack of focus on the interactions between them in sharing information and knowledge, including the role of social capital.
- A lack of consideration of the social construction of meaning and the sense making processes of communities of practice and organizations. This is reflected in the strong belief in individual critical thinking as the basis for IL, and the advocacy for autonomous learning.

Important actual and potential connections between IL and KM have nevertheless been established from the findings of this study:

- Both IL and KM share a focus on the importance of lifelong learning. Attuning IL concepts to the more complex realities of organizations should make them more suitable and effective to realistically support lifelong learning. KM, on the other hand, has not recognized the potential contributions of IL and this seems to be partly due to the limitations of existing frameworks, as much as to disconnection and lack of recognition between professional communities. But if the shortcomings of IL frameworks are addressed, a strong affinity would exist between the aims of IL and those of KM, not only in relation to learning but generally in relation to effective information use in organizations.
- There is a strong connection between IL and KM in relation to the use of documental information sources and systems of access. In many aspects, KM is based on information

management and many initiatives are based on the use of documental information. However, the KM literature has not for the most part recognized information behaviour as an aspect of organizational behaviour, and it has not recognized the contributions of IB research to KM. This impinges also on the recognition of IL as an important aspect of KM initiatives, as the discussion of the triangular relationships between these fields has shown. In this aspect KM has a lot to gain from recognizing these contributions. LIS communities would have to make a stronger effort in connecting with KM and 'selling' their developments. More mutual recognition and collaboration between IL and IB research would go a long way towards gaining recognition for both in the management literature. For LIS, this seems an important direction of development which will require purposefully opening spaces in the KM field.

- Properly contextualized frameworks for IL should be part of any comprehensive KM initiative. Rather than expecting organizations to use ready made models designed for educational purposes, they should define their own requirements for IL and devise the corresponding training programs. To a certain extent, that is what NHS Scotland has done, although it has not called all of that 'information literacy'. There is to some extent a problem with the label itself, which is often not understood completely, or is considered inappropriate. But otherwise the concepts of literacy or *literacies* are perfectly applicable to knowledge-managed organizations. In fact, a knowledge-managed workplace may be almost a requisite for successful development of IL initiatives; it is the type of organizational environment where information and knowledge are valued, under the concept of continuous learning. In the case of NHS Scotland, there exists a limited recognition of the

importance of IL, evident in some of their training programs.

8.1 Original contributions to knowledge.

This research is making several original contributions to understanding the role of information literacy in organizations, particularly in the context of the knowledge-managed workplace. These comprise methodological and substantive contributions.

Methodological contributions:

- **This study focused on a non-educational setting.** This has involved acknowledging the importance of extending the range of studies beyond the educational realm, a situation which has so far reinforced the limitations of the concept of IL in terms of its applicability to workplace environments and the identification of IL almost exclusively with librarianship, preventing its further growth. It seems important to widen the type of settings where workplace IL studies are conducted, and this is the first study of its type done in a tele-health organization.
- **This study focused on a knowledge-managed workplace.** This is the first IL study to look specifically at a knowledge-managed workplace. This has involved understanding the emerging importance of KM and the potential relevance of IL to its focuses on effective information use and continuous learning. It has implied understanding that not only are more workplace IL studies needed, but also that researching the possible contributions of IL to knowledge build up and transference in organizations is important in order to increase its potential for future development.

- **This study developed a new methodological approach based on phenomenography.** Going beyond what other phenomenographic studies have done before, this research has taken into account additional evidence about relevant aspects of the organizational environment and workplace practice in the discussion of the outcome spaces. This has involved the theoretical consideration of context as situated practice, of which the individual phenomenological experience is an aspect, producing a richer and more concrete picture of effective information use. The consideration of context as situated practice does not preclude the employment of phenomenography as a research method, as long as it is not used in isolation. Phenomenography is particularly well suited for exploratory research of complex phenomena, using rather open research questions. It seems completely possible to develop and apply other combinations of qualitative methods based on phenomenography which explore conceptions along with evidence on different aspects of situated practices.

