A professional community goes online

- a study of an online learning community in general medicine

Studies in Applied Information Technology, Report 8, June 2010
ISBN 978-91-628-8128-3, ISSN 1652-490X;8

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Doctoral Dissertation

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ISBN: 978-91-628-8128-3
ISSN: 1652-490X;8

Available online:
http://hdl.handle.net/2077/22326

Printed by Geson Hylte Tryck, Göteborg, Sweden 2010

ABSTRACT

Title: A professional community goes online – a study of an online learning community in general medicine.
Author: Urban Carlén
Language: English
Keywords: Online learning communities, online participation, general medicine, e-mailing list, professional association, general practice.
ISBN: 978-91-628-8128-3

The aim of the study is to investigate how an e-mailing list, organised and managed by a Swedish professional association of general medicine, functions as an online learning community (OLC). In a contemporary networked society, people participate online in order to share knowledge and experiences about shared interests. Swedish professional and occupational associations face crucial challenges when building OLCs to support their members as they lack knowledge about maintaining online activities and professional networks that last longer than just a month. The longitudinal empirical material based on postings sent for a period of seven years has been collected from the web archive supporting the e-mailing list. The research questions examine the text - based material focusing on the characteristics of the participants, what they do online, and what they talk about. The analysis of the demographic statistics of participation, content analyses, and social network analyses take their departure in sociocultural theories and concepts of communities of practice. The findings indicate that e-mailing lists have the potential to enhance participation in online professional communities due to the participants' strict focus on the specialist subject when contributing online. The online activities show that the OLC is more than just an exchange of e-mail, sent back and forth among a group of participants. The OLC becomes an arena for the formation of professional identities that holds the general practice all together. Even if the number of subscribers increases over the years it does not automatically raise the number of contributing participants. The thesis suggests that OLCs can be built upon existing asynchronous tools which are embedded in professionals' daily work. Design implications derived from this thesis challenge professional and occupational associations to rethink strategies for organising continual professional development in terms of existing infrastructures for participation.

ACKNOWLEDGEMENTS

I would like to thank my supervisor Berner Lindström for his advice in my work. Wolmet Barendregt and Johan Lundin have also had an important role as co-supervisors as they straightened up my manuscript. I want to direct my great appreciation to the seminar group of *New Media, Education & Learning* (MUL) managed by Patrik Lilja, Ylva Hård af Segerstad and Berner Lindström. They created valuable opportunities for me to discuss my research. I owe much to the great support from colleagues at the IT Faculty concerning professional consultations in scientific and pedagogical matters, but also for sharing daily lives and worries during coffee breaks, especially Martin Tallvid, Mattias von Feilitzen, Annika Gårdsby, Maria Berge, Marie Eneman, Alexandra Weilenmann, Karin Wagner, and not at least Lena Dafgård and Jonas Kuschel, from whom I always have full support in critical moments. Thanks also to the administration of the IT Faculty, especially Catharina Jerkbrant and Ann-Britt Karlsson. The research programme of *LinCS* (The Linnaeus Centre for Research on Learning, Interaction, and Mediated Communication in Contemporary Society) has been most valuable for my research. Thanks to Ove Jobring for introducing me to the research community and being a part of the research project of Online Learning Communities (OLC). Special thanks to the members of the seminar group of OLC. I would like to direct special thanks to Martin Qvistgård for his technical support that made it feasible to handle the enormous amount of data material. The research project of OLC was managed by the national research programme called *LearnIT*, financed by the KK-foundation and Science Council of Sweden. I also want to direct special thanks to the steering board of LearnIT, especially Roger Säljö and Doris Gustafsson for their great organisation of vital research activities over the years. I want to thank my colleagues and friends at the University of Skövde, especially Anita Mattsson for her guidance throughout my career. Additional thanks go to the library personnel at Gothenburg University, Birgitta Ollars at The Swedish National Board of Health and Welfare, and for technical consultations by Christer Jonsson and Jonas Strömberg. I am most grateful to have a cheering audience of close friends with whom I long to spend more of my time with in the future. I would like to thank my two caring brothers, Martin and Johannes, who helped me to keep my feet on the track.

With all of my love and respect to my dear parents Ingrid and Jan-Ove to whom I dedicate my thesis with all of my heart.

Urban Carlén, Göteborg/Skövde, May 2010

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PROLOGUE

Within the scientific discipline *Applied Information Technology* at the Gothenburg University/Chalmers, the combination of theoretical and empirical approaches is accurate in research (IT-faculty, 2008). Applied IT concentrates on issues for design, development, organisation and use of IT on individual, organisational and societal accounts. Some of the research carried out specialises on learning, communication and information technologies taken its departure in behavioural science. In this study, the empirical case investigates *participation* among a group of professional actors in an e-mailing list in general medicine rather than examining how they *use* this tool in terms of mastering its technicalities only. From my own perspective, the term *applied* is defined close to the social aspects of how collectives *appropriate* tools in negotiation of meaning. Applied IT is more than just developing technological tools based on scientific knowledge; it also considers designing for participation in networked environments for learning and collaboration. This is important to know before reading the thesis, since sometimes it is the participants themselves who engage in building OLCs based on the activities they carry out, and not foremost, the technical staff of developers and its administration. Therefore, this research is situated in applied IT, capturing an array of research studies listed in the back of this thesis, that promote the scientific discipline.

1 INTRODUCTION

Vignette: General practitioners go online.

Olof has been working as a general practitioner for almost 30 years. He got his medical degree at Lund University in 1982. Olof takes pride in his long experience, and what he has achieved within primary care so far. Still, he discovers new things to learn, not only about general medicine, but also concerning organisational matters of health and medical care. To be able to keep up with the constant development of knowledge in his speciality, he regularly scans clinical news using a variety of web resources. He often engages in local activities with intention to change the conditions in general practice, and increase the possibilities for recruiting new people into the general practice field. At the moment, he works at a health centre in a suburb of Malmö, the third largest city in Sweden. Most of his patients are senior citizens. His house is situated between Lund and Malmö, which makes it possible for him to easily travel back and forth between work and the research team at Lund University.

Over the years, he has witnessed several organisational changes in the national primary care system. Off and on, he has been engaged as a local representative, in an association for professionals in general medicine. Olof finds it important to learn about the Internet to understand what it might mean to the development of general practice. Even if he considers himself an early adopter of computers and the Internet, he sometimes finds the demands of new technologies stressful. However, this does not stop him from engaging in two e-mailing lists, which help him to stay in contact with colleagues and support him in his continual professional development. The first of the e-mailing lists is run by a national diabetes centre. The second list is connected to a professional association in general medicine, the very same subject that he once specialised in during the 1980s. As a routine, Olof reads his e-mails during his morning break around 10 a.m. having his coffee at a safe distance from the computer. He has already learnt his lesson once, spilling coffee all over the keyboard. On those days, when he is fully booked with patients and meetings, he goes online back home, after finishing dinner and watching the news on TV.

Together with the other participants in this special e-mailing list, he discusses a variety of matters, not only medical issues. Once, he ended up in a discussion about what kind of changes that IT has brought to their work as GPs. In that discussion, one of the participants argued that, when using digital patient journals they no longer look at their patients when talking to them. Instead they just stare at the computer screen. Another participant concluded that nothing really new had happened, since they used to keep their eyes on the paper journals rather than at the patients, even before the birth of the Internet. In fact, it is just another way to carry out work practice, as another GP stated, saying that "it is merely the conditions that are different from what we do nowadays". As the debate continued, Olof wanted to discuss some strategies for using e-mail when communicating with patients based on the regulations of secrecy and integrity. He wanted to know more about how online communication could fit with ethical, economical and practical aspects of work. This was concluded that it could change the routines for how GPs communicate with patients.

As this debate continues, Olof want to discuss some strategies for using e-mail when communicating with patients upon the required conditions of secrecy and integrity that is based on ethical, economical and practical reasons, as this would totally change the routines for how GPs talk to patients in text based discourse

Generally Olof posts sparsely to the e-mailing lists. On a few occasions, he forwards news of diabetes that he has read in the British Medical Journal. He also reports from his engagements in local meetings. Sometimes he engages in discussions about what the professional role means to the practice and profession of general practise. He views himself as an active member of the list. He has been a member from its very start in 1999, and he also personally knows a number of the participants from activities in the professional association. Not all of the participants meet face-to-face, but the professional association coordinates its activities by using the e-mailing list in order to inform everyone of the items on the agenda. The e-mailing list has become a part of Olof's professional life as a general practitioner, as one of many ways he maintains his knowledge within the field, interacts with colleagues and keep up his professional relations.

This fictive vignette is based on the large body of empirical material collected in the study presented here. This narrative is intended to provide an idea of a typical participant by highlighting some of the activities professionals do online. Obviously, the Internet has revolutionised how people communicate in various networks, allowing people to act not only as consumers, but to engage in building of networks, and contribute to information and knowledge. A contemporary (Western) society is composed of people who are living in specific sets of relationships implied in a network logic (Castells, 2004, p. 41). The Internet itself can be understood as an example of capabilities of people who create ways and tools to communicate, collaborate and develop new ways of knowledge production and learning, i.e. to shape new forms of social life. However, the development of the Internet as an infrastructure for communication and networking builds on previous inventions like the printing press, radio and TV, telephones and even tools and infrastructures for transportation like cars and railways. People share the changes in conditions for human networking, physically and symbolically. The use of the Internet opens for new forms for how people carry out their work, educate themselves and handle everyday situations (Slevin, 2000; Wellman & Haythornthwaite, 2002). Slevin (2000) maintains that people in all generations, and for all times, have engaged in various kinds of social networks focusing on particular topics of interest to them. However, the Internet bridges distances in space and time in a way that has not been experienced before.

The study is conducted in Sweden, and consequently it is in place to provide some background concerning the use of Internet in Sweden. In the year 2003,

25 % of the Swedish population were using Internet on a daily basis, in 2007 the number had increased to 49 %, whereas 62 % go online today (Findahl, 2009). In the younger generation, aged between 19 and 25, 82 % go online every day compared to 66 % of people between 36 and 45 years of age, which constitute the group of adults more applicable for this study (Findahl & Zimic, 2008). E-mail is still the most common activity on the Internet (Findahl, 2009). Among people ages 26 to 55, one of four uses the Internet several times a day. There are no specific differences between male and females. Among white collars, 87 % post *every day* compared to 82 % of blue collars who post at least *once a week*. At work, they normally use e-mail for communication as they know how to attach documents when communicating.

Besides online communities for social networking, for example Facebook, MySpace, LinkedIn[1], there are a variety of tools, applications and services for engaging in network activities such as e-mailing lists, wikis, blogs, and online discussion forums. All these provide arenas for networking and sharing of knowledge and experiences. The need to investigate what people actually *do* online becomes important when trying to understand and describe how the use the Internet is embedded in our social lives. Van Dijk (2006) claims that when more and more people invest time on the Internet, they appropriate online environments as a part of everyday life. Activities performed outside the Internet are described, discussed and disseminated online, and conversely online interaction have consequences for people's everyday practices.

As pointed out, the development of the Internet and the networked society has an important infrastructural dimension. Guribye and Lindström (2009) present the notion of infrastructures for learning, incorporating technological and social arrangements of networked learning practices, as a way to analytically approach and understand learning. This relates closely to an idea of knowledge as shared and distributed among participants in social practices (Lave, 1996). In such a perspective the distribution of knowledge is an important premise to understand the development and functioning of social and networked practices (cf. Dirckinck-Holmfeld, Jones, & Lindström, 2009). The distribution is dependent and realised through the use of language and other mediating tools.

[1] www.facebook.com, www.myspace.com, www.linkedin.com,

1.1 Changing conditions for knowledge sharing in professional fields

The conditions for work have changed dramatically by the Internet. Nardi, Whittaker and Schwarz (2002) assert that in the past, most of the work took place in rather stable settings and long-term established relationships existed between various actors within businesses, suppliers, and customers. People tended to stay in the same occupation or even within the same company for decades. As conditions for companies have changed, so have also the working conditions. Increased competition has often driven constant re-organisations and need for creating connections and networks. Companies share business relationships between companies and organisations in order to stay powerful on the market (Nardi, et al., 2002). When new ways of organising work are introduced, people have to adapt. They need to become flexible in their work and their knowledge has to be updated perpetually in order to stay employable.

Eraut (2004) concludes that learning at work is often built into activities that are not primarily designed for learning purposes. In particular four main types of work activity can support learning (1) participation in group activities, (2) working alongside others, (3) tackling challenging tasks, and finally, (4) working with clients (Eraut, 2004). He also argues that successful learning depends on the quality of relationships among the participants. Interestingly enough, this can be connected to the development of professional OLCs. Research has shown that when people participate online, they also tend to become involved in activities of a more professional nature (Haythornthwaite, Wellman, & Mantei, 1995). Social interaction is one of the fundamental aspects of learning among professionals. Eraut (2004) not only points out how learning is a part of non-educational activities, but also that research on learning at work typically studies environments that are not planned for learning purposes. In many ways the e-mailing list in this thesis constitutes such an environment. It is not designed for learning but it is where learning takes place.

Boud and Middleton (2003) argue that the structures for organising learning in professional fields should not be reduced into a responsibility of the work-place. The argumentation for life-long learning stresses the individual's responsibility and accountability for their own learning. Allan and Lewis (2006) show how the continual change in professional fields pushes people to update themselves more regularly by using the Internet. Thompson et al. (2008) point out that participating in online activities expand the time for knowledge sharing beyond work place activities, into blurred boundaries

between work and personal time. On the flip side, this can create additional and unwelcome stress for some of the participants, and therefore, this will also affect the extent of online participation (Allan & Lewis, 2006).

Professional and occupational associations become increasingly important actors for organising networked learning and development within and across professional networks (Allan & Lewis, 2006; Gray, 2004). Lin, Hung and Chen (2009) suggest that it is important to professional and occupational associations to help their members with various supportive systems. By introducing online environments, they present strategies to meet future demands for and by members who want to improve themselves in work life.

1.2 Online learning communities in professional contexts

Carlén and Jobring (2005) define an online learning community (OLC) as a group of individuals who participate in online environments in order to share common interests as they build a knowledge domain collectively. The concept of community as a way of understanding sharing of knowledge and learning has been wide spread. There are a number of theories of learning in social networks which relates closely to the concept of OLC, such as *learning networks* (Harasim, Hiltz, Teles, & Turoff, 1995), *knowledge-building communities* (Scardamalia, 1994), *communities of practice* (Lave & Wenger, 1991; Wenger, 1998) *communities of interest* (Fischer, 2001), and *communities of inquiry* (Lipman, 2003). Concerning online activities such as social aggregations can also be referred to as *virtual learning communities* (Kowch & Schwier, 1998; Rogers, 2000) or *online communities of practice* (Johnson, 2001). To some extent, the array of concepts of disparate forms explaining social networks in themselves exemplifies what networked social activities is all about: the actual participation in online social practices. Fundamental to the majority of research on learning in communities of practice is the idea of how participants constitute a joint enterprise that is built upon a set of activities (Wenger, 1998). Wenger, McDermont and Snyder (2002, p. 4) describe communities of practice (CoP) as "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in the area by interacting on an ongoing basis". Contrasting this with networked learning, Haythornthwaite (2008) describes two foundational elements of any networks, that is, *participants* and their *relations*. Whether or not these relations are weak or strong, multiple or spare, temporary or stable, examining what social interactions occur provides the basis for understanding how participants of a learning network engage with each other and constitute as a communal

whole. Haythornthwaite states that what (2008, p. 141) "underpins such learning communities is a necessary step before designing and providing social and technical mechanisms for fully web-based communities, and for the online component of any contemporary community".

It is not suggested that online participation should be viewed as an ultimate solution for organising knowledge sharing and exchange of experiences. Barab, Kling and Gray (2004b) propose that the ideal picture, in which groups of participants organise themselves for online learning on a continual basis, do not fully align with how people actually participate in OLCs. The work to manage online activities tends to require much effort by organisers, rather than being a shared responsibility among the participants. It seems as if the technical implementation of online environments, is much less complex compared to the efforts that are required to organise and maintain the activities (Gray, 2004). The social structuring of online activities tends to be neglected, "we often assume that technology will automatically connect remote learners and promote borderless exchange of information, knowledge, and skills among distributed individuals and teams" (Cho, Gay, Davidson, & Ingraffea, 2007, p. 325). Consequently, professional and occupational associations, that want to establish OLCs, are facing several challenges that people need to know more about.

1.3 Medical professionals go online

This thesis will report on the exploration of a professional OLC in general practice. The OLC has been active for over seven years. This is an exceptionally long life time for an OLC, as most of these learning arenas tend to fail after a while due to lack of interaction (Renninger & Shumar, 2002). The long-term sustainability of the community makes it a particularly interesting case to study. Online learning in different forms has been proposed to have the potential to support general practitioners in their continuing professional development, but such learning formats are still poorly studied and evaluated (Thorley, Turner, Hussey, & Agius, 2009).

Besides lawyers and priests, doctors are one of the world's oldest professions (Abbot & Meerabeau, 1998; McWhinney, 1997). A profession differs from other occupational groups, as it can be understood to have a mandate to define its own premises. The profession is an institutionalised practice that is organised to maintain and protect the practice that is dependent on the capacity to establish a role in society (Abbot & Meerabeau, 1998). "It is through the professional tasks carried out by its members that a profession

can establish its identity, legitimacy and jurisdiction in contrast with other professions with which it is interdependent" (Beaulieu, Rioux, Rocher, Samson, & Boucher, 2008, p. 1155). Jones and Green (2006) point out that people who identify themselves as *professionals* make not only discursive claims about themselves as members of a privileged occupational group, they also suggest that they hold valued attributes of trustworthiness and competent in relation to the profession.

In recent years, there has been an increased emphasis on continuous professional development in all medical specialities (Hara & Hew, 2007). More and more professionals in medicine take part pro-actively in OLCs which enables them to share knowledge, seek information, collect ideas, coordinate forthcoming activities online as well as offline, improve their capabilities at work (James Lin, et al., 2009). Professional networks, not least in medicine, are developed over time as a part of a professional career (Freidson, 2001). Already during the basic medical education this network building starts by students' engagement in different kinds of social activities.

Thorely et al. (2009), Thompson et al. (2008) and Boudioni et al. (2007) all argue that one of the main responsibilities for general practitioners is to keep their knowledge and skills updated. Among other things, this is specifically connected to the continuous change in working conditions and a rapid development of scientific and clinical knowledge. Johnson (2001) maintains that knowledge sharing is an important human skill. It is not only knowledge in itself that is valuable, but rather the ability of professionals to generate and use knowledge as participants in a professional community.

Beaulieu et al. (2008) shows that the number of GPs does not increase as much as the number of doctors in other specialities in most OECD[2] countries. Responding to this, general practice opens up in order to attract, not only practicing doctors, but also medical students and the surrounding society, allowing them insight in what GPs do at work (McAllister & Moyle, 2006). As GPs strive to characterise general practice in comprehensible and attractive ways, they also need to outline boundaries towards other specialties. As mentioned, building professional identities is an important part of structuring a professional field (Beaulieu, et al., 2008). In these efforts OLC may play a part. For example, McAllister and Moyle (2006) argue that an OLC has the potential to change the culture of general medicine from its present state of

[2] OECD is a cooperation organization consisting of 30 developed countries.

fragmentation, to fostering connections and dialogues between isolated professionals.

The work of providing yourself with accurate tools and resources is something that all medical practitioners are fostered to do (Beaulieu, et al., 2008). This means that professionals have to keep up with development of the battery of clinical equipment within the medicine profession, such as syringes for injections or the stethoscopes, but also deal with the introduction of IT in the profession, such as digital medical records. All this presents a challenge, not least because of the impact that IT tend to have on infrastructures for work. Umefjord (2006) show that doctors use encrypted web-based messaging systems for consulting colleagues on e-mail concerning medication refills, appointments, and preventive care reminders. Beaulieu et al. (2008, p. 1162) suggest that "[s]haring the patient relationship with other professionals in collaborative practice models may be the most effective strategy for preserving the fundamental uniqueness of the profession of general practitioners – the scope of practice, the comprehensive view of a situation, and the privileged point of view for ensuring continuous and integrated care".

The use of the Internet in health and medical care practices affects the relation between doctors and patients. Patients as health consumers use the Internet, empowering themselves by adopting information on health and health services for self-help and choice of doctor (Powell, Darvell, & Gray, 2003). Through the Internet, they easily obtain a second opinion by external doctors through commercial as well as non-commercial Ask-the-doctor services. This also changes the working conditions for the medicine professions. Health service consumers have full access to an array of Internet resources that make them fully capable to ask advanced questions about the diagnosis given by doctors, and therefore, often become more active in consultations (Josefsson, 2007; Powell, et al., 2003).

Boudioni, McLaren, Woods and Lemma (2007) argue that general practitioners need to build continuous learning environments, that support collaboration and foster relations between organisations and individuals. They stress that life-long learning development is "highly dependent on building, investing in and sustaining knowledge, learning environments and infrastructure" (2007, p. 157). The life-long learning perspective incorporates the efforts of professional and occupational organisations regarding strategies for learning. Eraut (2004) and Gray (2004) point out that online environments let organised learning activities stretch outside traditional educational settings into informal settings. On the Internet, people attend activities that foster

learning and that are not necessarily arranged as courses, seminars, work-shops or other educational genres.

As more and more of online communities for learning are being designed, it is important to assess their success and what professional and occupational associations might accomplish when going online (Barab, Kling, & Gray, 2004a). Until now, only a minor number of studies of OLCs in professional contexts has more deeply scrutinised the details of participation online. Drawing on the argumentation in this introduction - that OLCs, and other forms of social networking, is important to professional knowledge sharing and learning, - it is also potentially of great scientific and practical value to explore how these, established online collaborative networks, function. In the research presented in this thesis, the online activities of a group of people in professional context are studied for almost a decade.

1.4 Overall aim and research issue

The overall aim of this thesis is to empirically investigate how an online learning community in the professional domain of general medicine is organised and works as an arena for learning, collaboration and interaction.