Substantive contributions to knowledge:

- **This study has produced a picture of workplace IL in a knowledge-managed organization** that shows aspects of effective information use which had not appeared in prior research, and which challenge and enhance our understanding of the concept. Not only has a novel setting been chosen which has presented particular aspects of information use, but IL concepts have been discussed in relation to KM theories and models, as well as to the practical organizational initiatives of NHS24. The picture obtained not only shows a description of how IL is conceived of at NHS24, but has been the base for a theoretical discussion of how information use is related to learning theories and management models, enhancing our

understanding of the interactions between IL, IBS and KM and possible directions for further research.

- **Produced a critical discussion of the applicability of current IL frameworks** in a particular knowledge-managed workplace, which enhances our understanding of the challenges for further developing IL in educational and work situations, by identifying the specific limitations of IL frameworks and suggesting (in the next section) possible lines of development to make the concept of IL viable in the organizational, knowledge-managed context. This has implications for researchers and practitioners in librarianship, education and workplace learning. The results of this study support the consideration of a continuum of literacy practices from school to workplace that calls for the development of specific, rather than generic, IL frameworks and development strategies that address that continuum.
- **Produced an innovative critical discussion of the relationships between IL, IB and KM** and their potential contributions to the study of information use in organizations, which enhances our understanding of how LIS can develop as a discipline. There are important interactions between IL and IB which have not been acknowledged clearly in the LIS literature. On the other hand, both have a large potential for contributing to KM in organizations. Mutual recognition and collaboration should be fostered from the respective communities of research and practice. It is in the best interest of LIS to seek more integration of the IL and IB communities, and to seek a larger influence in the development of KM. The findings of this study show specific aspects on which each field can move on, and these are detailed below.

8.2 Further lines for research and practice.

The findings of this study have brought up a number of issues which point to possible lines of future research and suggest ways in which practitioners can enhance educational and workplace IL frameworks and development initiatives. On the whole, they point at the importance of further mutual recognition and collaboration between the main fields of study (IL, ISB and KM) discussed in this dissertation, through mutually taking up aspects of information use in organizations to which each field has given more consideration than the others.

a) For IL, the main challenges arising from this study are:

- Breaking up the isolation of IL within the librarianship community, by linking with other disciplines and research areas. This study has pointed at the importance of strengthening links with the IB research community and of considering KM as a focus of development for IL.
- The consideration of people as information sources, to a higher degree. In consequence of this, also:
 - The consideration of the interactions between people in sharing information and knowledge, and the development of the corresponding abilities and skills as part of IL.
 - The consideration of social capital as an aspect of continuous learning.
- The consideration of the centrality of informal and experiential learning in workplaces. This implies considering the importance of non-documental information, such as bodily knowledge and skills, and the processes of apprenticeship as aspects of IL in workplace environments.

- The consideration of developing a knowledge base in relation to pragmatic performance in situated practices, to a higher degree.
- The consideration to a higher degree of the construction of meaning for the interpretation and application of information as a result of the social interactions and sense making which occurs within organizations and communities of practice, rather than by individual critical thinking alone.
- The consideration of the evaluation of the quality of information sources from the point of view of social sense making related to specific disciplines and communities of practice. This involves a view of information as subjective, historical and contested.
- The consideration of information literacy as tacit knowledge (rather than just explicit skills) to a higher degree, and the recognition that people who perform well (experts) in workplace environments are ordinarily information literate in that context. This leads to granting more importance to exploration than prescription of what IL is, and to recognizing a wider variety of *literacies* and situated literacy practices.
- The user-centred line of research advocated by Dervin (1992) and later Bruce (1997) should be kept up, but it is suggested that research studies embrace the concept of situated practice as a strong theoretical consideration of context, and develop research methods suitable to this conceptualization.