1.5 Contributions to research and practical fields

There is an extensive body of knowledge of online communities and activities. Still, there is a need for research on the activities within online learning communities. In the research field of *Computer Supported Collaborative Learning* (CSCL), empirical studies examine collaborative learning in educational and work-related practices. Stahl, Koschmann and Suthers (2006, p. 418) express that "[T]he goal for design in CSCL is to create artefacts, activities and environments that enhance the practices of group meaning making". In this study, one attempt is to understand the affordances of an e-mailing list used by the members of a professional organisation.

Besides the research community of CSCL, the thesis provides knowledge to practical fields. People who manage OLCs as organisers of continual professional development in professional and occupational associations could learn from this thesis in order to building environments for learning and communication. OLCs do not automatically offer a solution for the creation of learning activities in online environments.

1.6 Thesis outline

The introduction above gave a short background presenting the central ideas as well as the overall aim of the study. The thesis is organised as follows:

In the second chapter, OLCs are presented in terms of their historical agenda, rhetorical accounts, and is defined through its technological programme.

The third chapter provides the applied theoretical framework and the research fields into which this study can be placed. A sociocultural perspective on learning adds theories where the understanding of tools and language become central for human development. The theory of communities of practice deals with processes and activities that are empirically studied.

The fourth chapter gives an account of related empirical research of specific importance for understanding the phenomena under study.

The fifth chapter contextualises the empirical study by giving a description of the professional practice of medicine. Here the historical background of the profession of medicine and the organisation of Swedish health and medical care practices, are provided. Furthermore, the introduction of IT in the practice of general medicine is explained.

This is followed by a presentation of the specific aim and research questions in chapter six.

The design of the empirical study is presented in the seventh chapter. Here the methodological considerations in carrying out the empirical analyses are explained.

There are eight chapters of results that penetrate the different analyses of the empirical material.

- Chapter eight present demographic statistics of the participants based on the contributions made to the OLC.
- The ninth chapter deals with analyses of the professional networks within the OLC. A social network analysis gives descriptions of the structure of interactions in the e-mailing list.
- The tenth chapter continues to explore the social interactions by focusing on positioning and positioning work and the participants' formation of professional identities in the OLC.

- Chapter eleven consists of an analysis of participation in the OLC over time as a way of giving an account of the sustainability of the community over time.
- In chapter twelve, the content of postings or what the participants in the OLC discuss is analysed.
- Chapter thirteen captures what types of activities are carried out in terms of what "tasks" are carried out.
- Chapter fourteen deals with how the activities in the OLC are moderated.
- In the fifteenth chapter the technological affordances of the e-mailing list as a main tool of the OLC are examined.

This is followed by two chapters where the implications of the results are discussed.

In chapter sixteen the discussion embraces the research questions raised in relation to the empirical analyses.

The final chapter addresses implications of the study to the CSCL-community and the practical field, and closes with some thoughts of future research.

2 THE CONCEPT OF ONLINE LEARNING COMMUNITIES

The purpose of this chapter is twofold. One purpose is to give an account of how the empirical phenomenon of online learning communities (OLCs) has been talked about and conceptualised in the literature. The other is to situate the discussion of OLCs in the broader context of communities as foundations for learning and work or, more generally, in activities. Five sections will conceptualise online learning communities. The first section examines *community* that provides a historical background of the sociological term in order to explain movements of social constellations in Western society. The second section focuses on the concept of *learning communities* influenced by John Dewey's ideas on democracy (Dewey, 1916/1959). The third section explores *online communities* as a social arena for people to meet in text-based communication. The fourth section discusses *online learning communities* in terms of learning activities about shared interests. Finally, the fifth section deals with *design for learning in OLCs* that stresses some aspects of collective engagement in building such learning environments.

2.1 Communities

The term community entered the English language from the French word *commune* in the fourteenth century (Cole, 2002). Community referred to "geographically localised groups of people", but during the seventeenth and nineteenth centuries, community was "expanded to include the idea of a group of people who hold something in common (as in *community of interest*) or who share a common sense of identity even if they do not live in the single locale" (Cole, 2002, p. xxiii). In the 19th century, industrialisation caused people to move into larger cities to apply for work, resulting in dramatic shifts in social structures. During this time, the progress of human inventions resulted in various tools for communication, such as the telephone, and networks such as the railways (Castells, 1996). These inventions changed the view of how people extended social relations, since they now were able to bridge geographical distances by travelling long journeys. Even in contemporary society, these inventions are essential for human beings and social life. In 1887, the German sociologist Ferdinand Tönnies wrote about the social changes in society by introducing the dichotomous terms "Gemeinschaft und Gesellschaft" (later translated by Charles Loomis as "Community and Society"). Brint (2001, p. 2) explains the dichotomy of community and society in the following way:

> Gemeinschaft is associated with common ways of life, gesellschaft with dissimilar ways of life; gemeinschaft with common beliefs, gesellschaft with dissimilar beliefs; gemeinschaft with concentrated ties and frequent interaction, gesellschaft with dispersed ties and infrequent interaction; gemeinschaft with small numbers of people, gesellschaft with large numbers of people; gemeinschaft with distance from centers of power, gesellschaft with proximity to centers of power; gemeinschaft with familiarity, gesellschaft with rules to overcome distrust, gemeinschaft with continuity, gesellschaft with temporary arrangements; gemeinschaft with emotional bonds, gesellschaft with regulated competition.

Community has a positive connotation as opposed to the term society. Living together in a society can be bad, whereas living together in community is good. "Community, we feel, is always a good thing" (Bauman, 2001, p. 1). The meaning of community is essentially a social group in harmony. Thus, being outside the community creates feelings of anxiety. However, to some extent, the positive description of historical communities has been exaggerated, since villages in former social structures were controlled within a strict feudal system managed in hierarchical structures (Anderson, 1983/1991; Castells, 2001). Furthermore, Slevin (2000) asserts that regardless of negative characteristics such as inequality and exploitation within the community, the members still conceive their social relationships as deep and equal friendships. It can be concluded that the ideal community does not always exist in terms of trust, democracy, belonging and commitment etcetera.

Talking about communities will always involve a struggle to separate sentiments and what is really happening in social practices. Hillery (1955, p. 119) stated that "there is no complete agreement as to the nature of community". Therefore, instead of focusing on the qualities that define the concept of community we should direct our attention towards activities. One researcher making this shift towards the study of activities is Brint (2001, p. 8), who explains that "communities are aggregates of people who share common activities and/or beliefs and who are bound together principally by relations of affect, loyalty, common values, and/or personal concern (i.e., interest in the personalities and life events of one another)".

Moreover, according to Anderson (1983/1991) the term community receives a symbolic meaning as participants think of themselves as a part of the activities. Similarly, Kling and Courtright (2004, p. 97) refer to "sociological communities as these social constellations are based on social relationships that emerge through participation". This could mean that a feeling of community arises through participation in activities without people physically meeting each other. Slevin (2000) adds that participants in a community tend

to separate themselves from other communities based on the activities in which they do and do not participate.

In summary, the meaning of community has changed over the years. Nowadays, it is used for various social constellations, ranging from professional associations, business collaborations and company relations to groups of costumers, virtual groups, or even groups in educational programmes, to mention just a few. In the remainder of this thesis, the focus will not so much be on the definition of community but rather on studying the phenomenon by looking at activities and participation.

2.2 Learning communities

One particular social constellation is a learning community. Learning communities are nothing new. Already at the beginning of the 20th century, educationalists strove to create environments that fostered pupils/students in collaborative activities that would benefit all society, not just the local school (Lenning & Ebbers, 1999). Lenning and Ebbers (1999) argue that theories of John Dewey (1916/1959) incorporated democracy in educational contexts that re-constructed the organisation for learning. His ideas were realised in an experimental school, resulting from his conviction to improve society. Not only did Dewey acclaim the right for every child to get an education, he also argued that parents, school administrators and instances of society, such as the church and communal institutions, should support education through collaboration. This pragmatic view of the organisation of learning activities ensured that children could learn social values and contribute to welfare from an early stage in life. Dewey expressed that democracy is accomplished when people see the results of work and collaboration (Coombe, 1999). This could only be fulfilled through shared interests among people who collaborate in communities. Later, the concept of learning communities was also applied in the organisation of higher education (Lenning & Ebbers, 1999). For example, a single course at university was linked together with similar courses within the same discipline. Educational programmes were developed that actually reformed all of academia on an organisational level (Lenning & Ebbers, 1999). The idea of learning communities was created by groups of students who organised themselves into study groups supported by the faculty (Love, 1999; Shapiro & Levine, 1999). Their collaboration changed the education as it implied new roles for teachers; they acted as facilitating co-learners rather than lecturers performing in front of the students, lecturing and transferring knowledge.

Dewey acclaimed shared interest and active participation in society as important pillars for the development of democratic values. These concepts have also been used to discern learning communities from other kinds of social constellations (Shumar & Renninger, 2002). Seufert Lechner and Stanoevska (2002, p. 124) add that "the common interest is the common interest in learning". Riel and Polin (2004) refer to learning communities as environments that are intentionally designed to support learning. From a social perspective of learning, learning in communities is not always performed in pre-determined activities in educational contexts. Rather, activities in learning communities need to be understood as a group of individuals having shared interests that benefit the democratic values in society. Human development becomes a process of negotiation of meaning in everyday practice with others (Riel & Polin, 2004). People learn through participation to create changes that stretch outside the educational environment.

2.3 Online communities

Participants in communities use different kinds of tools in order to perform the activities of the shared interest. The invention of the Internet has extended the possibilities for participants in communities to interact together. In the early 1990s, Rheingold (1994) argued that people could create social intimacy in the conditions of text-based conversations over the Internet. This statement once more challenged the traditional concept of communities. Rheingold called communities interacting via the Internet *virtual communities*, referring to social interactions among people who actually never meet physically. He referred to another dimension that stretched both time and place in its fundamental constitution. Back then, his ideas seemed odd to people who did not use the Internet for communication and collaboration themselves whereas people who did use the Internet recognised themselves in his description of social relations. Sveningsson (2001) added that participants show affinity with each other online and they talk about themselves as members of a virtual community. As more and more people started using Internet tools, his ideas became more accepted among larger groups. Instead of using the term *virtual* that had a rather negative connotation, people started to use the term *online* that focused more on the conditions for people to meet by accessing social networks. Furthermore, with the growth of the number of people online, a shift took place from talking mainly to strangers to maintaining social relations with people one already knew. This shift, together with the development of various technologies, such as mobile phones, means that people are accessible even when being offline.

2.4 Online learning communities

Many efforts have been made to define Online Learning Communities (OLCs). These efforts have generated long lists of different characteristics of OLCs. Three of these characterisations are discussed below in terms of symbolic values, the technical platform, and the kind of activities that are undertaken.

2.4.1 Symbolic values

The first characterisation is in terms of symbolic values, such as trust, democracy, belonging, and commitment. These symbolic values are often used to determine whether an empirical phenomenon is an OLC or not or, more generally, what social constellations on the Internet can be defined as OLCs. Symbolic values can also serve as parameters for the characterisation and evaluation of the functioning of an OLC, and researchers sometimes use these terms to explore how participants fulfil these criteria in social interactions. However, symbolic values were originally used to characterise more physical types of communities. In contemporary society, symbolic values have been transferred from their physical context to the OLC context in order to explore how 'real' social relations actually become online[3]. Kling and Courtright (2003, p. 98) warn us that "when a term is used to depict an ideal or desired state of affairs rather than to analyse an existing reality, it can be considered aspirational". Shumar and Renninger (2002) furthermore explain that the characterisation in terms of symbolic values has rather limited power in defining OLCs.

2.4.2 Technical platforms

Another attempt to define OLCs is by categorising what Internet tools constitute an OLC or not. OLCs tend to be defined as web-based platforms forming universal environments for learning. Learning activities are carried out on computers and mobile artefacts, asynchronously as well as synchronously, completely or partially online. Haythornthwaite (2002) claims that people use various tools depending on how close the relationships are among the participants. Furthermore, Barab, Kling and Gray (2004a) claims that the complexity of OLCs lies not so much in the specific technical platforms, but rather in the online conditions for how communication and collaboration are carried out collectively in social networks. The importance of technological

[3] I leave out the term *offline* to explain the opposite condition of online mode since the boundaries of what happens online and outside the Internet are very much intertwined.

skills decreases since the main challenge for the organisers of an OLC consist of how they manage social interactions in order to sustain online activities. Shumar and Renninger (2002), and Barab et al. (2004a) assert that online environments consisting of e-mailing lists and listservs provide an adequate underlying technology for building OLCs. For example, e-mailing lists can support continuous professional development of nurses by offering them opportunities to support each other in decisions and providing them with updated knowledge that is constructed online (Hew & Hara, 2008). Designers of OLCs agree that the technical platform can never deliver satisfying conditions for a group of people unless they all agree on their common technological needs (Barab, et al., 2004a).

2.4.3 Online activities

A final attempt to define OLCs is based on studies of the online activities. The categorisation of OLC distinguishes the context in which the OLC is developed and maintained. For example, Carlén and Jobring (2005) divide OLCs into the following categories:

- online educational communities (higher education) (see Hrastinski, 2007; Mattsson, 2009; Olofsson & Lindberg, 2005; Svensson, 2002)
- online interest communities (hobbies and topics) (see Maricic, 2005; Sveningsson, 2001)
- online professional communities (work-related practices) (see Nilsen, 2009).

Another categorisation based on activities asserts that OLCs can be clustered in a "joint environment (organisation), joint objective (task, product), common interest/situation (topic/profession), and social connection" (Ala-Mutka, 2009, p. 6). The context in which online activities are carried out become crucial for how OLCs can be understood in situations created by the participants themselves. Only the studies of online activities can reveal in what way they act as if they were a part of an OLC and how the activities can be understood as an extension of the wider social relations of an existing professional practice (Fox & Roberts, 1999). One has to know that people create changes that stretch beyond the online environment and vice versa.

2.4.4 Learning in online learning communities

Learning in OLCs takes place in activities. Those activities not only involve sharing knowledge about the common interest, but also discussions about how to participate, and how to use the online environment to socially interact

based on norms and rules. *Participation* in OLCs can be explained as social interactions that imply a collective negotiation on how to interact together. OLCs are built around the idea that participants achieve goals both individually and collectively by using one another as a resource (McAllister & Moyle, 2006). According to Ala-Mutka (2009, p. 6), factors explaining individual participation in OLCs are:

- Perceived relevance and opportunity for participation
- Psychological commitment to the community goals and culture
- Socially supporting environment for interaction
- Norms, rules and (diverse) roles that facilitate community learning
- Self-perception and personal skills for learning.

These interrelated factors, along with tools for online learning, are essential for how participants become engaged online. However, these individual factors merely shine a light on a limited part of the activities of the participants, focusing mainly on what they privately gain from the participation. OLCs are organised by a group of participants in order for the whole group to benefit from them and accomplish certain tasks. In OLCs, other motivations for participation are usefulness, social networking and contributing to the common good (Ala-Mutka, 2009). In the remainder of this section, we will instead focus on the factors that make OLCs valuable for the collective.

Ala-Mutka (2009) claims that goals for online participation are not always explicit; nor is online participation organised in pre-planned learning activities. Instead, the participants need to negotiate goals and share the agenda for online participation. This becomes a challenge for both the participants themselves and for the organisers of OLCs. Most of the work on building an OLC has to be carried out by the participants who, to a large extent, contribute on a voluntary basis. What they accomplish together depends on their ability to organise and maintain activities over time. As they engage online, social relations might emerge from the shared activities. It is through these relationships that some researchers attempt to define OLC as a phenomenon of social values.

2.5 Design for learning in online learning communities

Activities in OLCs can be designed for learning and various actors show their interest in building and maintaining OLCs. Besides researchers, there are a number of stakeholders with different interests in OLCs; developers and

technicians, educational practitioners, people from various organisations and institutions, policy people, representatives of professional development and, not least, the participants themselves. They all contribute to how OLCs develop within social practices. However, these contributions are made in terms of guidelines and design models for developing and managing online activities (Barab, et al., 2004a). In the extensive literature on design for learning in OLCs, the contributions are more or less based on scientific studies. In design for learning in OLCs, it is the participants themselves who need to become co-designers of their own learning environments. In order to develop OLCs, the participants must become contributors instead of merely being recipients or consumers of other members' contributions (Hunter, 2002). A website that offers free material does not automatically generate uptakes (Thorley, et al., 2009). "Give-and-take" is considered to be a crucial idea concerning how participation in OLCs is carried out (Wasko & Faraj, 2005). Examples of guidelines can contribute to how to moderate online activities. Online activities are performed by managers of OLCs as they strive to develop and maintain them. There is a lot of focus on the technical platform that offers the best options for carrying out the online activities. Researchers explain that there is a need for continual efforts by the organisers of OLCs once the technical platform has been implemented (Renninger & Shumar, 2002). Accordingly, the online activities are not self-propelled, meaning that participants do not naturally contribute just because they have an online environment to use.

2.6 Summary

This background chapter explains that the term *community* has shifted in historical times due to technological inventions. The concept of a learning community is further derived from John Dewey's ideas about collaboration between citizens in the organisation of activities for learning that benefit the whole community by fostering children in democratic values at an early stage in life. Learning within a learning community is not always organised in educational settings. People engage in various social practices in which they interact together as they learn at work or in everyday life. Online communities emerge as people experience social intimacy with one another. Finally, OLCs challenge our conceptions of social relations when people use Internet tools to bridge geographical distances without necessarily meeting face-to-face. There are various definitions of the meaning of an OLC, focusing on symbolic values, technical platforms or activities. In this chapter, it is argued that the central aim of an OLC is a joint activity by a group of participants who share

knowledge, experiences and ideas that benefit the whole community. Learning in online communities includes knowledge sharing, not only about the common interest, but also about how to participate online and how to use the tools within the social practice. In this study, understanding OLCs involves examining the activities in which participants construct and maintain social relations. Participation is explained as essential for understanding any community. In design for learning, guidelines are produced in order to support and sustain online activities in order to share knowledge and experiences. Design for learning in OLCs is thus focused on the online activities rather than on the construction of tools and functions in technical infrastructures.

3 THEORETICAL FRAMEWORK

This chapter presents a theoretical foundation of the thesis that will provide some analytical tools. First, I give a historical overview of the field of computer supported collaborative learning (CSCL) in order to situate this study. Then, I give an outline of the more general sociocultural theoretical framework of the study, with an emphasis on the fundamental concepts. Finally, I turn to the more specific theoretical concepts in order to explain crucial terms that are stressed throughout the thesis. Theories of community of practice provide conceptual tools for studying online participation as activities negotiated in social practices. Theories on positioning and identity formation enhance the understanding of the social interactions in the OLC.

3.1 Situating the study in research field of CSCL/CSCW

Computers and the Internet have been used in learning and working situations since the 1960s. At the beginning of 1980s, the research field Computer Supported Cooperative Work (CSCW) emerged from computer science, e.g. Artificial Intelligence (AI) and Distributed System, telecommunication, information management that were also influenced by sociology and organisational theories. In the CSCW community, researchers share an interest in the design process of tools, models and activities aim at supporting professionals and workers in cooperative work (Borghoff & Schlichter, 2000). In the mid-1990s, a complementary field called Computer Supported Collaborative Learning (CSCL) evolved among a group of researchers who were designing for learning and collaboration with computers and the Internet in educational practices. In a sense, CSCL can be viewed as a sibling of CSCW (Koschmann, 1996; Lipponen, 2001). Both research fields share an interest for the design process. The design process incorporates the technical structures of the tool with the social aspects of participation. In this perspective, participation becomes the theme that stretches between these two research fields since the involvement of participants becomes characteristics for how tools and environments are designed as the common task.

The field of CSCL can be situated in a historical context of the development of educational tools. Koschmann (1996) conceptualised the use of computers and the Internet in educational practices in four paradigms: including CSCL: Computer Supported Collaborative Learning (CSCL), Computer-Assisted Instruction (CAI), Intelligent Tutoring System (ITS), and Logo-as-Latin

(LOGO). In contemporary Western society, all paradigms co-exist in various degrees and have each been roughly assigned to one specific decade. CAI was founded on behaviouristic ideas in the 1960s. At that time, CAI applications enabled learners to acquire a pre-determined content as which was transferred into the mind by clicking though the application; when the learners reached the end of the application they would also have acquired the complete content, if not, they could repeatedly go through the material until they had successfully stored the content in their heads. In the 1970s, the paradigm ITS was developed based on the idea of information processing established in theories of artificial intelligence (AI) and psychology. The computer software is programmed to stimulate the individual in intelligent cognitive activities. Compared to the CAI paradigm, an application based on ITS offers the individual various choices when interacting and supports the learner by a tutoring feedback model. Feedback is triggered by the choices the learner makes when clicking through the application. The learning process is designed to become more of a discovery of the content. ITS is still considered to be a viable paradigm for various kinds of agent technologies. In the 1980s, Logo-as-Latin was built on a constructivistic approach, highly influenced by Piagetian developmental psychology but also by research influenced by computer science and Artificial Intelligence. The paradigmatic case, as developed by Papert (1980), is based on the individual knowledge construction which was created by programming the Logo application. This programming environment provided tools for individual thinking of mathematical problem-solving. Learners become co-constructors of knowledge rather than adopting ready-made materials (as in the case of CAI and ITS that also considered knowledge a fixed property).

Characteristics of CSCL are the pedagogical model based on communication, interaction, and collaborative learning (Koschmann, 1996). Koschmann (1996) describes three social perspectives that constitute CSCL; social constructivism, situated cognition and socio-cultural theories emanating from Vygotsky's thinking. CSCL, as an interdisciplinary field, is influenced by research disciplines such as computer science, psychology, anthropology, sociology, linguistics, and communication theory. Design-oriented CSCL research is carried out in several areas; from the computer science and cognitive perspectives to the dominant socio-culturally influenced perspectives (Arnseth & Ludvigsen, 2006). CSCL positions research problems of collective accounts as one reaction against the scenario of individuals submitting to computers without any social interactions. A goal of CSCL research is to develop tools

and environments that support collaboration among participants in learning communities.

The paradigm of CSCL contains a variety of research studies that examine groups of individuals with and/or without the use of computers as enablers for learning and collaboration. As a research field, CSCL "focuses on the use of technology as a mediational tool within collaborative methods of instruction" (Koschmann, 1996, p. 2). Lipponen expresses this slightly differently when he claims that "CSCL is focused on how collaborative learning supported by technology can enhance peer interaction and work in groups, and how collaboration and technology facilitate sharing and distributing of knowledge and expertise among community members" (Lipponen, 2001a, p. 19). Koschmann (1996) also argues that CSCL assembles studies of social activities where the process of learning is more important than the result. "…groups of students engaged in project-based work may produce some product, but the value of the activity presumably accrues from learning that occurs, not from the product they produce" (Koschmann, 1999, p. 496). Methodologically, the focus on processes of learning includes the observation of participation in learning activities and in interactions between humans and technologies. To a large extent, CSCL presents studies of *collaboration* and *cooperation* in educational contexts that concentrate on spatiotemporal conditions as performed in classroom situations (Lipponen, 2001a). The terms collaborate and cooperate are often used synonymously, but differs in the ways social activities are being organised (Lenning & Ebbers, 1999; McConnell, 2000). Collaborative activities refer to planned social interactions carried out simultaneously by the participants. They perform the task together without dividing the tasks into single responsibilities that they later add to the whole solution, as is the case in cooperative learning. The task is divided among the participants who share the responsibility for adding each part to the solution. Hoadley and Pea (2002, p. 323) explain that "people generally highlight collaboration as good and are interested in creating tools to support it". Besides the design process in research, CSCL also includes a more analytical agenda with studies of existing and emerging collaborative learning practices, even outside educational practices. Lipponen (2001a, p. 78) argues that pedagogical practices should be explored before implementing technology in any contexts when he explains that "[T]echnology itself does not solve the challenges of learning and collaboration".

The way in which the presumptive study belongs to the field of CSCL can be understood by examining participation. What participants do together becomes more relevant to explore than what makes this OLC belong to a field

that focuses on either work or learning. The OLC can be placed in the borderland of CSCL and CSCW. This study therefore contributes to an already established body of research that aims to design for learning and collaboration. When studying participation, there are some activities that are performed that take as their starting point existing activities organised by the participants themselves rather than being designed in advance by the researcher/s. This study will provide guidelines for how activities can be designed to support continual professional development on a voluntary basis organised by participants in professional associations. Here, this study raises questions concerning online participation in professional contexts that also complement the current research in CSCL, and might influence the research field of CSCW as well. In order to extend the knowledge in the field of CSCL, the need for a perspective that allows for a more in-depth examination of participation in collectives that focuses on tools and environments developed via computers and the Internet can be provided by a sociocultural perspective on learning.

3.2 A sociocultural theoretical framing

The sociocultural perspective can be viewed as a framework of theories on learning, interactions and collaboration performed by people in various social practices. What they do is situated in activities carried out with various tools within a socio historical context. This means that the main concern of a sociocultural perspective is to study the relationships between the collective and the individual, and ways that they appropriate cultural tools. An essential way of conceptualising the interrelationship between the individual and the collective is the theory of practice. The thinking and acting of GPs is situated in social situations that are culturally shaped by language and material structures. Not all theories in this perspective can be covered in this section. Only specific concepts of relevance to the empirical analysis will be described in greater detail in order to form a framework useful for this work. Based on the general framework consisting of theories on collectives support by tools, the sociocultural perspective offers concepts that can explain participation in online learning communities.

The theoretical foundation of social cultural perspective emerged through the work of a developmental researcher named Lev Vygotsky at the beginning of the twentieth century. Together with above all Luria and Leontiev, but also influenced by Dewey and Mead, he developed theories on cultural and historical influences on psychology, which assumed that people are social

creatures who participate in social practices. Back then, those researchers objected to Pavlov's behaviouristic assumption that learning is a strict biological explanation of how the human mind develops through processes of stimuli and response. Vygotsky added the social dimension to understand human development as contextually performed by groups of individuals through activities and tools. An asymmetric relation exists between the individual and the tools that constitute a situation that stretches far outside the activity with the tool. When people communicate under any circumstances, the *meaning* and *activity* have emergent qualities that can not be reduced to just the individual's thinking, speaking or writing, not even when sitting alone in front of the computer. Language becomes the compass pointing in the direction of the context (Linell, 1998). When participants post in the OLC, they consider these messages to be carriers of meaning. What is expressed in the text-based conversation will not in itself specify what is meant. Linell (1998) points out the communication is not a complete and shared understanding without the context in which the participants have to create meaning that furthers their practical tasks. One must understand that language is fundamentally incomplete and vague, that is, it is a communicative project to be solved.

Various analytical concepts such as communication, social interaction, learning, activity (types) and development are all crucial terms in the sociocultural perspective for explaining what happens in situations that indicate changes both for the individuals and the society as a whole (Säljö, 2005). *Communication* concerns the continual exchange of information between people in which the problem of interpreting the information is expected to be solved. A term synonymous with communication is *conversation* that stresses the occurrence of (text based) dialogues rather than just some information. Consequently, what becomes shared can be shown in terms of the *social interactions* and those responses that postings generate in the communication situation. What distinguishes communication from social interactions is that social interactions are viewed as more of an intentionally driven process than communication, since people always communicate something. In this thesis, social interaction is viewed in the interplay between participants that makes them act in ways that respond to what happens in the situation. The social interactions have a structure that will be explored in terms of the postings they sent to the e-mailing list. The *activities* make them address tasks to be performed together that can be viewed as a result of the text-based communication. Talking about accomplishment is not connected to what extent the participants actually reach an agreement, find an accurate answer to the topic, or actually receive full support, etc. The accomplishment is about

what happens online in terms of what project they carry out in the OLC. Linell (1998) introduces *activity types* which allow researchers to study institutional practices in the relationships between learning, institutional control (e.g. as managed by the professional association of general medicine), and the structures of professional conversations. Activity types can be viewed as solutions to recurrent problems in communication among the participants (Linell, 1998). Together, the participants in the OLC carry out discursive and interactive work as in professional projects. These projects constitute activity types in which tasks are re-created, re-produced and re-negotiated, even in cases that these are solved on basis of routine. If one of the participants is familiar with how things are done in the online environment, together they perform the activities and socialise based on cultural experiences. This means that all activities performed on any occasion result in change of some kind for the individuals; learning becomes a constant process of change that is not the same for everyone, even if they take part in the same thread or activity. From the perspective of sociocultural theory, knowledge is viewed as distributed among people as they engage in various social practices. "Knowledge is not merely stored in our minds; it circulates between us when we communicate with each other in concrete activities" (Säljö, 1999, p. 150). Contexts and social practices constitute thinking, ways of acting and communication, which also stresses that thinking, ways of acting and communication build contexts and social practices. Some of these social practices constitute communities, even if not all of them are online. All terms mentioned above (i.e. language, activities, tools, social interaction etcetera) form a sociocultural frame that enhances the understanding of participation in the professional context situated in an online environment. However, one has to bear in mind that humans communicate in ways that are dynamic and flexible (Säljö, 1999). Concepts that will deepen the description and explanation of online participation will be further explained below.

3.2.1 Learning as appropriation

A sociocultural perspective offers an array of analytical concepts. The following sections examine learning as appropriation, the mediation of activities through the use of tools, and learning as change in online participation.

From a sociocultural perspective on learning, the question of how collectives appropriate tools becomes crucial for understanding change and development of society. When people enter social practices, they need to become familiar with expected discourses, perspectives, skills and tools that guide how things

are done in the specific social practice. "The learning is not only inside the person, but in his or her ability to use particular set of tools in productive ways and for particular purposes" (Säljö, 1999, p. 147). *Appropriation* is the process in which an individual incorporates new knowledge into an already existing set of skills and experiences (Wertsch, 1998). Appropriation is shown in situations where an individual gradually changes his way of carrying out activities as he become familiar with how things are done in a specific social practice. In the professional context of general medicine, it is common that participants have been educated for long period of time in order to appropriate all the needed and expected meditational tools in order to perform the role of a doctor. The process of appropriation of tools is not always learnt specifically within the general practice. Some tools, such as e-mail programmes, might be mastered for one social practice that is also relevant when participating in other kinds of online situations. Appropriation includes more than just manoeuvring the technical function; it also stresses the importance of the discourses for how participants carry out general practice online. Online participation lies in the concept of appropriation for understanding the activities in OLCs as something more than just handling a tool for information sharing. The e-mailing list is examined as a social arena in which the term participation includes these processes. Based on the resources available and tools that are constructed together within social practices, individuals learn to appropriate tools collectively through participation.

3.2.2 Tools and mediation

Human development is a matter of mastering tools of different kinds since these enable collectives to interact in order to achieve various tasks. Tools are created in the form of both intellectual/psychological (e.g. terminologies, rules systems, etc.) and physical (pencils, computer software) artefacts. Artefacts consist of reifications by people who once interacted with ideas, values and knowledge that enable us nowadays to appropriate tools through interaction with the world (Säljö, 1999). Artefacts take the form of *physical properties*, like the computer and the manual that describe the function of the computer, and *mental representations* such as software or online environments. Apart from the array of technical interventions, language is the outstanding tool of all tools as it constitutes the relation between external (communication) and internal (thinking) aspects of humankind (Säljö, 2005). In a sense, the computer and the e-mailing list represent the physical tools and the language produced in computer-mediated communication, which provides the psychological tools; together, they constitute a discursive practice formed by the participants themselves.

Vygotsky argues that tools and language become an intertwined unit explained in the process of mediation (Wertsch, 1998). Mediation is a central concept within a sociocultural perspective. Thinking, as in building our concepts of the world, is very much influenced by previous human cultures. Today, people in social practices have improved those tools that once stretched our ability to interact. The construction of language enables us to talk about our tools, not only in terms of their functionality, but also in terms of what meaning they give us when participating in social practice. The development of tools will progress as people continue to share ideas and knowledge (Säljö, 1999). An e-mailing list can be traced in models established way back in time that offered techniques and tools for people solve the problem of communicating over geographical distances. Over cultural and historical time, smoke signals, couriers with horse and wagon, telephones and postal services etc. share some characteristics that complement each other. A contemporary e-mail programme is a refined tool based on the idea of enabling people to interact without meeting face-to-face. In addition, it enhances the ability of humans to share knowledge.

The e-mailing list offers ways of interacting or for the participants to accomplish tasks within general practice. Gibson (1986) uses the term *affordance* to denote that former experiences of activities, tools and environments influence how people use these tools in ways that exceed their technical properties. In a sense, GPs perceive online environments as a construction of an advocate terminology for what they do online. Infrastructures for learning have been paid much attention in educational practices (Guribye, 2005). Guribye and Lindström (2009, p. 105) claim that "infrastructure for learning is a set of resources and arrangements – social, institutional, technical – that are designed to and/or assigned to support a learning practice". Therefore, designing an infrastructure for learning is different from designing a technological tool. The infrastructure is viewed as an ecology of tools that interweave several tools in a larger number of social and non-technical elements. The mediation of activities via the e-mailing list enables us to understand that participants in an OLC appropriate an array of tools in order to carry out work. This underlines the fact that the OLC constitutes merely one of many tools in the infrastructure for learning in general practice. What happens online influences the social practice outside the Internet and vice versa. Arnseth and Ludvigsen (2006) claim that CSCL researchers need to examine how the meaning and function of OLCs are institutionalised and constituted in practice through the activities that are performed under certain conditions. This can be explored in studies of what participants actually do

when they interact together in OLCs. Stahl (2002) point to four intertwined themes that provide a theoretical and methodological framework for the interdisciplinary field of CSCL in (1) collaborative knowledge sharing, (2) group and personal perspectives, (3) mediation by artefacts, and (4) interaction analysis. Such theoretical frameworks incorporate models of knowledge sharing, perspectives and artefacts by means of empirical analysis of social interactions that guide the design of OLCs. The different themes mutually shape one another, and the function of OLCs is the result of negotiation of meaning (Arnseth & Ludvigsen, 2006; Wenger, 1998).

3.2.3 Learning as changes in online participation

Anna Sfard (1998) distinguishes between two metaphors of learning – *acquisition* and *participation*. The former metaphor represents a view of knowledge as a property that each individual has to adopt, earlier described in educational situations of the CAI application. In this perspective, learning is a process of the mind based on transfer mechanisms and the ability of the individual to store knowledge as in a container of personal goods. The latter metaphor stands in contrast to this view. Learning becomes a process of participating in social practices. It is the activities that become the focus in studies of participation since participants appropriate a terminology and conceptual frame that become more and more sophisticated as they take part together. Knowing, instead of the outcomes, is viewed as central for understanding learning as a social construction of knowledge when using these metaphors. Researchers who adopt the participation metaphor examine how knowledge is sustained over generations viewed in terms of deliberate changes or cultural transformations (Paavola, Lipponen, & Hakkarainen, 2002). Pavvola, Lipponen and Hakkarainen (2002, p. 2) overcome "the dichotomy of the acquisition and participation metaphors of learning by providing a third metaphor of learning as a process of knowledge creation". A metaphor of knowledge creation emphasises the importance of going beyond information given. Sfard (1998) argues that the metaphors of acquisition and participation do not exclude one another because the social dimension also exists in the metaphor of acquisition. However, the metaphor of participation offers a focus on how members become participants in OLCs in terms of how they appropriate tools that mediate the activities they perform together. This involves social interactions in which participants learn how to communicate in terms of negotiation. However, learning in a sociocultural perspective does not have to be mistaken as merely being performed in social interplay. Rather, there are tasks that are more appropriate to be solved alone. Learning is, to a large extent, implicit and can only be observed through what is said and done

within social practices (Säljö, 2005). This means that it is the activities within the OLC that are analysed as constituting the material of learning. Still, answering the question of when and how learning happens is complicated, although what we do know is that they learn from engaging online.

Vygotsky (1934/1978) claims that the *zone of proximal development* is a learning process in which participants socially interact based on prior knowledge supported by a more knowledgeable person. The asymmetric relationship between the different participants allows us to view the social dimension of learning that needs to be understood as the point of departure of this social perspective. Vygotsky claimed that human development starts on an inter-psychological level constituted as a social dimension, as it leads to an intra-psychological level in which the individual appropriates the knowledge as something they construct on their own. Participation in social practices is viewed as apprenticeships by Lave and Wenger (1991), who exemplify learning as a preparation for participation. Apprenticeships do not have to be mistaken for a strict master-apprentice relation. Rather, the relations between the participants tend to differ due to legitimate access in which participation takes place based on the division of labour. In "guided participation", an experienced participant helps another who has less experience to become competent to contribute in specific activities (Rogoff, 1990). In the professional context, the moderator of the OLC is viewed as being the more competent participant who bridges the gap between what is known and what is new in participation. What becomes crucial when examining the OLC from a sociocultural perspective is the ability to study learning in terms of activities rather than the acquisition of pre-determined tasks. Learning can be understood as how participants appropriate tools in a collective, but also as changes in activities that go outside the mere focus on what they share in terms of content.

3.3 Theories on Communities of Practice

Theories on communities of practice (CoP) provide concepts for analysing and understanding online participation in social practices. In order to learn, the idea of situated learning explains that people interact as a part of the world that stresses learning as a way of engaging in social and cultural contexts and that the situations that are created together form who they are and the knowledge that is distributed among them. Wenger (1998, p. 73) asserts that "[P]ractice does not exist in the abstract. It exists because people are engaged in actions whose meanings they negotiate with one another". Lave (1988)

mentions that school, as a social practice, fosters learning among pupils in terms of being the participants in an educational system. CoP emerged as a result of the critique of the educational systems that viewed schools as the only practice for learning. However, conditions for learning are offered outside the educational system. In work-related practices, learning is realised in the concept of apprenticeship as a model for how learning is organised outside the educational system. Learning in work-related practices can be organised in terms of educational structures. Still, most learning organised outside the educational system is referred to as informal learning due to its lack of educational contexts (Gray, 2004). Numerous studies have then continued to examine social practices such as CoP in formal and informal settings, in schools, in workplaces, in everyday life activities. Arnseth and Ludvigsen (2006) claim that a distinction between formal and informal learning becomes less important since these learning activities tend to overlap. Learning activities are carried out in various settings; some of these can be studied in the lens of the concept of communities of practices (Wenger, 1998).

The theory of CoP has also been applied in investigations of online or networked practices and activities in education and workplaces (cf. Hrastinski, 2007; Johnson, 2001; Jonsson, 2004; Karlsson, 2004; Mattsson, 2009; Olofsson & Lindberg, 2005). However, these studies of a professional OLC have characteristics of workplace studies when examining learning activities situated in professional contexts (Luff, Hindmarsh, & Heath, 2000). Gray (2004) claims that organisations and professional associations consider the potential of OLCs to lay in workplace learning and professional development. According to Gray (2004) and Hew and Hara (2006), a small number of studies examine professionals who discuss work-related issues in online environments. An OLC offers a complement to the existing network of colleagues, including professional they do not usually meet on a daily basis at work. Consequently, it is important to study the activities in OLCs in the borderland between various professional contexts in order to understand learning as it is organised by the participants themselves. Community of practice become a conceptual frame for understanding learning activities in work practices. CoPs consist of four components, *community*, *identity*, *meaning*, and *practice* (Wenger, 1998) that explain the essence of the social practice.

Community concerns how people talk about participation when they define the enterprise to which they belong. CoP is a special type of community that can be understood as a unit of mutual engagement, a joint enterprise, and a shared repertoire.

Identity is formed through discourses that are produced within the community. In the formation of identity, the participants share histories of meaning in which they talk about how learning changes who they are and what they do together.

Meaning needs to be understood as a negotiation of interactions constituted by processes called participation and reification. Negotiation of meaning is characterised by experiences from living in the world when people engage in social practices.

Practice is built upon shared historical and social contexts that are based on what people do together, which gives structure and meaning in order to sustain mutual engagement in activities.

All four components are interconnected and form the analytical lens for understanding CoP. Below, concepts that are relevant to this thesis are explained in detail in order to provide a frame for examining online participation.

Wenger (1998) claims that participants who have a mutual engagement in a joint enterprise develop a shared repertoire over time. To analyse participation in the empirical material, the relationships between practice and community can be understood in three dimensions of *mutual engagement* (what participants want to accomplish together), *joint enterprise* (what participants are there to do), and a *shared repertoire* (what participants know and can do together) (Jonsson, 2004; Wenger, 1998). The dimensions define the concept of CoP as one type of community.

Mutual engagement is created between participants who are engaged in social practices. The participants attempt to maintain the online environment as an arena for learning as it depends on the mutual engagement organised around what they want to accomplish together. People engage in different ways during work when they discuss work, attend conferences and meetings, engage in professional development, etc. In OLCs, the meaning of the mutual engagement around the shared interest is negotiated when they support one another and discuss topics that engage the collective. The engagement in OLCs is about maintaining an arena for learning that engages participants in shared histories of meaning about what happens around the participants as a collective.

Joint enterprise is defined by the participants in discussions about what is considered to be the mutual tasks. What makes the participants engage in

online activities is explained as means of participation by those who maintain the OLC. What the participants are there to do can be explained by three essential parts of the enterprise, as mentioned by Wenger (1998, pp. 77-78):

- It is the result of a collective process of negotiation that reflects the full complexity of mutual engagement.

- It is defined by the participants in the very process of pursuing it. It is their negotiated response to their situation and thus belongs to them in a profound sense, in spite of all the forces and influences that are beyond their control.

- It is not just a stated goal, but creates among the participants relations of mutual accountability that become an integral part of the practice.

The joint enterprise emerges as relations of mutual accountability that are not a static agreement. Accountability to the joint enterprise means the ability of the participants to understand what the enterprise is about and how they need to engage together in contributing to maintaining the enterprise. In OLCs, the participants include what matters or not in discussions, what they need to discuss and can ignore in order to present what they know about the topics discussed.

Shared repertoire is "a joint pursuit of an enterprise creates resources for negotiating meaning" (1998, p. 82). The repertoire of a community of practice become explicit in routines, words, tools, ways of doing things, stories, symbols, actions; all produced or adopted by the participants. These resources become essential for its existence since new members needs to appropriate the collective resources in order to become a part of the OLC. Both reificative and participative aspects constitute the repertoire as the discourse reveals meaningful statements, ways of expressing the membership and identities as participants. In professional OLCs, the stories told about work constitute the shared repertoire together with what participants know and can do together in online participation. In this study, participants share the repertoire both online and offline. The shared repertoire is constituted in several CoPs based on full participation in the professional context.

To what extent the OLC studied here can be considered a CoP or not is explained by those concepts with which the activities can be studied. A CoP provides an array of analytical concepts that can explain what happens online. When the activities go outside the educational settings, the CoP offers a

complement to understanding learning as participation in terms of what they do collectively online.

3.3.1 Participation and reification

What the participants perform online is created as shared histories of meaning. "Meaning exists neither in us, nor in the world, but in the dynamic relation of living in the world" (Wenger, 1998, p. 54). The construction of meaning can be explored in the processes of *reification* and *participation* as inseparable concepts in the analytical phase. These processes are central to the theories of CoP and provide analytical tools for understanding the productive means by which participants in social practices interact and construct knowledge.

Reification can be understood as "the process of giving form to our experience by producing objects that congeal this experience into 'thingness'" (Wenger, 1998, p. 58). In a process of reification, participants gather around artefacts such as documents, terms, stories, concepts or events in which negotiation of meaning is organised. These artefacts report what happens in the general practice. The creation of discussion threads results in situated activities that are considered products of shared meaning. They take part in actions and based on relationships with other people that make them a part of the OLC through an individual engagement for the good of the collective. Participants who read take part in individual accounts as they act as listeners of debates. The roles of participants are not static. In the online environment, meaning becomes explicit in collective matters when the participants post messages. In a sense, participation in terms of CoP can be considered a way of engagement in the OLC that makes appropriation of terminology and the accomplishment of the activities vital for understanding learning in social practices.