The challenges to IL listed above need to be addressed through more workplace based research. It seems important to leave, at least for some time, the educational workplace settings and widen the range of industries

focused, as important variance in literacy practices is expected to be found. It seems important also to research the literacy practices of different types of employees (e.g. blue collar, professionals, managers, etc.) within each industry. The study of knowledge-managed workplaces should be a central, but not exclusive, focus of research. For all the importance of KM, not all workplaces and professional practices are likely to be affected by it in the same ways and to the same degree.

It is suggested that the methodological approaches of further studies seek the exploration and interpretation of literacy practices *existing* in workplaces. In this regard the main hypothesis, which the findings of this study support, is that skilled performance in a situated practice is synonymous with being information literate in that context. This research has shown that frontline staff at NHS24, most of whom have a long professional experience and have had extensive training in their respective jobs, are information literate in their workplace situation. The same can be expected of people who perform expertly in other workplace settings. This acknowledges that people's literacy is composed of different abilities and skills, defined basically by the characteristics of the situated practice and the level of expertise required to perform in that setting, and not necessarily conforming to any single academic (or other) standard. Description of literacy practices, elaboration of standards or curricula, and training and development initiatives should ensue from the examination of situated practices and what expertise means for each one. No doubt some generic aspects can be ascertained for particular types of industries, professions, trades, etc. But the research findings of the present study, and the relative lack of similar studies, suggest that open exploration of more workplaces is necessary without rushing to generalize prescriptive frameworks.

The literacy of the experts can be contrasted with the situation of apprenticeship, where newcomers come into organizations with some skills and knowledge, but lack others. The investigation of IL practices should lead not only to cataloguing abilities and skills, but to address the processes of learning and development. These could be very different across

industries, trades and professions. An important point to bear in mind is that all research in this line will be influenced by the theoretical and methodological standpoints, and any conceptualization of IL will reflect the methodological approach to the problem, fundamentally the consideration of learning theories and the understanding of 'context'.

Lloyd's (2007) study is exemplar in showing a very interesting research approach to IL which focuses on the learning process, considering the transitions in apprenticeship and the use of affordances existing in the particular 'information landscape'. The findings of the present study endorse the socio-constructive consideration of learning practices, as this provides a more comprehensive approach to the complexity of workplace environments and the activity systems within them. However, this involves theoretical perspectives which are not often found in mainstream LIS, for example: socio-cultural learning theory; organizational theory; workplace learning theory; etc. Also, developing methodological approaches that suit these theoretical approaches is necessary. Taking up these theoretical and practical perspectives is one of the avenues to expanding the discipline.

It should be stressed that this dissertation does not suggest that educational IL frameworks should attempt to address, in generic ways, the IL requirements of workplaces. Consideration should be given to some general factors which have been largely ignored (and which have been discussed above), but the conclusions of this study point at the need to develop diverse points of support for a *continuum of literacy practices* that extends from schools to workplaces, addressed by a number of frameworks and development initiatives at different times and locations.

It is of course important that research and development of IL is not the undertaking of librarianship alone. Strengthening the links and collaboration with the IB research community should be a key undertaking in this regard, but also with other communities of research and practice in education and management.

Educational frameworks should address concerns related to the literacy practices proper to schools, while keeping an eye on implications for the future. But the real pitfall of current IL frameworks is to assume that the literacy practices of schools are the same as those of workplaces, and therefore that abilities and skills will be relevant and transferable. It is in this aspect that IL frameworks show limitations which have to be acknowledged, which will allow for development of additional strategies that complement the school-based efforts.

The literacy practices of workplaces should have frameworks developed specifically for them, even on an ad-hoc basis. Practitioners in organizations, who are involved in training, coaching and information management, as well as professional bodies that more generally oversee particular industries, should devise a curriculum of literacy practices for organizations (or professions) that addresses the appropriate abilities and skills in using information to learn and to deliver the products or services proper to the industry. This would be similar to what the librarianship professional bodies have done, but with the aim of developing local rather than all encompassing definitions. The concept of workplace literacy practices is a powerful idea that can help bring together otherwise scattered elements of training and workplace learning in organizations.