In order to understand similarities and differences in problem solving among a group of individuals that seems quite equal in its constitution to an outsider, Lave (1988) and Lave and Wenger (1991) introduce a concept called *structural resources*. This concept indicates what is considered as either being of primary or secondary concern when carrying out tasks. When one activity structures the other, structural resources point to what can be done in another task. For example, in an online environment, the continual construction of FAQs (frequently asked questions) creates the rules that need to be followed when participating online, since they are created by the participants themselves. When participating as a distance student, a curriculum for the course formed within its educational settings, structures how participation is expected in order to graduate. Distance students need to consider a combination of rules

for online participation. Participation in online environments is built on models of and ideas about how participation is actually organised in social practices. In this study, the participants use an e-mailing list in order to accomplish certain tasks. The structural resources can be viewed in the affordances of the technology such as the subject heading and thread structure of the postings. However, the technology is manipulated in ways that suit the participants themselves. Lave and Wenger (1991) describe technology in terms of the transparency of its use. Transparency of the technology occurs when shared understanding of its use and the affordance it provides become one learning process. The duality of the technology, as it become opaque, contains of *invisibility* in the form of unproblematic integration of the activities, and *visibility*, as it extends the access to information. In CoP, this kind of access is the same process in which participants experience legitimate peripheral participation. Technology provides specific forms of participation in which it fulfills a mediating function. Participation is about the production of resources that structure the way that the participants take part online.

3.3.2 Positioning

In the analysis of social interactions, *positions* are essential for understanding social structures and power among the participants. These positions are dynamic and constantly negotiated in the ways that positioning occur and the carrying out of positioning work that can be further investigated based on what they do and what they express in text-based communication.

Legitimate peripheral participation (LPP) is the learning process in which participants become full members of a community of practice (Lave & Wenger, 1991). The conception of legitimate peripheral participation is based on three contrasting pairs, containing inseparable aspects: "legitimate versus illegitimate, peripheral versus central, and participation versus non-participation" (Lave & Wenger, 1991, p. 35). The situation in which the participant leaves the periphery and moves to a more central position is examined through learning trajectories, developing identities, and forms of membership that constitute the conditions for full participation. Legitimate peripherality is an intricate notion that involves relations of power since the positions are not static in any way (Wenger, 1998). The trajectories in legitimate peripheral participation raise questions about what happens in positions online as they are already positioned outside the OLC as being situated in general practice. Goffman (1959) describes the social process in which participants define the situation. He uses the term *performance* to refer to the activities carried out on a theatrical stage in front of the others. In the

present study, performance becomes synonymous with participation as the participants contribute postings in discussions. Depending on what topics they initiate or discuss online, participants change positions – from being included to excluded, from centrally situated to situated in the periphery, from acting on their own devices to marginalised by others. Unless the participants contribute postings, they will remain behind the backstage curtains, invisible to the others. In that case, the contributing participants will play on an empty stage, without any response from the others actors or spectators. Accordingly, the way that participants frame themselves and are framed by the other participants becomes crucial for understanding the social interactions. In an OLC, the ways that participants greet each other can be used to understand positions online. Theories on positioning complement the presented theories used in CoP in terms that enable us to understand the positions of core and peripheral participants negotiated in social interactions. Simplistically, positions can be observed in discursive practices, using personal pronouns such as 'I' or 'we' etc. in the postings. Positions are based on discourses, as explained by Davies and Harré (1999, p. 37):

> …the discursive process whereby selves are located in conversations as observable and subjectively coherent participants in jointly produced storylines. There can be interactive positioning in what one person says positions another. And there can be reflexive positioning in which one positions oneself (Davies & Harré, 1999, p. 37).

Lagenhove and Harré (1999) argue that positions can be considered more dynamic than roles. A role is static and a formal aspect of relations that already exist among the participants. Positions are constituted as an ongoing process through social interactions (Jones & Green, 2006). Participants define situations that they recognise and view as familiar (Dennen, 2007; Langenhove & Harré, 1999). Being attached to a role does not give minor choices to step aside from an already given manuscript of acting, for example, being the moderator of an OLC. Positioning is a process in which participants are allowed to choose between different kinds of subject positions (Dennen, 2007). "Conversations have storylines and the positions people take in a conversation will be linked to these storylines" (Langenhove & Harré, 1999, p. 17).

The differences between positioning theory and the positions described in LPP are the understanding of trajectories based on social interactions. Positioning theory tends to offer concepts for how discourses (i.e. what is being said within the social practice) are constructed due to the interplay between the participants as they enter a dynamic position based on what is

expressed in conversations, whereas LPP explains how these positions shift constantly due to what they do (i.e. how they socially interact). Wenger (1998) continues to explores the positions in LPP in a more structural account than was first carried out in collaboration with Lave. Positions in OLCs require a dynamic examination of the social relations between the participants due to what is expressed in text-based conversation in order to capture the centrality of participation.

In OLCs, participants create and maintain a shared terminology that shows that they belong to the social practice. The construction of threads can be viewed as storylines that are based collectively on a shared topic. The distinction between what they do and what they say they do become essential for understanding what happens in the work of positioning within the professional OLC.

Threads, as the series of postings, constitute activities and tools that reificate what the distributed group of participants know about the topic initiated. Threads do not always provide one shared point of view of the topic discussed. Rather, some of the threads can be viewed as boundary objects. A boundary object is defined as an object or infrastructure that gathers and coordinates participants from various communities (Wenger, 1998). This means that boundary objects allow for different interpretations and act as common points of reference for communication. Participants might agree that they talk about certain topics, but they attach different meanings to the topic depending on what makes them post or even become members of an OLC. In this study, the idea is to view the threads as narratives of the professional contexts and activities of their performance online.

3.3.3 Identities in professional contexts

The concept of identity become crucial for this thesis since it is mostly general practitioners who interact in an OLC. Theories on identity formation enhance the understanding of the conditions for participation in online environments that have changed over the years since emergence of the Internet.

The identity of professionals becomes an explicit object of change (Lave & Wenger, 1991). Wenger (1998) defines identity as a learned experience of agency. In the concept of identity, the analysis is conducted so that the individual and the social constitute each other. Identity formation is created through participation as people experience being in the world. "[W]e define ourselves, and who we are by the ways we experience ourselves by participation, as well as by the way we, and others, reify us" (Wenger, 1998, p.

106). People often think about identities as self-images because they talk and think about themselves and others in words and others do the same. However, participation and reification become essential for the formation of identities in social practices. Identity is not merely constituted by what participants are, but also by what they are not. In the current study, the participants engage in a shared interest in general medicine in which they form a small part of who they are as professionals, explicitly constructed online in narratives of selves and the profession, or in what ways they engage in or belong to general practice. The engagement in practice on a regular basis creates relations among a group of participants who know from each other who they are, what they do, what they know and who is peripheral and who is member of the core (for the moment). Identities based on participation in OLCs become essential for understanding reifications created within the OLC. The formation of professional identities becomes explicit when they write about what they do and who they are in terms of belonging to the general practice.

In the research communities in behavioural science, attempts to understand the challenges and consequences of identity formation for both people and society have been examined at an earlier stage of the Internet (cf. Donath, 1998; Rheingold, 1994; Turkle, 1995). Virtual identities were viewed in usage of the self exposed in text-based conversations based on the conception of fluidity and dynamic conditions. In the virtual communities, participants could apply fictive names and characters that were not always compatible to their personal identity compared with what was normally created when interacting face to face (as regards gender, sexual orientation, age etc.) (Baym, 1998; Turkle, 1995). Back then, ways of communicating over the Internet emerged in debates on reality and human features for checking whether the identity of the participant behind the text-based conversation was real or not. As more and more people interact online, the focus on the formation of online identities has changed through the years, going from intentional identity- and gender-bending in virtual environments to inclusion and engagement in social practice. Still, some social practices are based on anonymous use of nicknames, but these are viewed as social and real like any other kind of OLC. People interact in ways that are constructed by the participants themselves for specific purposes. This means that the conditions for participation vary depending on what they are there to do. In some OLCs, it is highly recommended that participants promote themselves as professionals within the specific domain in order to interact. This is in contrast with some other OLCs where participants use the anonymity to participate without jeopardising existing structures for participation. Due to the specific conditions constructed

by members of a professional community, they are required to subscribe as someone who actually belongs to the work practice and this needs to be verified by others in order to be accepted. Castells (1997) explains formation of identities based on discourses and interactions as socially constructed in professional contexts. As more and more people become engaged online, the conditions for experimenting with online identities have shifted (Castells, 2001). More often, people interact together with their existing networks of relatives and friends who socially correct the self-images that are produced online. The Internet allows people to engage in social practices in which the participants create different positions depending on the means for online participation. Turkle (1995) claims that the Internet allows people to construct multiple yet coherent identities. "Traditional approaches see virtual identity as a linear mapping of the social identity of an individual, whereas postmodern approaches stress that [online environments] allow multiple identities" (Fuchs, 2008, p. 322). Gergen (1993) claims that identity can be described as a multifaceted and dynamic dimension under constant re-negotiation in cultural and ideologically informed discourse. This means that construction of identities is a dialogical dimension that can be studied in social practices. A dialectic approach sees online conditions as a part of social practices (Fuchs, 2008). Therefore, an online identity is more than what is expressed by the participants in the online environment.

Gergen (2003) claims that communication tools enable people to take part in numerous social practices that make identity fluid as the intertwined conditions for the use of various tools makes possible social relationships outside the participant's immediate social network. People want to create social relations with others online that also work outside the Internet (Fuchs, 2008). Hodgson (2008) views OLCs as learning spaces where individual and collective identities are constructed. In this study, online identities are both individual and collective constructions as the participants identify themselves in situations of professional selves. The formation of identities reflects a position of being a general practitioner or not. Identity is not just a category, a (professional) role or an attribute. Rather, it is a lived experience that incorporates a multiple form of memberships. The sociologist Anthony Giddens (1991) does not view identities as static. He explains self-identity by describing what roles the participant is thinking of adopting in the world, or how the participant differs from the other participants as well as what they have in common. "In OLC, narratives about experiences and ways of being together get produced and re-produced and in the process create the social norms within the group about what is acceptable but also about the group

itself and ultimately about the experienced collective identity" (Hodgson, 2008, p. 164). Identities are influenced by and constantly re-produced by social practices (Wenger, 1998). Compared to identities understood in terms of the theories of Wenger, identities are formed in processes of belonging to the general practice. Together, they engage in specific topics that interest them. The formation of professional identity in online settings is further examined in section 4.3 in the following chapter.

3.4 Summary

In order to study online participation, a combination of social theories and concepts make it feasible to investigate what happens online in professional contexts. The concentration of the activities meditated in support of the e-mailing list reduces the duality of work and learning. Accordingly, this research study is situated in the field of Computer Supported Collaborative Learning (CSCL). CSCL includes studies of continuous professional development with the support of computers and Internet. Sociocultural theories provide analytical tools that can be used to investigate online participation situated in social practices. Communities of practice (CoP) offer central concepts for analysing the activities in participation and reification in negotiation of meaning. Learning is understood as ways of appropriating tools, the change in online participation, positioning and the positioning work in general practice, and the formation of professional identities. The perspectives on and concepts of learning are based on a general theoretical frame for studying online participation outside the educational settings and physical contexts.

4 RESEARCH ON ONLINE LEARNING COMMUNITIES

The aim of this chapter is to provide an overview of empirical studies of participation in OLCs. This overview provides a context for the empirical study presented later on. The research studies presented in this chapter have been divided into five sections, each representing relevant aspects of online participation, with emphasis on continual professional development. These aspects have been derived from the overall aim and will lead further to the research questions presented in chapter 6. The five aspects of online participation are:

Social interactions: which stress what participants do in a professional context when carrying out activities in an asynchronous mode

Formation of professional identities: which examines how participants take part in forming their professional character

Sustainability of online activities: which deals with how activities are sustained over time, and in particular the available structures supporting sustainability

Moderating online activities: which focuses on the management of voluntary online participation, especially outside the educational settings

Building categories of online participation: which treats construction of analytical methods for coding and categorisation of online participation.

Some of the selected empirical research studies presented in this chapter will discuss several of these aspects.

4.1 Limiting the research literature

Research on participation in OLCs can be understood as a multidisciplinary interest that includes research studies derived from both technical and social fields. Before presenting the related research, some strategies in sampling and selected literature will be explained shortly. The most valuable research fields from where literature is drawn for this study are: computer supported collaborative learning/cooperative work, asynchronous learning network, computer mediated communication, and web based communities. These fields also provide keywords that are close to the interest of online participation. As some of the keywords occur more frequently, these have been used to embrace studies in order to create a framework of prior research. Since the

professional context consists mostly of general practitioners, keywords connected to general- and family practice/medicine, and health care practices are relevant. The content-connected research has been found in a list of scientific journals at the website of the professional association. In addition, research studies could also be derived from the empirical material as participants referred to some journals that they read regularly. The majority of the selected research studies was published between 1999 and 2009.

4.2 Social interaction in online learning communities

In this section, studies on *social interaction* in OLCs will relate to the professional context built by participants who carry out the activities in an asynchronous mode. The research studies related to social interaction provide a focus on online participation in e-mailing lists based on incentives, motivators, and barriers. Those concepts are able to explain some of what professionals do online. This section will also provide knowledge on how social interaction can be studied as social networks.

Online environments require organisers of competence development to rethink their fundamental epistemological assumptions about collaboration and learning (Charalambos, Michalinos, & Chamberlain, 2004). The introduction of online environments does not guarantee a well-attended arena in itself. A nurturing learning experience needs to be organised in social interactions as participants do not just show up online to engage immediately . The organisation of online participation challenges the structures for individual learning as the idea is to engage collectively, which complements learning activities in physical contexts.

An e-mailing list provides technical possibilities and constraints for carrying out social interactions online. Subject headings in e-mail communication have been studied by Holt and Graves (2007), who study criminals' strategies for using subject headings to commit fraud. They claim that an enticing subject line will compel the receiver to open the message, and proceed as instructed dependent on what information these people intend to use for illegal activities. Both subject- and addressee fields become strategic tools. Skovholt and Svennevig (2006) examined online activities in which e-mail copies were sent to third parties for reasons of social control within a company. This supported a variety of tasks but particularly it provided senders with extended power dependent on which co-workers were among the recipients. These studies point out how technological affordances of the use of an e-mailing list structure online participation. An e-mailing list provides a certain way of

interacting. For example, all messages reach the inbox of all subscribers who have to adapt to such affordances when participating.

A main incentive for building OLCs within professional contexts is the capability of supporting social interactions for continual knowledge sharing (Curran & Abidi, 2007). One example of this is that nurses and physicians, who worked in nine rural and two urban emergency departments, were partitioned into district discussions around 12 content modules on paediatric emergency care during a period of 18 months. Curran and Abidi (2007) used descriptive statistics, and content- and social network analysis (SNA) in order to understand knowledge sharing and information seeking behaviours. They generated descriptive statistics by using SPSS to describe the network demographics, including descriptions of the actors and the volume of postings[4]. First a categorisation of the content of discussion was created, showing frequencies for each category. Subsequently, SNA visualised the relationships among the participants dependent on what interests they shared together. In the findings, they observed sparse interactions between the 187 practitioners from different disciplines (78 % of these were nurses). Despite an articulated need to discuss work-related issues, the building of an OLC does not always result in a high number of postings. For professional OLCs, the social interactions must be viewed in their context at work and be explored not only in numbers of postings (Hrastinski, 2007).

Hara and Hew (2007) have carried out several studies about professional nurses in critical care who participated in e-mailing lists. In one of these studies, they examined incentives for online participation, based on observations, interviews, and descriptive statistics. They identified motivators and barriers that encourage and hinder participants to share knowledge and experiences. They found that nurses engage in knowledge sharing and solicitation, which were the most frequent activities. Emphasising empathy and appreciation were less common. Social interactions in OLCs are associated with processes of relationships that emerge through the exchange of kindness which tends to differ in professional contexts. Using the terminology of Wenger, Svensson (2002) defines the activities within an OLC as a process of *communitising*. This means that the activities enforce various

[4] Contributions made by participants of an OLC constitutes in shape of a posting. A posting is a communicative form of text message that comes in a wide variety of contexts in online learning, including emails between individual participants, e-mailing lists, (or LISTSERVs), threaded discussion environments, and more recently, in communication taking place on blogs and wikis (Friesen, 2009).

modes of belonging (i.e. engagement, alignment and imagination) which also affects how social interactions are carried out. In professional OLCs, one has to understand that communitising takes various forms and differs from educational settings due to the sometimes informal structures of participation. Professional OLCs can be understood as task-oriented social arenas that do not primarily serve the purpose of exchanging social-emotional information (Hara & Hew, 2007). Wasko and Faraj (2000) discuss that professionals' motivation for participating in OLCs is closely related to the intellectual stimulations or professional topics. The results presented by Wasko and Faraj (Wasko & Faraj, 2005) showed that justification of participation differs between various professions. For example, professional lawyers motivate online participation with individual concerns. They participate when they find opportunities to enhance their reputation, consider themselves to hold experiences worth sharing, or when they have obtained the position of being one of the core participants (Wasko & Faraj, 2005). Hew and Hara (2006) claim that participants in occupational OLCs post in situations of immediate curiosity about a topic and when in need of direct support. They post whenever time and work permits, including outside their working schedule. A sense of reciprocity determines that once they have been helped, they feel the moral obligation to help others as well (Hew & Hara, 2006). Social interactions among a group of teachers were driven by their personal beliefs and potential solutions on ethical issues that they knew were useful for the collective (Vavasseur & MacGregor, 2008).

During a period of one year, Fox and Roberts (1999) examined the activities within an un-moderated e-mailing list for general practitioners called GP-UK. In the content analysis, they explored the reasons for online participation. Fox and Roberts (1999) found that a prerequisite for the participation of GPs is that they are involved in the negotiation of the rules over time. In another study of GP-UK, carried out by Thomas and James (1999), this was not explicitly found during an analysis of what they talked about. Thomas and James (ibid.) identified the following thirteen thematic categories (mentioned in numerical order) based on one month of postings: (1) humour, (2) technical, (3) clinical, (4) organisational, (5) legal, (6) ethical, (7) procedural, (8) financial, (9) political, (10) announcements, (11) mistakes, (12) cross-subject, and (13) other. These will later be used to categorise some of the themes that participants in the current OLC talk about online (see section 7.4.5. about *The construction of thematic categories* in chapter 7 on Design of the empirical study).

Social interactions stretch over geographical boarders. Porter (2004) describes an increasing number of international health professionals who represent the

developing countries in OLCs. The e-mailing list is argued to offer rather equal conditions for participation due to its technological affordances. In a global perspective on social interactions, online discussions tend to be carried out by participants who share the same nationality as the initiator. This means that the *digital divide* between rich and poor countries still remains strong (Porter, 2004). Porter (2004) defines the digital divide as the gap between people with very limited or no access at all compared to those who have the capability to use information technology more often based on the infrastructure of technology. To what extent social interactions are organised nationally needs to be further investigated. Online environments "do not reduce inequalities in the opportunities to use informal communication" (Matzat, 2004, p. 221). Matzat (2004) found that English and Dutch university researchers within the humanities and the social and natural sciences constructed weaker ties in order to make their research become more visible and that these ties made them more aware of other researchers' work. A central aspect of social interactions in OLCs is who is talking to whom. One common way of analysing this structure of communication is social network analysis, commonly used in Internet research (see Garton, Haythornthwaite, & Wellman, 1999; Haythornthwaite, 2002; Subrahmanyama, Reich, Waechter, & Espinoza, 2008). Research studies on OLCs endeavour to investigate social interactions and the structures in participation that emerge when participants contribute with postings. With support of SNA, Haythornthwaite (2002, p. 183) found that "the more that pairs communicate, the more media they use for those communications" as they intend to maintain the social relationship.

The development of social relationships in online environments has been operationalised in factors of sociability and characteristics of the specific environment (Kreijns, Kirschner, Jochems, & Buuren, 2007). In the perspective of online activities, social relations are viewed as collaborations within threaded discussions. Curran and Abidi (2007) assert that existing social relationships are an essential source for sharing knowledge, information and ideas. Jones, Ferreday and Hogdson (2008) found that contribution to an OLC is a way to take position in the OLC. The intertwined process of social relations and positions that is taken and/or given is essential for understanding online participation. The distributive setting of colleagues is one central characteristic of how OLCs are organised and function. Kimball and Ladd (2004) point out that the more distributed an organisation becomes, the more important the relationships among the participants will be for those who work within the organisation. The professional association of general medicine gather their members and stakeholders online to offer them a professional

arena for knowledge sharing and exchange of experiences that intends to benefit the whole collective. According to Jones, Dirckinck-Holmfeld and Lindström (2006) there is a need for carrying out research on social networks for learning within professional communities. To what extent the Internet fosters either densely knitted communities or encourages sparser, loose-knit formations is a central question to study when examining social interactions. Licoppe and Smoreda (2005) show that participants who know each other, will reply more rapidly and choose communication tools that make them able to respond more quickly. Jones, Ferreday and Hodgson (2008) explored weak or strong ties in online learning. They found that knowledge is not simply transferred between participants; it is negotiated in dialogues between the participants. One can measure online participation in network centrality. Network centrality influences online participation based on what position the participants initially had within the social network (Cho, et al., 2007). In a longitudinal study, Malin and Carley (2007) extracted the editorial boards of approximately 40 journals in medical informatics and bioinformatics over a five-year period (2000 to 2005), in order to study the development of relationships between the editorial members. By using SNA, Malin and Carley (2007) found that the members in the editorial centrality are located in a consistent intersection of the scientific communities, and that the number of members of the board is growing with time.