- b) For information behaviour studies, the main challenges arising from this study are:
- The consideration of learning as an aim of information behaviour to a higher degree, including the role of reflection in learning.
 - The consideration of context in information behaviour from a stronger theoretical perspective, as situated practice.
 - The consideration, to a higher degree, of the problems in developing knowledge and skills for effective information

behaviour. This should lead to greater involvement in the development or reinterpretation of IL frameworks.

- The acknowledgement, to a higher degree, that IBS has important contributions to make to KM, and the consideration of knowledge-managed workplaces as sites for research into information behaviour.
- The consideration of structured verbal exchanges of information as information behaviour, instead of simply communication.

Generally, it seems important that IB research focuses more on learning as a specific aspect of information behaviour. This will enhance its affinity with IL and KM and extend the applications of research. It is also important that more complex organizational information practices are focused, beyond the consideration of 'tasks'. IB research has developed from an initial consideration of information systems and users as part of a dyadic cognitive system, on to a consideration of some environmental variables affecting information behaviour, and lately to a larger consideration of social context. But a lot of research is still focused on specific aspects of information behaviour, such as seeking, and research of micro-incident behaviour. While all of that research is valuable, the KM perspective calls for a broader consideration of learning in complex organizational contexts. This involves developing more holistic models and, again, incorporating the above mentioned theoretical perspectives which relate to the social construction of meaning and knowledge. Some authors have already done this, but these should become mainstream trends in LIS, in order to link up with the more advanced conceptualizations of KM and the related practices.

Finally, IBS should embrace the idea of IL as the developmental aspects of appropriate information behaviour, understood in situated practices. While the development of abstract and general IB models is often sought, this does not help understand what is appropriate in a particular context and leads to the same type of limitations found in the institutional IL

frameworks. The quest for general knowledge and models is important, but it also hinders the understanding of phenomena which have a lot of variance, and this seems to be the case of workplace information use. On the other hand, the great number of IB models (and the contrasting small number of substantive theories) evidences that generalizations are attempted out of almost any combination of attributes or factors in information behaviour, without going deeper into the complexity of real-life information use.

In this regard Kuhlthau's (2004) model is exemplar and it is the result of a long term research effort and strong theoretical grounding. Dervin's (1998) sense making model is also very promising for research of workplace information practices, but a stronger consideration of learning would be helpful in going beyond the gap-bridging metaphor. Lloyd (2007) has developed a very strong approach to research of workplace literacy practices that is not based on a model (or has attempted to produce a model), but on learning theories, and this lead should also be followed.

c) For KM, some specific challenges arising from this study are:

- The theoretical consideration of information use in the organization based on information behaviour models and research, to a higher degree.
- The consideration of workplace literacy practices as a focus of research.
- The consideration of developing IL frameworks for the workplace as an intrinsic aspect of KM initiatives. These frameworks would have to be developed for specific industries and even particular organizations.
- The consideration of the relatively subsidiary role of information systems and of information using skills

development, as effective information use is largely dependent on the social sense making and interpretation of its application to the tasks and aims of the organization.

To point out challenges for KM is more difficult, since it involves such a broad collection of disciplines and applications, and in fact many aspects have been already addressed by some authors. But the results from this study seem to endorse the trends in KM that point at the consideration of learning in organizations as a complex sense making activity based largely on communities of practice that generates interpretation of organizational values, discourses and initiatives in the application of information and knowledge to the problems and tasks of their work, following the lead of Lave and Wenger (1991), Blackler (1995), Wenger (1999), Brown and Duguid (1989, 1996, 2000), Snowden (2002), Snowden and Kurtz (2003); Tsoukas (1996, 2005), Elkjaer (2003) and others.

Writing this dissertation from a LIS point of view, it seems necessary to reiterate that the communities of librarianship and IBS make efforts to work together and gain more presence and influence in workplace studies. It has been argued that this involves three main aspects:

- A greater consideration of learning as a key aspect of information behaviour.
- A consideration of context as situated practice.
- A consideration of socio-constructivist theories of learning.

LIS as a discipline should consider a greater involvement with management theory and practice, and particularly knowledge management. It would probably be a mistake to second-guess its importance and remain cautiously at the sideline. On the contrary, it is a conclusion of this dissertation that LIS can make valuable, even essential, contributions to the development of KM. It has been argued how KM lacks a cogent understanding of information behaviour and information literacy in its theoretical groundings. This creates a number of opportunities for LIS research and for involvement at the practitioner level. But it requires

mutual recognition of how each discipline has progressed, as well as understanding of its aims, theories and methods. But expanding frontiers is what research is all about.

LIS research should approach workplace situations more often and seek output in KM related publications. This includes organizational studies and workplace learning. Additionally, participation in industry-specific publications would advance the contributions of LIS in those particular areas.

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Clinical Directorate

Ruben Toledano O'Farrill
Research Student
Department of Information Management
Aberdeen Business School
Robert Gordon University
Garthdee Road
Aberdeen
AB10 7QE

Date 24th October 2006
Your Ref
Our Ref
Enquiries to: George Crooks
Extension: 0141 225 0099
Mobile:
Email: george.crooks@nhs24.scot.nhs.uk

Dear Mr Toledano O'Farrill,

Further to your discussions with Katie McGlew, Health Information Manager and Iain Armstrong, Head of Research and Development, NHS 24 agree in principle to allow the "Information literacy and learning in the workplace: a phenomenographic study of health professionals' conceptions." This agreement is subject to the following:

- Evidence of ethical approval from the COREC ethics committee.
- Written informed consent will be sought from the staff involved in the study.
- Contact with staff will not impact on business as usual.
- No contact with staff during the festive freeze period.
- Feedback to NHS 24 provided as per research proposal.

We hope this meets your requirements. We wish you every success with the research project. If you require any further support from NHS 24, please don't hesitate to contact Katie McGlew.

Yours sincerely,



George Crooks
Chief Operating Officer/Clinical Director

cc. Professor Dorothy Williams

Appendix 1

Multi-Centre Research Ethics Committee for
Scotland

Secretariat
Deaconess House
148 Pleasance
Edinburgh
EH8 9RS
Telephone 0131 536 9026
Fax 0131 536 9346
www.corec.org.uk



Mr Ruben T O'Farrill
Research Student
Department of Information Management RGU
Robert Gordon University
Aberdeen Business School
Garthdee Road
Aberdeen
AB10 7QE

Date: 27 November 2006
Your Ref.:
Our Ref.: 06/MRE00/108
Enquiries to: Walter Hunter
Extension: 89026
Direct Line: 0131 536 9026
Email: walter.hunter@lhb.scot.nhs.uk

Dear Mr O'Farrill

Study title: Information literacy and learning in the workplace: A study of health professionals' conceptions

REC reference: 06/MRE00/108

The Multi-Centre Research Ethics Committee for Scotland, Committee A reviewed the above application at the meeting held on 23 November 2006. Thank you for attending to discuss the study.

You provided the following documents for consideration:

Document	Version	Date
Application Form Parts A and B		26 October 2006
Secondary Academic supervisor CV		27 October 2006
Principal Academic Supervisor CV		27 October 2006
Investigator CV		27 October 2006
Protocol	1	26 October 2006
Covering Letter		26 October 2006
Interview Schedules/Topic Guides	1	26 October 2006
Participant Information Sheet	1	26 October 2006
Participant Consent Form	1	26 October 2006

The Committee decided that this project is not one that is required to be ethically reviewed under the terms of the Governance Arrangements for Research Ethics Committees in the UK. In the

Appendix 2

Chairman Professor Kennedy Lees
Vice-Chairman Dr George Masterton

circumstances it was felt that ethical review was not necessary but this did not preclude the project from going ahead. Having looked at the application the Committee considered that it should be made clear to participants that it was an opt-in process. The letters would need to come from the employer, who would not be aware of the names of those ultimately participating. In the discussion with Mr O’Farrill and Professor Williams they explained in answer to a question about whether this would happen in own time or work time that they were in negotiation with NHS Direct about this particular point.