However, social network analysis does not only provide knowledge about central participants with strong ties, but also knowledge on exclusion and sub-communities. Reffay and Chanier (2003) measured the cohesion between participants within a collaborative distance learning context in order to understand the formation of isolated students, active sub-groups and various roles of the members. "Studying social phenomena using a small sample size is not unusual in social network research due to the extreme difficulties gathering such rich and complex information" (Cho, et al., 2007, p. 326). Commonly, distance learners interact in a stable group of participants during a predetermined period for carrying out tasks together that create boundaries for the researcher to consider in the empirical study (Hrastinski, 2007; Reffay & Chanier, 2003). Cho et al. (Cho, et al., 2007) address the need for longitudinal studies of social relationship in the research on computer support collaborative learning, as these tend to be strikingly few.

4.3 Formation of professional identities in OLCs

In this section the formation of professional identities will be described as participants build the professional practice of general medicine together.

In the e-mailing list called GP-UK, the participants add information on their professional status in online discussions by signing their postings. Fox and Roberts (1999) claim that complete anonymity when participating cannot be achieved due to personal registration and the e-mailing addresses that reveal some information about the participants. Fox and Roberts (1999) suggest that professional practices develop and maintain specific social orders in OLCs. They describe general practice in the UK as a traditional fragmented speciality within medicine that is built up by small groups of GPs who usually work in isolation with occasional opportunities of collegial interaction. The GP-UK list needs to be "understood as extensions of the wider social relations of general practice" (Fox & Roberts, 1999, p. 643). In another study by Thomas and James (1999), the aspect of professional identities was not one of their concerns when studying GPs online.

The formation of diverse professional identities online has been studied. Bowers (1997), for example, examined the construction of professional identity among an international group of psychiatric nurses. They exchanged stories that describe national conditions and exposed what it means to work in the international psychiatric nursing field. Bowers (1997) found that the participation in online environments does not guarantee that professionals develop professional identities in the OLC. Perotta (2006) claims that professional identities are socially constructed in the relationship between the local and global boundaries of each professional practice. Wenger adds that "[W]e define who we are by negotiating local ways of belonging to broader constellations and of manifesting broader styles and discourses" (Wenger, 1998, p. 149). The formation of professional identities can be found inside as well as outside the boundaries of the professional network. Perotta studied the professional discussions among a group of Italian psychologists, in which the boundaries of the profession were articulated. The OLC of psychologists constituted an intertwined academic and professional context built by students and professionals together. Perotta (2006) found that professional identities are based on the definitions of a specific cultural field. This field is defined by what is considered valuable. In a sense, what participants find valuable within the cultural field also legitimates their participation in online environments. Perotta (2006) categorised the online discussions among the participants into three main interpretive repertoires: *professional boundaries*, *disempowered psychology*,

and *psychology and health*. These three repertoires build a framework for understanding the formation of professional identities that can be applied in this study.

By using professional boundaries, the psychologists defend the profession from alternative practices. They explicitly negotiate its legitimacy by establishing clear boundaries between those who belong or do not belong. Perotta (2006) claims that disempowered psychology concerns the legitimate ways of promoting profession in society. Together the participants strive to gain power and attempt to increase their professional status as a collective in a larger power-related context. For example, in political arenas in which they endeavour to create change and influence working conditions for the better. Professionals intend to determine what constitutes the symbolic capital within the profession. In the repertoire of psychology and health, the objectives and the ultimate aim of the profession are negotiated in a set of discursive elements. In this study, the three repertoires add a framework for executing the formation of professional identities based on what GPs discuss online.

Beaulieu et al. (2008) stress that there is a lack of empirical studies that examine how GPs define themselves within the medicine profession. The work of formulating how a profession belongs to, and fits into, a professional system of health care is shared by other professional communities and occupational groups. For example, nurses who struggle to articulate their uniqueness and their own agenda in attempt to build a body of knowledge defined by strong disciplinary boundaries (Andrew, Ferguson, Wilkie, Corcoran, & Simpson, 2009). The formation of professional identities is crucial to the health system as it affects the roles and functioning of other medical professions as well. Allan and Lewis (2006) showed that membership in OLCs becomes a support for younger participants who are making progress in their careers. When they are in the beginning of their career they use the OLC to construct their identities participating with long-term professionals. GPs worry about being an endangered species in medicine profession. Attempts are therefore made to further strengthen the collective values of GPs by creating common definitions of general practice through the construction of 'a clear identity' on both a national as an international level (Beaulieu, et al., 2008, p. 1153). The formation of a professional identity has several uses to the practice, for example, it is closely connected with the recruiting of new professionals to the general practice. Boundaries are created and maintained by the participants in the general practice; borders are established in relation to other medical professions. Beaulieu et al. (2008) mention three main repertoires about GPs in the formation of professional identities regarding (1)

the definitions of family medicine (i.e. compared to general medicine), (2) the boundaries in which GPs become an endangered species, and (3) the growing generation gap between young GPs and their educators. Beaulieu et al. (2008) claim that developing a "specialised family physician" is one response to these emerging challenges. They claim that the solution lies in reaching a new understanding of the scope of practice and the relationship of trust between the family physician and the patient. However, this thesis shifts the focus away from this specific relationship to examine the online discussions between professionals that go online. This will complement the otherwise so strict focus on the doctor-patient relationships in the research studies and the professional agenda of general medicine.

4.4 Research on sustaining online activities

The third section of research deals with online participation as sustaining online activities. Sustainability can be understood from the perspective of online activities rather than how to maintain the existence of the technological platform itself. Farooq et al. (2007) define sustainability as the continuous achievement of goals over time. The processes of sustainability can be described as continual and meaningful activities that are maintained over time based on social relations between the participants. Hara and Hew (2007) identified six factors connected to the continuous contribution to an OLC among advanced practice nurses. These factors were: (1) self-selection; (2) validation of one's practice with others who shared a similar working situation; (3) a need to gain a better understanding of current knowledge and best practices in the field; (4) a non-competitive environment; (5) the asynchronous nature of the online communication medium; and (6) the role of the listserv moderator. The study showed that nurses participate in order to maintain professional relationships and to have constantly access to updated knowledge in the field. The nurses are not pressured to contribute to the OLC, and they participate even though they have a heavy workload. Informal conditions and distant professional relations emerged as important mechanisms to overcome the barriers of self-interest.

Even though sustainability can be understood as a continual flow of postings, successful participation can be understood in different ways. Organisers of OLCs tend to argue for the continual flow of postings as an indicator of success of the existence of the OLC. However, the number of postings is only one perspective of online participation (Hrastinski, 2007; Mazzolini & Maddison, 2007). When investigating the sustainability of OLCs, the initiation

is sometimes suggested as paramount. Vavasseur and MacGregor (2008) describe critical moments in which a newly started online environment has to be managed in certain ways in order to make the online environment successful in both keeping its existing members and supporting the ongoing discussion. For example, the participants identified problems that were contextualised in their daily practice.

Farooq et al. (2007) found that the building of online professional communities tends to fail if the infrastructure does not meet participants' requirements. Stuckey and Smith (2004) claim that the continual development of OLCs needs to be understood as a balance between stability and change. They explain that continual change implies a risk for the community to loose its characteristics, but at the same time, if no development whatsoever takes place the relevance of that community will fade. The OLCs are built on the engagement of the community leaders and the attractive position of the participants to constitute a core group. Stuckey and Smith (2004) conclude that the basis for sustainable growth is the moderators' capability of generating various tasks among the participants as they are the ones who see the value of investing the time and the continual effort that is required when building OLCs.

Hewitt (2005) examined how and why online discussions come to an end in a master's-level distance course over a 13-week period. Hewitt conducted three studies focussing on (1) the conference transition by the participants who move between five separate online areas within the web-based threaded forum; (2) the learners' own explanations on the thread death phenomenon through an online questionnaire; and (3) observations of the patterns of online activities drawn from the conference log files in order to identify what the participants really do online. Hewitt concludes that one thread's survival or demise can be explained as a by-product of unrelated activities, based on the participant's routine to read new postings and ignore older postings. Therefore, threads sometimes die unintentionally having nothing to do with the minor importance of the content of the discussion or that students find the interest less relevant.

Researchers and designers for learning aim to take control over what happens online by developing various functionalities that facilitate participants to use OLCs when communicating (Barab, et al., 2004a). Stuckey and Smith (2004) performed a study of different professional web-based communities consisting of participants such as teachers and military staff, in order to identify the conditions relevant to sustainability. They identified three main issues that

need to be considered by the organisational staff in order to keep up the activities. First, the organisers of OLCs must work on practical and important questions with the participants. Second, they also have to make sure that the boundaries of the community are explicitly defined. Third, they need to supply knowledge for the environment that provides material for the participants' creativity. Roberts and Fox (1998) provide a model for the sustainability of medical e-mailing lists stressing the need for clear aims and objectives, a collection of information resources, facilitation, a sufficient membership, and an infrastructure that supports the discussions groups.

4.5 Research on moderating online activities

The fourth section deals with moderating online activities that connects to the previous sustainability aspect. The aspect of moderation can be contrasted against the un-moderated British e-mailing list of GP-UK as mentioned earlier. The role of the online moderator has been identified as critical for the sustainability of the online community over an extended period and to increase the situations for learning. However, there are also research studies that found the role of moderators to be exaggerated (Maricic, 2005).

Moderation is explored in terms of moderation techniques and ways of facilitation that address the concern of practitioners in the field (Kienle & Ritterskamp, 2007). Curran and Adidi (2007) found that moderation was a crucial function in order to maintain the social interactions over time, especially in times when there were just a few postings sent to the OLC. Besides sustainability, moderation is one of the most frequently addressed issues in the research field. Since most research on moderation in OLCs is situated in educational contexts studies on moderation in OLCs concern various roles of the moderator and dilemmas that emerge in the interplay between the learners and teachers. The main tasks for the moderator include the introduction of new members to the OLC, facilitating and encouraging online activities, and maintaining the collective rules among the participants (Berge, 2001). For some moderators, administrative tasks and technical maintenance are also included in their work. Within the educational context, the task of moderation is often conducted by the tutors (Berge, 2001), educators (Tornaghi, Vivacqua, & De Souza, 2005), or directors (Hoadley & Pea, 2002). Mazzolini and Maddison (2007) assert that the role of a moderator in educational practices tends to alternate between being, what is called, the "sage on the stage", to the "guide on the side". Due to the professional

context under study, I use the term moderator for the executive organiser of the OLC.

According to Stuckey and Smith (2004), the large number of contributions made by moderators can be explained by their capability to see the broadest picture of the professional contexts. In sustainable OLCs, teams of participants engage in the role of moderating the online activities. According to Brace-Govan and Gabbott (2004), GPs also need to be engaged in the organisation of the online activities in order to prevent that the online environment merely is used as a tool for management of information instead of knowledge sharing. Hara and Hew (2007) identify the activities of the moderator as one of the six factors that sustain knowledge sharing in an e-mailing list for advanced nurses. In the moderation of this list, they define three specific tasks (1) giving personal assistance regarding issues of participation, (2) being the filter of the initiated topics that need to address the shared interest of critical care and advanced nursing, and also, (3) being the "watchdog" of civil and respectful communication. Clark (1996, p. 99) describes the purpose of the moderation to engender a "strong sense of security, significance and solidarity within and across social systems through the learning process in order to create learning community". The participants rely on this person to keep the discussion rolling and support the participants. Swan and Shea (2005) stress the need for research about the part that moderators play in nurturing the online discussions, forming relationships in the online community, and what knowledge and experiences they share. Kienle and Ritterskamp (2007) explain the impact of contributions based on the clarity of instructions. They interviewed participants and carried out analysis of system log files in order to study the impact of different strategies of moderation. Findings from their case study showed that instructive wording is not always sufficient to raise the number of contributions, especially not when fostering the development of mutually agreed results which occur in collaborative tasks. Research on moderation tends to guide moderators to understand in what situations it is time to facilitate or how often they should moderate the online activities. Mazzolini and Maddision (2007) analysed forum postings and university evaluation survey results and carried out questionnaires among students and instructors to scrutinise the aspects of moderation. They explain that the volume of postings in online forums does not indicate how well online participation is functioning in the OLC. Mazzolini and Maddison (2007) clarify that the more moderators posted, the fewer contributions were made by the students and the shorter the threads became on average. Moderators, who initiated several topics at the same time in order to generate

more discussions among the participants, did not succeed. Mazzolini and Maddison (2007) add that online forums with fewer postings made by the participants and shorter threads are not necessarily deficient as learning environments since the moderator tends to make the online discussions more efficient. They conclude that a balance between a high number of participant postings and the interactions carried out by the moderator needs to be achieved.

In this study, the participants take part on a voluntary basis which makes their role different than in online educational practices. Moderation will therefore be studied in terms of how online activities are performed collectively rather than only investigating the role of the moderator.

4.6 Research on categories of online participation

Prior research on the construction of categories of conversation and interaction explains some of the analytical work within the field of CSCL related to this study. In earlier contributions to the analyses of online participation, Gunawardena, Lowe and Anderson (1998) created a content coding scheme for the analysis of collaborative construction of knowledge. Henri (1992) created a coding scheme for understanding learning processes in computer conferencing, whereas Henri and Pudelko (2003) provided a framework to observe, analyse and evaluate activities and learning in online environments. By using the activities as the unit of analysis, Henri and Pudelko (2003) concluded that participation in OLCs leads to different kinds of learning. Therefore, researchers consider different types of OLCs when examining social interactions online. In recent times, CSCL research has given rise to a plethora of analysis methods (Beers, Boshuizen, Kirschner, & Gijselaers, 2007). Beers et al. (2007) constructed a coding scheme for categorisation of negotiation processes in multidisciplinary teams. Friesen (2009) uses content analysis, specifically by developing a coding frame, that focuses on the Internet genre of the postings in communicative actions and situations in CSCL contexts compared to epistolary or letter-based communication. In the field of informatics and organisational theory, Orlikowski and Yates (1994) explain that genre analysis requires qualitative textual analysis of postings to understand the situations within which certain genres are invoked as well as their shared purpose, substance and form. "Genres are typified communicative actions characterised by similar substance and form and taken in response to recurrent situations" (Yates & Orlikowski, 1992, p. 299). In various contexts it is likely that aspects of the form, content

and function of the posting will vary with genres that requires different strategies in construction of coding schemes and category systems. Beers, Boshuizen, Kirschner and Gijselaers (2007) claim that every CSCL analysis method differs in terms of the specific unit of analysis, the goals of analysis, and the specific data types (posting, chat, threaded discussions etcetera). The coding approach of the analysis in this study provides more of a typology than conversation analysis. It is the online activities that are explored in order to understand what participants discuss, what they do and accomplish, and how they use the e-mailing list for continual professional development. The categories of conversations and interactions can be used to statistically measure the distribution of accurate entities (Mercer & Wegerif, 1998) which can explain the extent of those activities that are performed in the OLC. Therefore, the categories created indicate not only what participants do, but also the extent of their activities.

4.7 Summary

The current chapter presented prior empirical research that treats participation within e-mailing lists and asynchronous forums situated in professional contexts. Research was selected when the contributions provided relevant studies connected to the overall aim of this study presented earlier. All studies relate to the field of CSCL and when possible to the field of health care/general practice. The empirical studies represent five relevant aspects of online participation: (1) social interactions in asynchronous mode, (2) online formation of professional identities, (3) sustaining and (4) moderating of online activities, and finally (5) building categories of online participation. These aspects of online participation provide the relevant knowledge for understanding the forthcoming empirical study. Concerning the participation in professional OLCs within the field of health care practices, empirical research is still missing. Most empirical studies of OLCs are carried out in an educational context which leaves much to the research on voluntary participation in professional OLCs. This study provides knowledge on online participation in which professionals take part online in discussions about the specialist subject of general medicine. Research on social interactions also provides knowledge on how online participation can be studied with help of social relation analysis. In line with the group of professionals, the formation of professional identities becomes one aspect for further investigation as it constitutes a basis for understanding general practice when building a professional practice online. The empirical studies presented in this chapter provide insights in how professional actors interact in order to strengthen

their identities. Sustainability is closely explored together with the function of moderation. Empirical studies on facilitating OLCs in professional contexts are missing since most of the research scrutinise what the moderator carries out in the role of an instructor or teacher situated in formal educational settings. Empirical research on building categories of online participation within the field of CSCL enhances the understanding of the analytical work on content, activities and communicative strategies of the e-mailing list. The studies also create a framework for investigating the participants in this study. However, most research studies offering a longitudinal perspective of examining online activities cover only one-year of data collection. These aspects together motivated the current longitudinal study examining a group of professional actors who share the interest for general medicine organised in a semi-accessed OLC that allows anyone who shares the interest for general medicine to subscribe and contribute online.

5 THE PROFESSIONAL CONTEXT OF GENERAL MEDICINE

The purpose of this chapter is to describe general medicine as a professional practice. It will provide a background of the analyses by describing the general practice as it is talked about in the domain of general medicine. The following chapter covers the historical background of the medicine profession, the organisational structures in the Swedish primary care system, the constitution of the professional practice of general medicine, a brief description of the organisation of medical training in Sweden, and continuous professional development as it is organised for and by GPs in learning activities both in physical contexts and online, and finally, a short presentation of the professional association that manages the OLC being studied. This chapter starts with a brief introduction of the evolvement of a profession that contextualises one kind of community in the networked society.

5.1 The characteristics of a profession

One kind of social practice constitutes a profession. Goodwin (1994, p. 606) explains that a profession is a group of experts who produce and maintain a discursive practice among themselves:

> Discursive practices are used by members of a profession to shape events in the domains subject to their professional scrutiny. The shaping process creates objects of knowledge that become the insignia of a profession's craft: the theories, artifacts, and bodies of expertise that distinguish it from other professions. Analysis of the methods used by members of a community to build and contest the events that structure their life world contributes to the development of a practice-based theory of knowledge and action.

In the quotation above, a profession can be understood as a discursive practice based on a shared terminology that marks the body of knowledge. To some extent, a profession is synonymous to a closed system, as it allows only qualified members to interact as solely qualified members are allowed to interact. A profession is more than its occupational group sharing a common background in training; it is a network of expertise in which the qualified members participate in developing the rules for how to proceed when doing practice. In historical accounts, there are three core occupational groups, doctors, lawyers and religious leaders, on which the ideas of profession rest (Abbot & Meerabeau, 1998). In contemporary society, the term *profession* is used in different ways, similar to the various meanings of the term *community*. The term profession gives status to those people who become qualified in an educational programme as they endeavour to position themselves in the

occupational community and working life. This becomes obvious when workers and professionals organise themselves in work-related associations and apply the ideas of profession to their own agenda. Together they act to support one another as they strive to control and influence how they need to act in work situations. The constitution and emergence of the medicine profession will continue to be explored in the following chapter.

5.2 The medical profession

In this thesis, the term *profession* refers to the whole medical practice in which *general medicine* is one of many disciplines. The section will give a short account of medicine as a profession. A historical perspective on the emergence of the medical profession is important in order to understand the long tradition of medical training and professional development.

Freidson (1970) has discussed the role of medicine in society. The essential characteristics of a profession are its pre-eminent official policy-making position as the participants, including an expert authority, constitute a monopoly over its own existence. These kinds of rules and regulations prevent people without a medical licence from practising medicine. Members of the medical profession produce legitimate definitions of health and illness, and construct feasible treatments. "This is to say, medicine's knowledge about illness and its treatment is considered to be authoritative and definitive" (Abbot & Meerabeau, 1998, p. 5). Freidson (1970) argues that the word *occupation* should be used instead of profession in order to reduce the pretentious and sometimes sanctimonious overtones. According to Freidson, a profession has to be studied in terms of the organisation of activities in order to understand the processes of institutionalisation. Members of a profession construct knowledge and share common terminology that distinguishes them from other professions. What is crucial for understanding the medical profession is the continual need for certification and organisation of activities in professional development based on scientific disciplines. In this study, the professional association invites anyone who shares an interest in general medicine to join the online activities that challenge the otherwise so strict professional boundaries. In order to understand the evolvement of a profession, a historical background will provide information on the essential characteristics.

Even though all cultures have had persons working as healers, providing help when someone in the group was ill, it was not until the nineteenths century that doctors were first referred to as a belonging to a profession. This makes

doctors one of the oldest professional groups (McWhinney, 1997). One crucial aspect of the emerging profession is the evolvement of the academia (Abbot & Meerabeau, 1998; McWhinnery, 2000). The establishment of a medical profession includes educating people to cure other citizens and excluding those people who do not have full qualifications. In the seventeenth and eighteenth centuries, "physicians were a small and elite group of learned men, educated in the few universities" (McWhinney, 1997, p. 4). Back then, doctors would carry out work among the rich and influential citizens as this gave them a high status and reputation. Freidson (1970) argues that the formation of the profession was dependent on members organising themselves as a collective, rather than just earning a living by curing people. As new clinical treatments were developed, the profession was divided into numerous disciplines. Specialisations developed as a consequence of the expanding knowledge of clinical work. Besides general practice, specialists can be found in all the disciplines in the health and medical care system. Today, doctors still have good reputation as they are viewed in every society as being important for welfare.