The Committee made the following observations:

1. NHS 24 should send out the invitation letter on behalf of researcher.
2. The participant information sheet should:
 1. be written in the first person, i.e. ‘I’ instead of “We”
 2. explain the study was for PhD qualification
 3. make clear to the staff that this study was voluntary – they had to opt-in - and that the employer would not be informed who does/does not participate
 4. make clear whether this study would occur during the staff’s own or working time (for anonymity from the employer, the former would be preferable)
 5. mention that interviews would be audio-taped but only with their consent
 6. mention that participants would have the opportunity to review the transcript of the tape-recording
 7. “access to publications up to 1 year after interview” change to refer to 1 year after project ends
 8. it would be useful to attach the sample interview schedule to the information sheet for the participants’ information.
3. The consent form should:
 1. re-word the publications paragraph for 1 year after end of study
 2. have a separate tick box for consenting to audiotaping.

Although review by a Research Ethics Committee is not required, you should check with the R&D Department(s) whether management approval is required before the project starts.

(Invitation e-mail sent to NHS24 frontline staff)

Dear member of staff at NHS24,

The Robert Gordon University of Aberdeen (RGU) is sponsoring a novel research study that aims at exploring NHS24 staff's conceptions of effective information use in the workplace.

Health professionals working for NHS24 are considered to have very important insights to share in relation to their experiences of effective information use and learning in the workplace.

All call handlers, nurse advisors and HIAs at the Aberdeen Centre are invited to participate on a voluntary basis.

If you decide to participate in this study, you will only be required to attend a single private interview. In this interview, you will be asked to talk about your conceptions and experiences of effective information use in the context of your job. The estimated duration of the interview is one hour.

All information obtained will be made anonymous.

This interview will not be an evaluation of your abilities or performance in any way, but rather an exploration of the ways in which you understand and practice effective information use in your job.

NHS24 has agreed to interviews being done at convenient times agreed with team leaders, within NHS24 premises.

This research has not been commissioned by NHS24, and NHS24 will not be informed of your participation, or of your decision not to participate.