5.3 Swedish primary care system

Health and medical care is viewed as a crucial component of the welfare system (Hunskår & Hovelius, 2007). The responsibility for providing a mandatory health and medical service in Sweden is divided between the state, county councils and municipalities (Regeringskansliet, 2007). The Health and Medical Service Act stipulates that every county council and the municipality must satisfy the local citizens' needs. Health and medical care policy is the responsibility of the state (Ibid.) and it provides directives for both the county councils and municipalities regarding how to fulfil this responsibility. The Ministry of Health and Social Affairs administer the directives of the Swedish Parliament and Government to "improve the quality of care, increase accessibility and create diversity" (Ibid., p. 1). There are several independent government agencies[5] in the Swedish ministries that organise and control the objectives set up for health and medical care by the government. 21 county councils[6] provide services in health and medical care. Each county council is responsible for organising care in its own area. County councils are grouped

[5] For example, The National Board of Health and Welfare (SoS), or The Medical Responsibility Board (HSAN) or The Swedish Council on Technology Assessment in Health Care (SBU), to mention just a few.
[6] Since August 2007.

into six regions where each provides fully specialised care. Health and medical care is organised as follows: regional medical care, county medical care and primary care. There are eight regional hospitals, about 70 county hospitals and over 1,000 health centres. Approximately 80 % of all Swedish doctors are employed by county councils and municipalities and work at hospitals and health centres as well as child clinics and antenatal (prenatal) clinics (Swedish Medical Association, 2008). The remaining 20 % work in private practice, as company doctors or in research and education. Most GPs work at health care centres in primary care (Hunskår & Hovelius, 2007). There are also a number of private companies in Sweden that hire GPs to provide health care. The Swedish healthcare system is tax financed, and all Swedish citizens are covered by a health insurance system that provides health and medical care when needed. "Patients can seek care anywhere in the country on the same terms as in their own county council area" (Regeringskansliet, 2007, p. 2). However, the agreement between the Swedish state and the Swedish Association of Local Authorities and Regions has established a contract of free choice that includes a health care guarantee (Regeringskansliet, 2007). Patients contact the health centre to book an appointment, and the government pays the health centres to take care of the patients. In a sense, patients are viewed as assets for general practitioners (Hunskår & Hovelius, 2007).

5.4 The professional practice of general medicine

This section will investigate the general practice from a national perspective. In Sweden, a specialist in general medicine is called 'allmänmedicinare', which is translated as general practitioner in English. A general practitioner (GP) specialises in the medical speciality of general/family medicine. GPs treat multiple health issues such acute and chronic illnesses, and they carry out preventive care. The domain of knowledge shared in general medicine is characterised by a multiplicity of health concerns, raised by all kinds of patients, that require broad as well as in-depth competencies and knowledge about people, biology, illness, the organisation of health care and society per se (Hunskår & Hovelius, 2007). Hunskår and Hovelius (2007) claim that the core of general medicine consists of socio-medical, epidemic, biological and clinical knowledge influenced by psychology, sociology, anthropology and ethics. The clinical subject of general medicine will be exemplified in chapter 12 based on what they talk about. As the work of GPs is quite diverse and broad, the "breadth and comprehensiveness of its endeavour has made general practice notoriously difficult to define" (Heath, Evans, & van Weel, 2000, p. 326). In general practice, the term *general*, as opposed to *special*, indicates and misleads

us to think that any kind of clinical issue is included (Olesen, Dickinson, & Hjortdahl, 2000). All registered medical practitioners can decide to specialise in general medicine that sometimes leads to confusion due to the differences in practical work between generalists and specialists (Harrold, Field, & Gurwitz, 1999), or the intricate dilemma of being generalists in a specialist culture (Stein, 2006). They attempt to clarify what knowledge they posses as GPs in national as well as international discussions (McWhinnery, 2000). It might be worth mentioning that only a part of the extensive domain of general medicine can be found in, and understood from, the empirical material presented later on.

Some GPs refer to themselves as *family physicians* (McWhinney, 1997). To some extent, they hope to overcome the intricate situation of being general or having general knowledge once they have specialised in the subject of family medicine. This becomes evident in research literature as well as in the empirical material, since these terms are considered synonymous to general medicine/practice. In this thesis, I have chosen the terms general medicine/practice based on a direct translation of the Swedish term *allmänmedicin*. This, I argue, captures the essence of the Swedish terminology that is useful for this study. Thus, I do not intend to solve the intricate definitions existing in the professional practice studied here. Both national and international differences in the use of the terms general or family exist in the literature when authors endeavour to create a consistent definition of general practice (Heath, et al., 2000).

Continuing the examination of the professional practice of general medicine, the organisation of work is of particular interest in order to remain focused on an analysis of activities. In Western society, general medicine was revitalised in the 1960s when general practice became one of the cornerstones of the healthcare system (Olesen, et al., 2000). The development of the general practice can be described as being dependent on three essential changes in the way work is done (McWhinney, 1997, p. 7). First, GPs provided continuing care for both adults and children based on a personal interest for health care. Second, patients were sent to specialists in secondary care via a referral note from the general practitioners. Third, all specialised services were offered outside the health care centres. The above-mentioned organisational changes for GPs have been introduced in most developed countries (Olesen, et al., 2000). In primary care, various health care professionals work together to provide services in health care. GPs in primary care are the first instance to contact when in need of consultation. GPs can be considered gatekeepers since they coordinate the patients in consultations in order to improve

individual health. GPs help the patients with diagnoses, medical treatments, care and rehabilitation as well as working with the prevention of illness (Hunskår & Hovelius, 2007). The general practice includes taking into account physical as well as social and psychological aspects in order to assess the patient's need for medical care (McWhinney, 1997). General practice is described as a patient-centred discipline since GPs seek to understand the context of the illness (Hunskår & Hovelius, 2007; McWhinney, 1997). Other medical disciplines define themselves in terms of clinical content, while general medicine is defined in terms of relationships with the patients (McWhinnery, 2000). Patient-doctor relationships and family records constitute the body of knowledge that is employed in general medicine. From such a perspective, patients also contribute to the knowledge domain by raising questions and responding to the GPs questions. The importance of the continuity of care in a sustained relationship with the patients is regarded as the core characteristic of general medicine (Beaulieu, et al., 2008). In Sweden, contacts also include government authorities and institutions such as regional social insurance offices and social services (Hunskår & Hovelius, 2007). GPs collaborate with various professionals, both at the health centres (such as nurses and administrative staff), and in secondary care units in the medical service (such as laboratories and roentgen etc.). In collaboration with these people, GPs negotiate how particular illnesses need to be treated and organised for the patients to fully recover. Even if the patients are surrounded by competent doctors and nurses, the work of GPs is to a large extent carried out alone. Landström, Rudebeck and Mattsson (2006, p. 123) describe how GPs mostly work on their own, as they find it "difficult to achieve comprehension of the working qualities and styles of colleagues". This motivates the examination of the OLCs of general medicine since they want to create a resource for sharing knowledge and experiences among the participants.

5.5 Medical training in Sweden

A brief description of Swedish medical training will contextualise the background shared by most of the participants and some activities that concern the professional association.

Medical training in Sweden[7] consists of basic studies over a period of five and a half years (Swedish Medical Association, 2008). Due to the extensive body of

[7] Medical education programs are offered by the Swedish universities in Gothenburg, Linköping,

knowledge, medical students invest considerable time and effort to obtain their medical licence (McWhinney, 1997). They carry out practical work during a supervised period of 18-21 months. The professional association promotes general medicine as one possible medical speciality for the student to choose. After graduation, the medical students apply for a medical degree as most of them subsequently work in primary care (Swedish Medical Association, 2008).

Some *registered medical practitioners* continue to study medicine in order to qualify as a specialist by adding five years of work-integrated training. The specialists gain experience of their future professional role by engaging in supervised practical work. When the requirements of the objectives of the specialist task have been met, the qualifications are approved by the chief medical officer in consultation with the supervisors. Representatives of the professional association of general medicine act as executors of the specialist qualifications (in Swedish: 'specialistbevis'). All specialist certificates (in Swedish: 'tjänstgöringsintyg') are issued by the National Board of Health and Welfare. The various medical qualifications of the participants in the OLC will be examined in chapter 8.

5.6 Continuous professional development in general medicine

As a result of their long medical training, doctors are fostered in a tradition of continually updating their knowledge. Medical training overlaps learning activities in programmes for professional development. The continuous need to update knowledge in general medicine requires resources and organised activities after the basic medical training.

In general practice, the increased emphasis on professional development is stated in continual learning development (CPD) programmes (Boudioni, et al., 2007) or continual medical education (CME) (Olesen & Hjortdahl, 1999). The programmes are synonymous and they both deal with the interest for the improvement and maintenance of scientifically grounded knowledge and skills that include medical, psychological and sociological issues for general practitioners. Learning activities are often organised in educational contexts where the participants strive to acquire specific content (Cook & Smith, 2004; McWhinney, 1997; Seely Brown & Duguid, 1991). However, training arranged

Lund/Malmö, Stockholm, Umeå and Uppsala. For further information, see The Swedish Medical Association, http://www.slf.se/ or the respective university.

in such ways is often questioned because it separates knowledge production from the context in which it is supposed to be used. Activities organised outside the educational settings offer flexibility for learners, and "recognises the social significance of learning from others, but implies greater scope for individual agency than socialization" (Seely Brown & Duguid, 1991, p. 247). What is learnt outside the educational context is to some extent misunderstood as being unimportant or just moments of chit-chat (Eraut, 2004; Seely Brown & Duguid, 1991). Orr (1996) claims that meetings between employees at work provide exchanges of information that enable them solve problems later when on duty or in action.

Professional development is becoming increasingly organised in online environments in order to extend the professional networks among the participants sharing knowledge collectively. In a list of activities for professional development on its website, the professional association that manages the OLC studied in this thesis, suggests that members read certain articles and literature, arrange collegial talks and supervision among peers, self-evaluations and recertifying working GPs in the interval 5-7 years, and organise workshops and seminars. Other collective activities can be mentioned in the organisation of "Balint groups". These meetings are intended to provide opportunities for GPs to discuss crucial matters concerning consultations and relationships with patients. The production of "study letters" on relevant clinical issues of general medicine is an important resource for continual professional development. Thus, these letters sum up a certain clinical aspect addressed by the collective of GPs and are constructed together by the GPs and distributed among the collective. They organise and prepare visits to conferences. Some members of the professional association organise courses and carry out development work and research studies. Some activities suggested by the professional association support the arrangement of lectures for younger colleagues, medical students and personnel categories in health care practices. The learning activities mentioned above are only a few of many face-to-face activities that GPs can organise and participate in together. Besides engaging in face-to-face activities, GPs construct and use several resources. For example, scientific journals, literature in family medicine (McWhinney, 1997), medical web-based databases such as FASS[8], professional

[8] FASS is an encyclopaedia of pharmaceutical facts about drugs. FASS can be translated to "Pharmaceutical Specialities in Sweden" and is a professional organization managed by research-based companies in the medical industry, which provide FASS as a web-based resource and as a book frequently used by doctors (see: http://www.fass.se).

development organised as online courses for general practitioners (Brace-Govan & Gabbott, 2004) or clinical educators (McAllister & Moyle, 2006), online evidence systems (Magrabi, Coiera, Westbrook, Gosling, & Vickland, 2005) are just a few of all the resources mentioned in the literature. Little and Hayes (2003) argue that medical staff need to create personal professional development plans[9] to be able to ensure competence development over time. This thesis contributes knowledge of collective organised learning that can be understood as a resource in the individual's learning strategies. Increasingly, online environments are being introduced to offer social arenas for learning among groups of GPs (Fox & Roberts, 1999; Thomas & James, 1999). From this perspective, the online environments are one of many resources available in general practice. According to Nylenna and Aasland (2000), there is a lack of studies exploring online participation in general practice, something that is addressed in this study.

GPs are regarded as one professional group that can be categorised as early adopters of IT. In 2000, when the e-mailing list had just been introduced by the professional association, access to both computers and the Internet as well as the use of e-mail were common in high-income homes in Sweden (Nilsson & Elvelid, 2004). At this time, 90 % of all citizens aged 45-65 had access to computers and this increased to 96 % in 2003. In all, 87 % used the Internet at home in 2000, and in 2003 this figure had increased to as much as 93 %. E-mail was used by 56 % in 2000 and 67 % in 2003. In the category of high-income citizens aged 25-44 years, the numbers vary slightly compared to the older population presented above. The subsidising of computers within the framework of the "Personal computer reform" resulted in advantages for the high-income citizens (Nilsson & Elvelid, 2004). These numbers are essential when investigating the context in which they participate.

Brace-Govan and Gabbott (2004) promote the use of online environments to create new arenas for knowledge sharing among GPs. Establishing OLCs can be one strategy for professional development of the individual GP, but also regarding the collective knowledge. In a sense, the GPs extend their existing network of colleagues when they go online. Not only are the medical e-mailing lists an important resource for the GPs, but they also have the advantage of distributing information quickly. Hernandez-Borges et al. (1998, p. 231)

[9] Professional Development Plans is a comprehensive term for learning activities including "outside lectures, practice meetings, reading, small group work, significant event audits and Internet searches" (Little & Hayes, 2003, p. 193).

describe how the e-mailing lists "allow an immediate diffusion of ideas, and provide a way to discuss with other colleagues, as a daily held conference". E-mail is a widespread tool for online communication in work-related practices. Teigland and Wasko (2004) suggest that one explanation of the success of e-mail is connected to the fact that the tool in itself enabled not only communication, but also simple, offline accessible, individually adaptable organisation of e-mails compared with the procedure for accessing online OLCs websites. In general practice, the doctors use e-mail and numerous Internet tools on a daily basis and for various means (Thorley, et al., 2009). However, GPs often tend to dismiss the use of new web-based resources. They express problems finding time to engage in professional development programmes (Thorley, et al., 2009). Rather than lacking technical skills, it seems that the real challenges for participation lie in the organisation of participation in the OLCs.

Holtrop (2001) evaluated an initiative where an e-mailing list was introduced in a network of family practice residency programs. She concluded that while it did not develop as an online discussion group, it did function as a provider of information for an affiliated residency faculty. The large number of participants had little incentive to contribute messages, which Holstorp refers to the "public goods dilemma incentive structure" (Holstorp, 2001, p. 3), i.e. what is the personal benefit of investing time in the development of collective resources? One important aspect when trying to understand the discussions in e–mailing lists is the negotiation of topics. Besides looking at questions responses in the interaction, focusing on the negotiations and possible conflicts in the participation provides insights into how social relations are built up. Turner et al. (2004) discuss that there seems to be good agreement between frequency and priority assigned to a task or subject in online activities. Research on online participation should enhance the understanding of social interactions more than reporting on the number of postings sent to the e-mailing list (Hrastinski, 2007). Thorley et al. (2009) address one common issue for the design of educational resources – the identification of the needs of users (or potential users) whenever they intend to adapt the content.

5.7 The professional association of general medicine

The final section of this chapter will briefly present the professional associations that organise and maintain the online environments studied in this thesis.

The purpose of the professional association of general medicine is to support its members in continuing professional development, the training of future GPs, quality improvements, and research in general medicine. The professional association acts on a governmental level to support and comment on proposals from the government as well as other authorities concerning medical practice and matters that concern GPs and the patients. The professional association of general medicine works to promote general medicine as an important domain of knowledge in medical training, and to provide medical students with access to work placement both during their education and after graduation. The professional association trains examiners who assess the GPs when they are awarded their specialist degree. The examiners come from several councils and networks that aim to inspect several assigned interests. The professional association is affiliated with both national and international general practice organisations. Outside the discipline of general medicine, the association acts as an official referral body for proposals from the Swedish government and other authorities. It organises and offers numerous activities for professional development. The online environment studied in this thesis is one of the sources monitored by news agencies. The professional association of general medicine allows online access by anyone who finds the specialist subject interesting. To gain access to the online environment, participants send an e-mail request to the moderator and are granted what is called *semi-open access*. The language used is Swedish, which limits participation to those who speak the language.

5.8 Summary

A profession is defined as a network of expertise in which the qualified members hold an official policy-making position. A profession is based on its pre-eminence as the participants develop and maintain an expert authority. Members of the medicine profession constitute a monopoly of their existing work. General practice is a profession constructed on the basis of its pre-eminence, formed as an expert authority, and maintaining a monopoly over the exercise of work. The organisation of Swedish clinical and medical system is constantly changing as a result of governmental influence and the development of the profession of medicine as a whole. The work practice offers various varieties of working as a GP, although most of them work in health care centres. Medical students are fostered to become doctors when they attend medical training in order to choose a discipline for further study, possibly leading to a specialist degree. When some of them attend specialist training in general medicine, they face the intricate dilemma of being

specialists in generalism. In this study, the professional association manages the online activities, which needs to be explained in terms of the consequences for online participation. The participants construct the professional context in accordance with the conditions laid down in the OLC. The need for continual professional development among the participants is explained in terms of what they do online. The online environment can be one arena for continual professional development, but it involves efforts to organise and maintain the online activities. Such efforts tend to be difficult in work-related practices.

6 OBJECTIVE AND RESEARCH QUESTIONS

The objective of the study is to understand how an e-mailing list, organised and managed by a Swedish professional association of general medicine, functions as an online learning community. The thesis investigates online participation in social practices based on a sociocultural perspective on learning. Theories on situated learning provide a theoretical lens that will reveal what happens online. When the participants perform various activities in the OLC, the research questions focus on online participation based on prior research in CSCL. The answers to the research questions will give implications for building an OLC. In times when several professional and occupational associations are establishing OLCs as a resource for supporting their members, they strategically create and change existing conditions for continual professional development. The empirical analyses are guided by the following research questions, which will be commented on and divided into sub questions in subsequent sections:

1) What characterises the participants of the OLC?
   a) Who are the participants?
   b) How many participate in the OLC?
   c) What professional identities are negotiated and displayed?

The first research question explores what kind of participants take part in the OLC. Due to the specific conditions for participation based on the specialist subject, only some people can access and contribute to the OLC. Demographic aspects investigate the characteristics of the participants when they are referred to as a professional practice. Who the participants are can also be closely linked to having semi-open access to the OLC, which allows anyone to use the e-mailing list. By investigating how many of them actually contribute online, the social structures are exposed in professional networks that later can be followed up in questions about how the OLC is sustained by online activities. Most accurate for examining the participants is the formation of professional identities. Participants talk about what tie them together as GPs. They negotiate and display themselves as a professional group of participants.

2) What characterise participation in the OLC?
   a) What are the rules of participation?
   b) What are the structures of participation?
   c) How do participants position themselves?

The second questions investigate participation in the OLC by studying the rules that are negotiated in the professional context. Questions about structures for participation in the OLC are scrutinised in terms of how they interact together. Structures, in this sense, explore the characteristics of the social interactions. Positions are taken as well as given based on individual contributions in the professional networks. In social interactions, they obtain positions temporarily in a constant mode of change in the OLC. Positioning and positioning work are investigated in social interactions based on theories on communities of practice that help to understand how the participants maintain their professional roles and interact in positions based on what messages they post and what meaning is negotiated between them. Sub questions are:

3) What characterise the activities in the OLC?
    a) What types of activities are carried out?
    b) How are activities initiated and maintained?
    c) How are the activities moderated?
    d) What is the content of the activities?

The interactional activities can be stressed in terms of what they accomplish in social interactions. Together, participants perform activities in the e-mailing list that go beyond the exchange of information. The initiation of activities, as they are maintained over time, is examined in order to understand how the participants organise themselves. Due to the organised function of moderation, one question focuses on the moderation activities rather than just scrutinising the moderator. This provides knowledge about how moderation influences online participation. The content is explored in terms of what topics are initiated and how they are related by theme. The content thus shows what the participants share as knowledge and experiences online, and some part of the knowledge domain and general practice can explain what general medicine is about based on the topical interactions.

4) How does the OLC develop over time?
    a) How are the online activities sustained?

One characteristic of an OLC is the continuous activities that are initiated and carried out in the learning environment. One shared interest among most work-related associations is the struggle to maintain the learning arena with continual flow of postings sent and initiated by the participants. The sustained social relationships, and online activities performed over time, are one essential characteristic of what can be regarded as an OLC. The fourth set of

questions stresses issues relating to the development of the OLC, investigated via the online activities, and what sustains the OLC through the years.

5) What are the affordances of the technology?

The final research question examines the affordances of the e-mailing list. Because there are numerous asynchronous tools in contemporary Western society, the offerings and constraints of the existing e-mailing list are scrutinised as a technology for learning rather than just a tool for information exchange. By carrying out this study, implications can be provided that complement the field of CSCL and professional and occupational associations and provide some guidelines for organising online activities in professional contexts.

7 DESIGN OF THE EMPIRICAL STUDY

In this chapter, the design of the empirical study will be explained. First, some methodological considerations explain the characteristics of the study. Then, the research process is described with respect to the selection of the empirical case, the organisation and presentation of empirical material, and the collection and storage of data. Later, the analytical work, consisting of reading the postings, examination of descriptive statistics, categorisation of the content discussed, and analyses of the social network, will be described. Finally, ethical considerations and some practicalities of the study will be discussed.

7.1 Methodological considerations

An Internet researcher wants to understand how people in a social practice transform communicative technologies when building social relations. In studies of online participation, the Internet becomes the social *arena* as well as the *tool* for doing research (Daneback, 2006). Rutter and Smith (2005) claim that data collection for an Internet researcher is more deskwork than fieldwork. Sveningsson, Lövheim and Bergquist (2003) add that getting close to the social practice in an online environment has to be understood as something other than physical contact. Rather, online activities have to be viewed as traces of social interactions performed under conditions that stretch the conceptions of time and place (Wellman, 2001). The research questions addressed in this study will therefore only explore online participation as no claims can be made as to what happens outside the online environment (e.g. in GPs' workplace, in front of the computer etc.), even though the postings published by the participants contribute narratives about the general practice and situations at work.

The research study can be described as inductive and exploratory. The inductive approach strives to explore online participation without any pre-determined hypothesis of what happens online. From the very beginning in the empirical study, the objective was to explore the postings with open questions, taking a naïve approach, in order to describe and explain the online activities. This approach is mostly a reading process in which notes are taken in order to comment on situations that seem either characteristic or less common. This open approach helped me determine what was crucial to explore in the research, and define my questions more precisely over time.

Researchers collect and produce data using both quantitative and qualitative methods in order to answer research questions (see Kvale, 1997; Silverman, 2001) that also includes social studies on the Internet (see Hine, 2000; Schrire, 2006). A qualitative approach is based on the assumption that multiple realities can be constructed from *interpretations*, whereas quantitative methods *measure* the extent of a specific aspect in the empirical material. By using these analytical strategies, such as interpretations of text as well as descriptive statistics, this study can provide a *thick description* (Geertz, 1973). A thick description refers to the ability to convey full descriptions of what happens in the social practice under study.

Influences from traditional ethnographic studies provide numerous methods and challenges for Internet researchers to explore social practices on the Internet (Hine, 2000). Hammersley and Atkins (1995) explain that ethnographic studies are examined over a period of time during which the researcher strives to grasp the social practice from inside by using various methods for collecting data in order to understand, describe and explain the activities that are performed. To some extent, this research study has the characteristics of an ethnographic approach since online activities are observed and explored. Silverman (2001) claims that empirical material can be generated either as *researcher-provoked* or *naturally occurring*. Interviews can be understood as material provoked by the researcher in social interplay with the respondents and/or informants, whereas collection of text material produced by the participants (uninfluenced by the researcher) can be understood as naturally occurring. In this study, the empirical material was derived naturally from the web-based archive, which enabled me to explore the online activities when they occurred. Even though I followed the online discussions in real time on a regular basis for the first six months of 2007, I chose to explore the large-scale web archive of postings sent between 2000 and 2006. The material stretches over seven years, which could add knowledge about the sustainability of OLCs. Most Internet researchers tend to stay approximately one year, at the most, while they endeavour to collect sufficient information using several methods in order to observe the activities in the social practice under study. My idea to tackle the large-scale material was to examine the characteristics of the participants in general practice as they work as doctors for longer periods and to understand the consequences for the online activities. With the support of computer programmes, it was possible to analyse the extensive body of material from all the years of online activities and answer questions about longitudinal processes. The retrospective approach ensures that no data were collected during my period of online participation. The advantage was that I

could explore what happened online without disturbing or provoking the participants in social interactions. A disadvantage was that I was not able to follow what happened in real-time as these situations had already occurred some time before. Because of my lack of online interaction, I use the term *participants* in order to refer to those contributors I studied, as they were not considered my informants or respondents (see Kvale, 1997). I only contacted the moderator via e-mail in order to organise the study.

7.2 Selection of the empirical case

In the research literature, I noticed numerous studies of online participation exploring OLCs in educational contexts (see Hrastinski, 2007; Olofsson & Lindberg, 2005; Svensson, 2002). With this in mind, I searched for empirical cases that would complement prior research studies of OLCs as this would generate knowledge of online participation outside the field of distance education. My intention was to select work-related OLCs in which participants perform activities similar to continual competence development. The selection of the case was not influenced by the technical platform the participants were using. Rather, the focus was on online activities. I searched the Internet for both occupational and professional associations that gather their members online when they organise and maintain an OLC for shared interests related to working life. At the beginning of the study, I considered creating a compilation of the national use of online environments in work-related practices in order to make a randomised selection of various cases. This idea was later abandoned. All work-related associations were non-profit and independently organised without any major organisation that link a larger number of work-related associations. Not having the ability to capture the whole organisational structure, I changed my strategy from randomisation to a purposeful selection of an empirical case. Otherwise, this would have shifted the focus away from examining online participation, and probably put a stop to my efforts to build a structure of national work-related associations.

I had collected a few prospective cases for further exploration. These included various occupational and professional forums organising craftsmen/women, farriers, upholsterers, taxi drivers, teachers, school leaders and general practitioners, to mention just a few. I discovered that access to most of these work-related associations was closed to all outsiders. Access was for members only. In a polite e-mail message and sometimes by means of telephone calls, I formulated my prospective study as a field trip in the OLC. One lesson learned was that just because an Internet researcher is interested in online

activities carried out by a group of participants, it does not mean that they all grant online access easily although some of them enjoy the attention that a researcher brings to their OLC. The main criteria for selecting a case were that it should provide the opportunity to collect sufficient empirical material analysis and that it should offer ongoing activities. I preferred a safe sample of data in order to avoid breakdowns when once I had started the research. Gaining access to these kinds of OLCs tended to be time-consuming, mostly because I needed to have full access (granted by the steering board of the association) in order to decide how to proceed after my first observation, not knowing the extent of activities and continual use of such an online environment. In the case of the OLCs I did gain access to, I received information by interviewing the moderators, who told be about the challenges the faced to prevent the online activities from drying up completely, or how they supported the participants, and what strategies for online participation they employed. For the most part, they explained the opportunities for them to discuss shared interests, but they also complained about the lack of knowledge about how to support the online activities. After learning about the background of the prospective cases, some of them were rejected. However, one professional association of general medicine had had a continuous flow of postings over seven years and these were stored in a web archive. In line with the main criteria for selecting a case, I decided to choose this OLC as the case for my research. They offered semi-open access that allowed anyone who sent an e-mail to the moderator to become a subscriber of the e-mailing list. Due to the conditions for access, I was able to approach the case as if I were one of the members and act as a lurker during my initial observations. As soon as I obtained full access, I was offered extensive material consisting of several years of ongoing online discussions stored in a web-based archive. At the beginning of the study, one idea was to study several OLCs in order to view the variety of online activities in occupational and professional practices. Since I understood the potential of the empirical material, other cases became less interesting for my work.

The present study was initiated at the beginning of 2007 when the steering board of the professional association accepted the research proposal sent by e-mail. The research proposal gave information about the purpose of the study and the main interst for online participation. I briefly explained how I would use the web-based material. As soon I had obtained the approval of the professional association, I sent an invitation to all the addresses on the e-mailing list with the intention of making contact with the participants and inviting them to take part in my study. In this phase of the study, I shifted

from being a visitor to being an explicit researcher with the intention of observing the online activities, and reading the published material stored in the web archive of postings. After a couple of months, a second posting announced that I had ceased the collection of data. I explained that I intended to concentrate on the postings stored in the web archive between the years 2000 and 2006, which actually excluded the period for my research study. The choice of OLC had not been based on its technological infrastructures as there were many kinds of online discussion forums to choose from.

7.2.1 The historical background of the e-mailing list of general medicine

In the beginning, the professional association used a ListBot system[10] to announce relevant issues to the subscribers. The online environment was updated when an e-mailing list was introduced in 1998. The e-mailing solution used by the professional association was developed by one of the largest providers of free communication platforms. The reason for changing to an e-mailing list was that it had the capability to let all members post messages on their own, instead of only being managed by the moderator. At first, the e-mailing list was introduced for discussions between specialists only. It was soon shut down because of lack of support for managing the online environment. The professional association attempted to restart the online activities in the form of an e-mailing list, aiming to address all qualified doctors in general medicine, and even outsiders, meaning those professional actors who had an interest in reading and discussing general medicine without being doctors. The results were that several actors such as representatives of the medical industry, journalists, nurses, politicians and administrators joined. The e-mailing list is connected to a website where the moderator had published a note to welcome new members:

> Group of General Medicine
>
> Here you can, as a general practitioner and member of the association, discuss, debate and exchange experiences that improve yourself and the general practice in progress. Even non-members of the association who are interested in discussing these issues are welcome to join. Welcome. Andy, the moderator.

Based on the observation of the archive of postings, the professional association has used the current forum since October 1999. The professional

10 ListBot was a large e-mail list hosting service. Over 20 million subscribers used ListBot to manage subscriptions to both announcement-only and discussion lists [Online: wikipedia.org. retrieved: 19/11/2008]

association had around 2,300 registered members in 2006, and approximately 500 participants were subscribers to the e-mailing list. However, not all of these were registered members of the professional association, nor were all members working as GPs.

7.2.2 Participation in the e-mailing list

The conditions for online participation and the main structures of the e-mailing list are presented in order to broaden the introduction of the empirical case.

There are two ways in which members can participate in the e-mailing list. The first way allows the participants to receive all published messages automatically in their personal e-mail inbox. They can choose to receive the messages in a digest format, sent on a daily or weekly basis, if they do not want to receive the income messages regularly. The postings are accessible to all subscribing members. What is essential for the empirical study is the ability to initiate a topic, and thereafter let the others place their answers linked to the existing postings. Together, they produce interlinked text-based conversations that are cohesive in structure and are similar to a thread consisting of answers arranged in a conversational order. A second way to participate in an e-mailing list allows participants to log into the website. They can decide to publish and read all messages viewed in the archives of former discussions, and search for specific threads stored online. All participants have full access. In the web archive, the main structure consists of messages stored under each other with the subject heading for every (initiated) topic on top. As the online discussion continues, the answers are indented to the right in order to be able to view which postings belong to the main topic. All postings can either be overviewed in a threaded structure (i.e. simplified), or be read in expanded mode. Each message is given a specific ID number in numerical order that is appropriate for any Internet researcher since the empirical material is already coded with a unique number for each posted message.

In e-mail correspondence with the moderator of the e-mailing list, it was learned that most of the participants take part by using their e-mail programme instead of logging into the web-based forum. The moderator estimated that only 30 % of the participants accessed the web-based forum once. Therefore, since most of the participants organise their participation via their e-mail inboxes, this will be the primary way in which I describe and explain online participation based on the online activities.

Online participation is institutionalised in the online environment where they negotiate about the rules in order to interact properly. The participants decide whether or not they want to take part, and to what extent they wish to contribute. The voluntary aspects need to be understood as a degree of free will under negotiation. If they initiate and send postings, the degree of voluntariness is under constant negotiation. The participants depend on one another since they establish routines and norms for how to participate. In a sense, membership is not complete free of obligations as it tends to add expectations to contribute information on the shared interests, depending on what the participants have contributed earlier. Such conditions emerge in pattern of participation in which the members interact more or less frequently.

7.3 Structuring the data

Due to the longitudinal nature of the study, there were a large number of postings in the archive. Initially, the empirical material consisted of 8,547 postings sent to the Swedish e-mailing list for general medicine between the 2000 and 2006. This was later reduced to 8,310 postings by deleting auto-replies, empty messages and doublets. Since it would have been difficult to perform analyses on the raw material of these 8,310 postings, it was necessary to use a structured way of extracting the important information from the archive and storing this information to make it accessible for later analysis. This was done in two phases. First, a script was written to transfer information from the postings stored in the web archive to a database. This was possible since data on all postings were available as open-source material. The extraction of the important information from the archive to the database is described in the next subsection.

7.3.1 Constructing the initial database

Every posting in the web archive has some structural information that can be extracted from the open-source material. The information extracted and stored in the database consisted of:

ID: every posted message was assigned a unique number (Key). The unique number can be used to count postings made to the e-mailing list. The ID number is useful for the organisation and representation of excerpts.

REFID: if the message is an answer to another message, the number refers to the unique number of the original message.

ROOT: shows the first message in the current thread to which the specific message belongs. This means that a thread is based on postings that can have different numbers, but can also consist of null in reference and a pointer to the very same ID. Depending on how participants place their postings when answer an existing one, various structures emerge in the social interaction.

DATE: the actual date and year when the message was posted.

CLOCK TIME: the Swedish time when the message was published

SENDER: the author's full name (Christian name) and e-mail address.

SUBJECT: the message consists of a heading composed by the author. The heading announces what will be discussed or commented on in the message.

BODY: the full text of the current message posted by the sender.

When the construction of the database was finished, the data had to be verified in order to ensure that it corresponded with the data originally represented on the web site. Since every posting received a unique ID number, it was easy to compare the numbers and information stored in the database. The results of queries of the database were checked manually in order to view whether they produced the correct results. The database was further reviewed by my network of colleagues to determine whether it provided a good basis for further analysis.

7.3.2 Structuring the data for further analysis

It was decided to use SPSS (Statistical Package for the Social Sciences) as a tool for further analysis of the data since this software can easily generate descriptive statistics. The data created by the initial extraction to the database thus needed to be transferred to a usable SPSS file. Although it was possible to transfer the data from the database directly to the SPSS file, some additional or derived information was added to aid the analyses. The variables in the resulting SPSS file can be categorised as follows:

1) Variables concerning the postings:
    a) Year sent: the year that the posting were sent
    b) Month sent: the month that the posting were sent
    c) Weekday sent: the day of the week that the posting were sent
    d) Time sent: the hour in which the posting were sent

e) Office time/Other time: postings sent between 08.00-18.00 were categorised as office time in order to examine the extent of online activities during normal working hours
f) Postings sent on one day: the total number of ongoing topics at the same time measured for each day
g) Number of postings in one thread: the length of threads measured in number of postings.

2) Variables relating to the participants
a) Author code: In order to ensure the anonymity of the 295 participants, the sender information from the database was extended by adding an author code in the SPSS file for later referencing. The author codes started from number one and in alphabetical order
b) Gender: This would make it possible to analyse social networks and social interactions from a gender perspective (1 for females, 2 for men)
c) Professional status: Not yet registered medical practitioners, registered medical practitioners with no specialist training, specialists in training for general medicine, other medical specialists, other occupational qualifications, unknown qualifications. All counted in 2000-2006
d) Year of birth: the specific year they were born to view differences between generations
e) Total years of contribution: Total number of years from the first to the last message sent by each participant. This distinguishes the long-term participants from the short-term participants
f) Qualification year as medical practitioner: The year they became medical practitioners explores years of experience in the field
g) Geographical location: This would make it possible to determine whether participants were situated, in or outside Sweden, to what extent they work in the countryside or in larger cities, or whether they are located around universities offering medical programs
h) Initiator code: Whenever a posting was an initiating posting, the author code was repeated in a column identifying the author code. This made it possible to explore single contributions by extent, frequency and relation to specific periods in time. It could also be used to determine to what extent the participants initiate and/or answer discussions
i) Total sum of postings sent by each participant.

3) Variables concerning the content:
a) Subject heading: This is the heading given by the participant
b) Body text: The actual text of the posting
c) Label of contents: my own labels of what topics are discussed in the specific posting

d) Thematic categories: my own themes of the content discussed and derived from the labels
e) Thread ID: unique ID number for all initial postings in order to examine the total number of topics and the total number of threads
f) Thread type: what kind of thread is initiated, announcements/medical abstracts, online discussion, support etc.
g) Number of participants posting in the thread
h) Duration of the thread counted in days between first and last posting
i) Number of topics dealt with in one day.

The SPSS file presented above was used for various combinations of descriptive analyses close to the research questions.

7.4 Analysis of the empirical material

The empirical material consists of one type of logged data of historical e-mail conversations. Four analytical methods have been applied to the empirical material: readings, descriptive statistics, content analyses and social network analyses. All analyses will be explained in detail in the following sections.

7.4.1 Reading the postings

The first phase in the analysis of the empirical material is reading all postings. This was carried out in three steps. First, I read the empirical material, from the first to the very last message, to understand *what happens in the data*. This technique is commonly used in ethnographical studies in order to observe activities that are carried out in social practices (Hammersley & Atkinson, 1995; Hine, 2000). The distinction between what the participants do online and how the Internet researcher approaches the empirical material needs to be explained. Online participation is the collective production of text-based conversations by the participants and not an arrangement of postings created by the Internet researcher.

All postings were read three times. This resulted in an overview of the material as I recognised patterns in the content discussed. Second, specific threads were selected to be read more closely in order to categorise the content in the forthcoming work. The selection of threads focused on a combination of structure and content in order to discover characteristics in social interactions. Third, while categorising the content into themes, labels that best described the essence of the discussion were added. In this process, I observed attributes of the participants in specific groups or as individuals. For example, I found that some of the participants were long-term participants and that the group

increased in size through the years. I also understood from reading the postings that GPs tend to stay in health and medical practice throughout most of their working life. Furthermore, as a result of the time I spent on reading the postings in various ways, I became acquainted with the participants and their work practice, as advised by Hammersley and Atkins (1995).

7.4.2 Descriptive statistics

In the second phase of the analysis, descriptive statistics of the postings were created. The idea was to create a complete overview of the empirical material in order to understand the extent of online participation in the OLC. Silverman (2001, p. 35) claims that "counting techniques can offer a means to survey the whole corpus of data ordinarily lost in intensive, qualitative research". This kind of analysis resulted in something more than just total numbers of postings. In fact, characteristics of online participation became visible as the posting were measured in numerous ways in order to enhance the structure of postings and their contributors. By combining all the data categories, a descriptive map of online participation could be created. Descriptive statistics has certain quantitative features that are called *surface level measurements* by Strijbos, Martens, Prins and Jochems (2006). They warn researchers in the field of CSCL to forget about the qualitative approach of the analysis of communication transcripts since surface level measurements merely provide a rough analysis of the communication when it comes to number of postings, the mean number of words in postings, the length of threads, etc. During the phase of examining the distribution of postings, this encouraged me to adopt an explorative approach to find patterns of participation. Using SPSS, I was able to structure the empirical material as a whole, in its relevant parts, or even as a combination of data. Through the descriptive statistics I could reinterpret my results from new perspectives. For example, I acquired a better understanding of how messages were interlinked in threads and how they changed over time.

7.4.3 The construction of thematic categories

According to Thomas and James (1999), studies of e-mailing lists require Internet researchers to capture the essence of the content by creating these thematic categories through analysing the texts in both subject headings and messages. The construction of thematic categories enables us to understand what the participants are talking about, the subject itself, and the extent of online activities. In comparison to web-based environments, some of the categorisation work had already carried out by the participants themselves as they had constructed pre-determined sub-categories related to specific aspects

of the shared subject. Whenever a posting is published, it is placed in one of these sub-categories, which also indicates the relevance of the content. To some extent, the e-mailing list makes it possible to publish topics on a broader level, which allows the Internet researcher to approach the empirical material without any categories of the shared subject.

One of the research questions is "What knowledge and experiences are shared in the OLC?". This question can be answered in different ways. One way is to analytically focus on what the participants talk about, in terms of what topical content is discussed in the online interaction. The reason for categorising the content is to explore the empirical material more in depth since the participants share some knowledge and experiences, and to investigate underlying patterns in online participation. In addition, categorisation of the content helps to arrange the empirical material when selecting excerpts in the subsequent text analyses.

The analysis is carried out as a three-step iterative process as depicted in figure 7.1 (to be presented on the following page). These three steps are carried out on two main levels based on *analyses* and the adopted *theory* since the content has been derived from *data*.

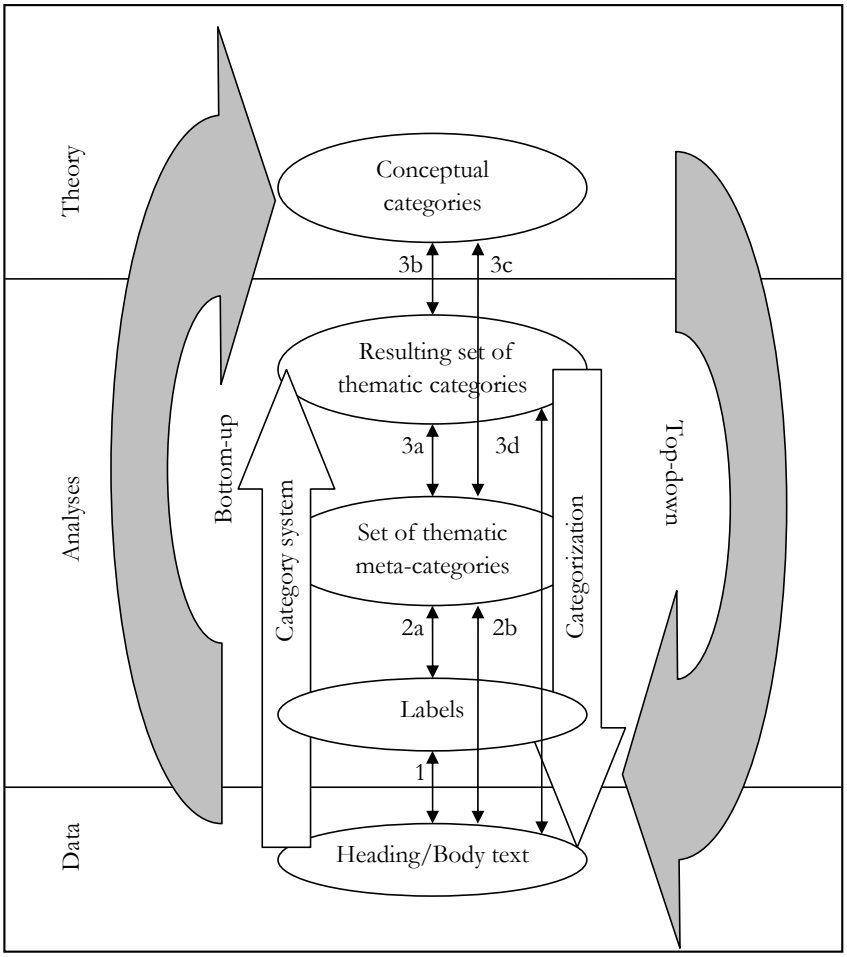


Figure 7.1. The analytical process in construction of thematic categories.

In the first step (1), a set of labels was developed on the basis of iterative readings of the topic headers and the body text of the postings. The topic header and the body text define a categorisation of the content produced by the participants themselves. However, it should be stressed that the labels derived from this step are not the members' own categories; all labels in the *category system* explain the content in my own words. The labelling results in concrete descriptions are then analytically mirrored to the body text in order to validate them. This process generates several labels for every single posting, grasping the essence of the content.

In the second step (2a-b), a set of thematic meta-categories was created which groups all labels with similar content characteristics. Iteratively, these meta-categories were once more compared with the postings to confirm them before I proceeded with the next step of my analytical work. What differs between the construction of labels in the first step and the thematic meta-categories in the second step is that the description of the labels has to be as close to the content as possible, whereas the thematic meta-categories are interpreted on a higher level. At this stage, I observed that some themes reoccurred, for example, the health insurance theme. As the iterative process continued, a resulting set of thematic categories was confirmed by the thematic meta-categories (3a). In order to explore the nuances in the resulting set of thematic categories, empirically driven *categorisation* was used in a top-down approach in which theory was added at the second analytical level (3b-d).

The third step compared the set of descriptive thematic categories to an existing set of categories (3b), developed by Thomas & James (1999). One reason for this was to create labels that could be compared with the results from similar studies. In the comparing process, I looked for differences in thematic categories that could be specific in terms of what my participants talked about. Their conceptual categories were examined in my meta-categories (3c). For example, one of my categories, called *practical work,* described the organisation of individual practice and the organisational aspects of general practice, whereas Thomas and James use the term *organisational* to explain the content of discussion. When I use a thematic category called *Medicine and guidelines*, they use the term *clinical*, and when I use the term *technologies*, they use the term *technical*, etc. During this process, I also discovered some differences in content. For example, they used the term *procedural* for "new working practices", while I use a similar term for organising online activities that include negotiation of rules.