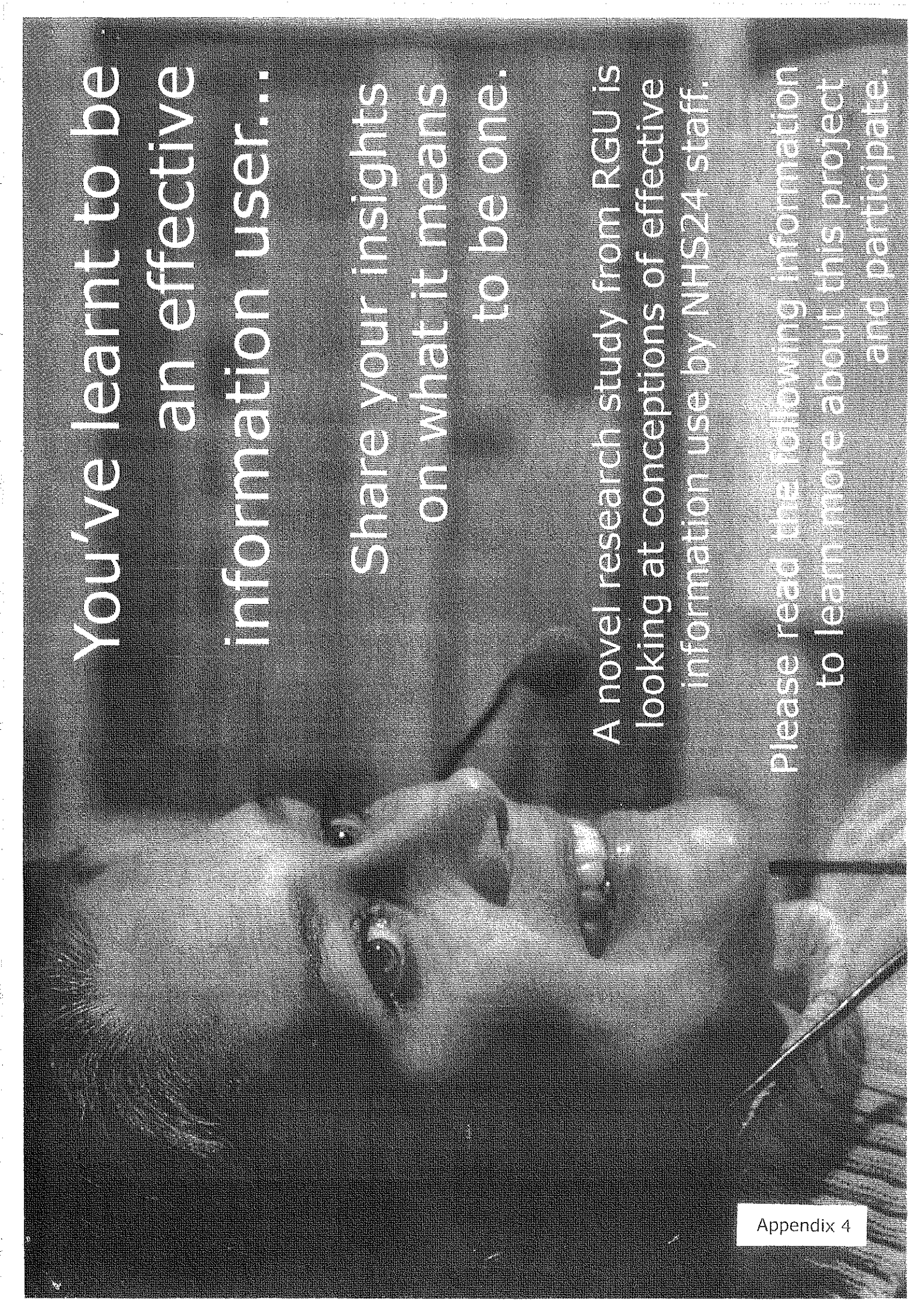
If you would like to participate in this study, or just want more information, you can contact the principal researcher:

Mr. Ruben Toledano
Dept. of Information Management
Aberdeen Business School
The Robert Gordon University

prs.toledano-o-farrill@rgu.ac.uk

Mobile:
07904005505

You can also contact Sheila Flaxman (Team Leader) at the NHS24 Aberdeen Centre.



You've learnt to be
an effective
information user...

Share your insights
on what it means
to be one.

A novel research study from RGU is
looking at conceptions of effective
information use by NHS24 staff.

Please read the following information
to learn more about this project
and participate.

Dear member of staff at NHS24:

You are being invited to participate in a research study entitled:

"INFORMATION LITERACY AND LEARNING IN THE WORKPLACE: A STUDY OF HEALTH PROFESSIONALS' CONCEPTIONS"

Before you decide to participate, it is important for you to understand why this research is being done and what it will involve. Please take time to read the following information carefully. Talk to others about the study if you wish.

What is the purpose of the study?

The purpose of this study is to research NHS24 health professionals' conceptions of effective information use in their workplace environment. This study is *not an evaluation* of your skills or performance, but rather an exploration of the ways in which you understand and practice effective information use.

Who is organising and funding this research?

This research is being funded by The Robert Gordon University of Aberdeen. The study is being done as part of a PhD degree by the principal researcher.

Do I have to take part?

All Call Handlers, Nurse Advisors, Health Information Advisors and Team Leaders at NHS24's Clydebank centre are being invited to participate.

Participation is completely voluntary. If you decide you want to take part in this study you will be asked to sign a consent form. If you agree to participate, you can still withdraw from the study at any point, without having to give a reason.

What will I be asked to do if I take part?

You will be asked to take part in a single, private, individual interview where you will be asked about your views and experiences of effective information use in the context of your job. In some cases, a second interview might be agreed on for the purpose of clarifying or expanding on any information given in the first interview.

What are the other possible disadvantages and risks of taking part?

We don't consider there are any risks or dangers implied. You will only have to spend some time in the interview (estimated 45 mins.)

What are the possible benefits of taking part?

This research is considered useful for gaining increased knowledge on effective information use and workplace learning. You will be contributing to this effort. For you, it might provide with an opportunity to reflect on the way your abilities for effective information use have developed.

Will my taking part in the study be kept confidential?

Absolutely. The information obtained from your interview(s) will be transcribed and made anonymous. Any quotes included in any publication will only be identified by a code. NHS24 will not be informed of your participation, or of your decision not to participate.

What will happen to the information I give?

The information that you and other participants give will eventually be included in some publications resulting from this research, such as journal articles, conference presentations and a doctoral dissertation.

What will happen if I don't want to carry on with the study?

You are free to disengage from the study at any point, without having to give a reason.

Information regarding the interviews:

- All interviews will be carried out within NHS24 premises.
- NHS24 has agreed to interviews being done at convenient times agreed with team leaders.
- The estimated duration of the interview is 45 mins.

- The person who will interview you is a trained and qualified researcher.
- The interview will be private.
- The interview will be audio (not video) recorded.
- The only person who will have access to this recording is the interviewer, who is also the principal researcher in this study.
- The interview will be transcribed and coded by the principal researcher, so that your name will no longer be connected with this information.
- In some cases, a second interview might be agreed on for the purpose of clarifying or expanding on any information given in the first interview.

The main topics that will be explored in the interview are:

- Your conceptions about effective information use in your workplace situation, and how these conceptions are related to your experience of using information on the job.
- Your conceptions about the relationship between effective information use and continuous learning.
- Your conceptions about how effective information use and learning can be influenced by institutional strategies (e.g. training).

Important aspects to remember:

- The interview will not be an evaluation of your abilities or performance in any way.
- NHS24 has not commissioned this research. It is an initiative of the Robert Gordon University of Aberdeen. While some reports will be made to NHS24 about this research, no individual participant information will be given at any time.
- You can disengage from this research at any moment, without having to give a reason for it.

Contact Details:

If you would like to participate in this study, or just want to have more information about it, you can contact the principal researcher:

Mr. Ruben Toledano

Dept. of Information Management
Aberdeen Business School
The Robert Gordon University

prs.toledano-o-farrill@rgu.ac.uk

Mobile: 07904005505

You can also contact **Maira McCabe (Team Leader)** at the NHS24 Clydebank Centre.

**YOUR PARTICIPATION IS IMPORTANT, AND
IT WILL BE MUCH APPRECIATED!**

Centre Number: _____

Participant Identification Code: _____

Job position _____

CONSENT FORM

Title of project: "INFORMATION LITERACY AND LEARNING IN THE WORKPLACE:
A STUDY OF HEALTH PROFESSIONALS' CONCEPTIONS"

Principal researcher: Mr. Ruben Toledano O'Farrill

	Please initial box
1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	<input type="checkbox"/>
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.	<input type="checkbox"/>
3. I understand that all information that I provide will be kept confidential and safeguarded. Any information I provide for this study will not be quoted using my name or surname or in any other way that might identify me personally.	<input type="checkbox"/>
4. I agree to audio taping of my interview	<input type="checkbox"/>
5. I agree to take part in the above study	<input type="checkbox"/>
I would like to be kept informed of any reports or publications made in relation to this study by the principal researcher for up to one year after this research project ends. I should be contacted through the following email address:	<input type="checkbox"/>

Participant: _____

Signature

Date

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