The iterative process continued with a comparison of the current body text with the conceptual schemes (3d) in order to distinguish the final set of thematic categories. The analytical work continued with the arrangement of the themes into sub-categories that more specifically explained the unique content in my thematic categories. The sub-categories produce a detailed description of the content discussed which would otherwise have been restricted to the existing conceptual schemes.

Bowers (1997) found some difficulties when analysing the content of discussions in e-mailing lists which I also experienced. For example, the

subject headings tend to change during the online discussion, which makes the researcher more careful when constructing thematic categories. If the content shifts in themes in one discussion, the subject headings become obsolete and this requires closer readings of all postings sent. Another example is that some participants tended to respond to several topics in one single posting. Not counting the several topics in these postings would have had consequences when measuring the extent of what they talked about. The resulting category system provides a basis for more quantitative analyses and will also present the *content of online discussion* in chapter 12.

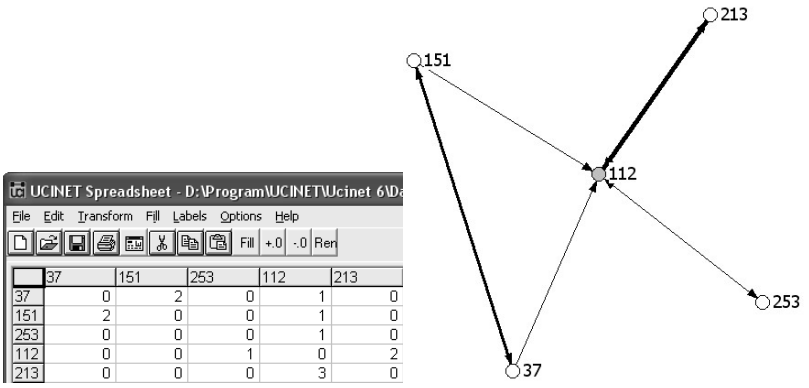
7.4.4 Social network analysis of online participation

In the final and fourth phase of the analysis, a social network analysis (SNA) was carried out to explore the social relations among the participants. An overall introduction of SNA will explain the concepts of social relations and how SNA has been applied to analyse social interactions in the OLC studied.

Social Network Analysis (SNA) is an analytical method for identifying, exploring and visualising social relations and underlying patterns between individuals, groups and organisations (Garton, et al., 1999; Haythornthwaite, 1996; Scott, 1991). One common question for all social network analysts concentrating on social interactions on the Internet is who is exchanging what resources with whom and when, using what kind of media (Haythornthwaite, 1996). SNA is viewed as mathematical sociology rather than a quantitative method (Scott, 1991). Häkkinen, Järvelää and Mäkitalo (2003) claim that SNA does not reveal the quality of the collaborative processes, nor does it explain the experiences shared among the participants. Martinez, Dimitriadis et al. (2006) and Laat, Lally, Lipponen, & Simons (2007) argue for multi-method approaches by mixing qualitative and quantitative analyses of social networks. In the field of CSCL, Laat et al. (2007) stress the account of evolution of social interactions as these develop over time and, therefore, argue for complementary studies of longitudinal material rather than only small-scale studies. In this study, SNA will complement former analyses focusing primarily on which participants share postings in the same threads.

Online participation in an e-mailing list is regarded as *relational data*, as threads are traces of social interactions that not only technically interconnect the postings, but also show patterns of social relations (Wellman, 2001). SNA techniques, such as socio-matrices and sociograms can provide graphical representations of online participation (Koehly & Shivy, 1998). "A sociogram is a representation of all participant connections in a social network" (Laat, et

al., 2007, p. 90). All sociograms are based on relational data stored in matrices. See figure7.2 below:



	37	151	253	112	213
37	0	2	0	1	0
151	2	0	0	1	0
253	0	0	0	1	0
112	0	0	1	0	2
213	0	0	0	3	0

Figure 7.2. Relational data stored in matrix as represented in a sociogram.

The data stored in the matrix to the left generate the sociogram, consisting of nodes and lines, presented to the right in figure 7.2. All the participants in a thread are represented on both axes. In my construction of the sociograms, every node contains the author code as stored in the database, which enhances the analyses of the social interactions. Thus, all participants can be followed as they change positions depending on their social interactions. In the matrix above, numbers associated to each node indicate the number of postings exchanged in response to a previous message. In figure 7.2, initiator 112 receives responses from a group of participants and responds back to some of them.

In this study, I have created matrices on both macro and micro levels. On the macro level, the complete network of participants was stored in a matrix in order to analyse the complete picture of social interactions over seven years. For the arrangement of the whole network, a rectangular matrix consisted of two-mode data in which the participants are placed in rows and unique threads in columns. Absence or presence is represented by *zeroes* and *ones*. On the micro level, single threads concerning one topic only were selected in order to visualise underlying patterns of social interactions. In the squared matrix, consisting of participants on both axes, the arrangement of social interactions performed by participants in a selected threaded discussion can be investigated. All social interactions are added to the matrix as nodes with an associated number representing the extent of postings directed to specific participants. The number represents the exchange of postings that generate

thicker lines between those who interact more often than the others. In the resulting sociogram, participants who interact more frequently are placed close to each other, whereas participants who have minor or no interactions are distant. The social interactions among participants can be visualised in various positions of core and periphery based on the contributions of postings. This supports the examination of changes over time, as participants may interact more or less frequently together in the same threads depending on the specific roles they share, etc.

The conditions for sending postings in e-mailing lists differ from ordinary e-mail conversation since most of the initial postings are undirected, that is, open for anyone to answer. If no one responds to an initial posting, the single node is left without any lines in the sociogram whereas in an ordinary e-mail conversation, the arrow points to the receiver. This has consequences for the visualisation of sociograms, as I needed to read the content in order to verify the direction of the postings. Otherwise the sociograms would only store the numerical order in which the contributions were sent.

There are two positions in sociograms that are relevant for studies of social interactions in e-mailing lists. A *star* is a central participant, placed in the middle of the sociogram, who tends to be the initiator of the topic. In the sociogram above, author 112 initiates the topic of discussion. As the online discussion proceeds, the star in the sociogram is not obvious as the social interactions might shift the star position to another participant. Another essential position is taken by an *isolate* who, in contrast to a star, stands alone without any responses to an (initial) posting. In addition, this position can sometimes also be reached when they only contribute sporadically with a posting outside the threaded structure. Therefore, they do not have any connections to the others even if they contribute to the topic under discussion. Between the position of being a star or an isolate, there is a range of different positions to investigate in social networks. The continual identification of the core and peripheral participants is essential for understanding the constant shift of positions.

In large-scale networks, matrices and sociograms tend to be blurry (even with only lines and the arrows deleted) and immense because of the large number of participants and social interactions between them. This makes the interpretation of the social interactions hard since the core participants become invisible whereas the peripheral participants can be distinguished on the fringe of the sociograms. Advanced computer software can enhance the understanding through dynamic visualisation of the social interactions.

UCINET is a software application for analysis of social networks (Borgatti, Everett, & Freeman, 2002), which I used to store all social interactions and to create sociograms presented in the thesis. A whole network matrix was constructed, which stored all unique participants and indicated what specific discussions threads they had once contributed to. Pajek[11] is social network software that handles large matrices (e.g. over 100 nodes) for explicit whole social networks. These dynamic programmes allow the researcher to temporarily close groups of participants (that are of less interest) in order to enhance relevant social structures for full interpretation of the actual inquiry. The drawing of sociograms was further supported by complementary computer applications. Netdraw was used in the construction of small-scale sociograms that visualise social structures in threads.

Cho, et al. (2007) argue that there is a need for longitudinal studies that can inform about shifts in social networks over time, especially in professional contexts where participants seem to come and go. Working with large-scale and longitudinal material over whole networks forced me to divide the empirical material into periods of time and to compare the numerous sociograms in my analysis of evolution of social interactions. A sociogram of the whole network over longer periods does not represent social relations satisfyingly since not all participants have actually met online due to non-overlapping periods of memberships. In this study, a sociogram of the whole network represents shared participation in threads which produce information about their contributions. By using the social network computer software, I was able to explore the various networks over time, as I sampled shorter periods in order to view participants who interact during the same periods. No computer programmes have been able to satisfyingly visualise these changes in moving scenarios. In this study, the analyses focus on certain groups of participants who share certain attributes and/or roles, how online participation develops over time, the constitution of sub-groups, social interactions in discussions threads, and egocentric analysis of the influence of the moderator.

7.4.5 Validity and reliability

According to Hammersley (1992, p. 67), reliability "refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions". One

[11] The sociograms in Pajek have been generated by an energy command[11] called Kamada-Kawai in the Pajek computer programme. Kamada-Kawai is an algorithm for cohesive blocking based on regular spaces between the nodes, as will be shown.

common way to ensure reliability of the construction of categories is to let several researchers look at the labels for a comparison of results. They then endeavour to ensure that their interpretations capture the same phenomenon and furthermore find accurate labels for those categories that are created. In this work, the categories have been presented and discussed in seminars and during supervision only. This means that no co-coder has been involved in the construction of the categories. Mercer and Wegerif (1998) asserts that a procedure involving co-coders does not automatically guarantee that the categories become more objective as it only tends to guarantee a shared interpretation of the empirical material, that is, not considered as validity of the categories per se. The validity of the categories can only be ensured by adding excerpts illustrating the essential activities that explain some of the characteristics in commentaries. The coding work in this thesis is limited to some extent as the category systems have been created without checking inter-coder reliability. The difficulty with content analyses of online participation seems to be the lack of guidelines on how to perform them in a valid and reliable way (Beers, et al., 2007). Beers et al. (2007, p. 428) claim that "little is known about the actual validity and reliability problems that emerge in practice when developing a new analysis coding scheme". However, this work includes both quantitative and qualitative analyses that include issues of validity and reliability.

7.5 Research ethics in social studies on the Internet

The Internet researcher faces the same ethical considerations as all researchers do, but has to add to this the specific conditions in which the research study is performed (Flicker, 2004). There are several research associations that endeavour to create guidelines for ethical conduct. One of them is the Swedish research council[12]. Ethical guidelines are intended to avoid potential risks for the participants who are involved in a research study and to promote informed consent[13], confidentiality, perceived privacy and vulnerability.

At the time when the study was introduced, I offered the members an opportunity to ask questions about the study and gave them a chance to refuse to participate in the study. If they did not want to participate, they could send

[12] Swedish research council: http://www.vr.se/

[13] Informed consent can be defined as a process of negotiation between the participants (or an organisation) and the researcher when they give their approval to be involved in the research study such as allowing the researcher to collect data or be quoted in research protocols.

their rejection and/or personal questions to my private e-mail at work, outside the e-mailing list. Only one participant declined to take part in the study that of course was accepted and unquestioned. Since I could not check that all of them had read my message, an ethical problem emerged due to the huge group of participants and the online conditions. The study has to conform to the guidelines of the academic Association of Internet Researchers[14], ensuring that research on the Internet is conducted in an ethical and professional manner. I became aware that I could not obtain complete informed consent from all the participants. Due to the longitudinal material, some of them might actually have unsubscribed a long time ago. I therefore adopted the approach used by Eysenbach and Till (2001, p. 1104) who state that one can refer to the collective decision:

> [in] clinical studies non-intrusive research such as retrospective use of existing medical records may be conducted ethically without the express consent of the individual subjects if the material is anonymised at the earliest possible stage, if there is no inconvenience or hazard to the subjects, and if the institutional review board has reviewed and agreed the research protocol.

Besides the approval from the professional association, I relied upon the welcome note published by the moderator on the website explaining that the e-mailing list is not a private conversation:

> [The e-mailing list] is an OPEN forum for discussion, which means that anyone, interested in the subject of general medicine, is allowed to take part. It is therefore not addressed merely to general practitioners, members of the professional organization or associates, but even a few JOURNALISTS AND AS WELL AS REPRESENTATIVES OF THE [MEDICAL] INDUSTRY are participating. PLEASE NOTE!! So far, this fact has not hindered our debate. A few incidents have resulted in the rule that JOURNALISTS DO NOT HAVE TO QUOTE POSTINGS FROM [THE E-MAILING LIST] in newspapers without the approval of the respective contributor.

Furthermore, the large number of subscribers limits the possibilities for outsiders to identify the empirical material quoted in excerpts. Only author codes were used in the analyses and fictive names have been used in excerpts. Since the empirical material is stored in a database, it has to conform to the guidelines of the Swedish Data Inspection Board[15]. The database and SPSS files have been stored in my personal web account on the university file server and are protected by login and safety restrictions; this fully acceptable for

[14] The Association of Internet Researchers: http://aoir.org/

[15] The Swedish Data Inspection Board is a central government agency that seeks to protect people's private lives in the information society: http://www.datainspektionen.se

keeping data away from intruders. No variables intruding on the integrity of the participants, such as social security number or postal addresses were added. In the end, I do not intend to harm anyone's integrity when using empirical material in specific excerpts. Thus, I maintain a focus on the group of participants rather than on the contributions made by specific individuals.

7.6 Practicalities of the study

In the final section of this chapter, some practicalities of the study will be briefly commented on.

The research questions have been answered by a purposeful selection of excerpts. With support of the thematic categories, the extensive material has been able to provide an overview for such selections. Some threads tend to shift in themes during the discussion, or eventually a posting might treat two topics; this has not prevented me from finding excerpts or threads to make the analysis in the study explicit. One or several excerpts have been selected from the same thread. One strategy for providing reliability is to add excerpts that capture the actual situations in order to let the readers grasp the context of the activities on their own in order to follow what happens online (Silverman, 2001). In this thesis, both common and more isolated activities have been presented in order to show what happens online. Fictitious Swedish names have been used in order to maintain confidentiality and to create authenticity in the narratives, rather than using unidentified author codes. I have consistently used the chosen names of the participants throughout the thesis. Gender has been marked by the letters m/f in brackets after the excerpts in order to indicate the male or female names to non-Swedish readers.

In the empirical material, a total of 237 postings (2.8 %) were identified as auto-replies, such as 'out-of-the-office' replies or empty messages sent by mistake. These have been excluded from the analysis. Only a few participants were deleted from the database because they did not contribute intentional postings. Intentional postings refer to the action taken by the participants who post messages on purpose instead of messages generated by the e-mail programme.

Using open source information, Internet Protocol (IP) numbers were extracted from the postings in the web-based archive. The geographical locations of each participant, such as being inside or outside Sweden, could be determined with the help of an IP-location tool. Geographical location contextualises the participants in certain conditions such as whether they are

located in the countryside or in larger cities, or the closeness to universities offering medical programs. IP numbers at work have mainly been used. If messages were sent from a home computer only, they were tracked down by the signature they used in the posting in order to check what area they lived in. Due to the longitudinal material, it was possible that they moved from one place to another. Accordingly, IP addresses were compared in order to find out changes in geographical location. As only one location was used for each participant, the highest number of postings connected to one location was used. However, only a few participants moved during the period of examination, which did not automatically affect the results. For example, they did not automatically have to be placed in another category when they moved from the West of Sweden to another city or town nearby, or when they had already worked close to a university city before. The geographical locations are represented by the name of the city or town. No specific postal addresses have been stored in the database.

All the material analysed in this research was in Swedish. Some adjustments have been made in order to provide grammatically correct English without jeopardising the meaning of the excerpts presented in the thesis. For this translation, my colleagues, who are trained English language teachers, have been consulted together with an authorised English reviewer.

7.7 Summary

This chapter describes the study as an inductive and explorative study concerning online participation in an e-mailing list for professional actors on the subject of general medicine. The study explored the online activities by means of the web-based archive of this mailing list for seven years, and can be characterised as an ethnographic approach carried out by desk-work. The research process explained in this chapter consisted of the selection of an appropriate mailing list, data transfer and construction of a database, manual categorisation and analysis of the data and analysis of the data by means of statistical computer programmes.

8 THE PARTICIPANTS IN THE ONLINE LEARNING COMMUNITY

In the first chapter of results, the examination of the participants forms a background for understanding online participation. The first of two sections deals with the demography of participants in terms of professional qualifications, the variation in age, gender and geographical locations. The second section continues to explore the individual and collective contributions sent to the OLC by looking at different types of participants.

8.1 Numbers of participants

Whether members of the OLC contribute postings or not, they are all defined as subscribers. A *subscriber* signs up for the e-mailing list in order to receive all postings at his/her e-mail address or to gain access to the website via a login procedure. In this study, all contributing subscribers are referred to as *participants*, and these are the ones who will be explored. Some researchers call subscribers who do not contribute *lurkers*, attributing a negative connotation to this behaviour (Herring, 1996; Maricic, 2005). These non-contributing subscribers can be considered presumptive contributors as they may not yet have decided if and to what extent they want to become involved.

In figure 8.1 below, the total number of participants for each year is compared to the total number of subscribers. The figure shows the changes in the number of both subscribers and participants for each year. However, the total number of subscribers may not be reflected in a unique number as derived from the empirical material. In an e-mail conversation with the moderator, he stated that approximately 5 % of the subscribers constantly use two e-mail addresses since they sometimes change e-mail addresses when moving from one workplace to another. Accordingly, a brief explanation of the removal of inactive participants from the mailing list is necessary. If postings sent to a subscriber are consistently returned to the distributors of the technical platform with an error, they are regarded as *bouncing members*. Bouncing members are placed in a separate catalogue by the technical function. When these members' inboxes are full and no more postings can be delivered to that e-mail address, their account is deactivated so that group messages will not be delivered to that account anymore. After 6 months, these e-mail addresses are removed from the list of subscribers. The technical function sends a series of test messages to the deactivated accounts in order to determine the status of

their online activity. If the postings are returned as undeliverable, the account continues to bounce. If the postings are delivered, the account is automatically reactivated. If the subscribers return online, they can also manually reactivate their accounts by logging into their web account. However, it is the number of active subscribers who are presented in the figure.

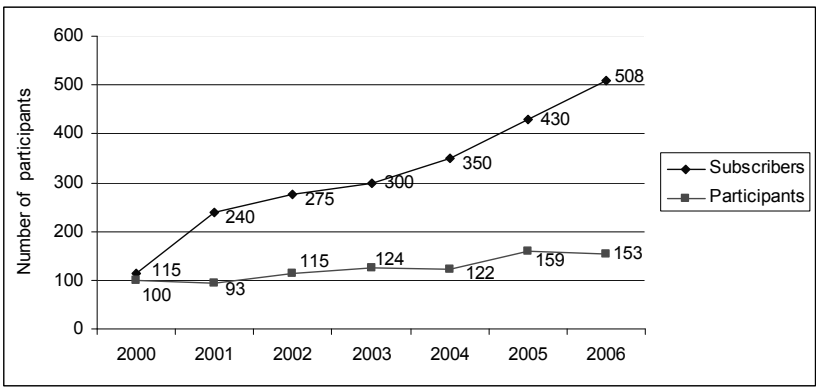


Figure 8.1. The changes in numbers of unique subscribers and participants over the years.

As more and more people subscribe to the OLC, the number of participants for each year does not follow the curve of subscribers. In the beginning, only a few subscribers do not contribute during the first year. Then, the number of participants who contribute drops dramatically during the second year as more professionals subscribe to the OLC. In the figure 8.2 below, the difference is shown as a percentage between the numbers of participants and the number of subscribers viewed for each year.

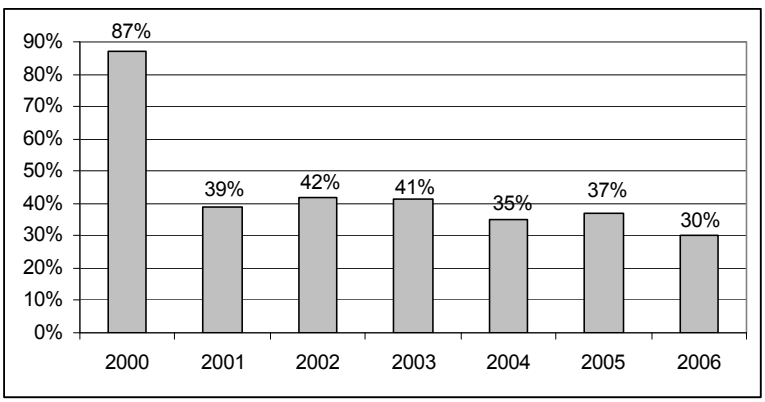


Figure 8.2. The difference between subscribers and participants viewed as a percentage.

After only one year, it shows that they lose over half of all participants, but subsequently, the gap between subscribers and participants tends to be rather stable over the years.

8.1.1 Qualifications of the participants

In a collective agreement, participants use their full names when contributing online. This information makes possible studies about the medical qualifications of the participants. In some cases, the participants actually signed their messages with professional titles or their qualifications, which is helpful for this examination, especially in the case of those who were not GPs. When participants did not sign their postings with their professional title, my search continued over the Internet. I used additional terms connected to *general practice/medicine*, and the name of the *professional association*, as well as information on *geographical location* in order to locate the correct participants as I discovered that there could be several participants with the same name. Especially the examination of medical qualifications required support from a legally responsible person from the National Board of Health and Welfare. This government agency operates under the Ministry of Health and Social Affairs and maintains a register of all registered medical practitioners and certificated specialists. A person at this agency helped me to retrieve a list of medical qualifications based on my own list of participants in the OLC. In cases participants were registered medical practitioners, I received information about the year they were certified and in what specialities. Based on their current qualifications, I could explore their participation in terms of their participation in the OLC. Seven categories relevant for the examination of qualifications were identified:

1) Not yet registered as medical practitioners
2) Registered medical practitioners – no specialist training
3) In specialist training in general medicine
4) Specialists in general medicine
5) Other medical specialists – speciality outside the domain of general medicine
6) Other occupational qualifications
7) Unknown qualifications.

Figure 8.3 shows the distribution of the qualifications among the participants when I placed all participants in one category, i.e. their highest qualification during the period.

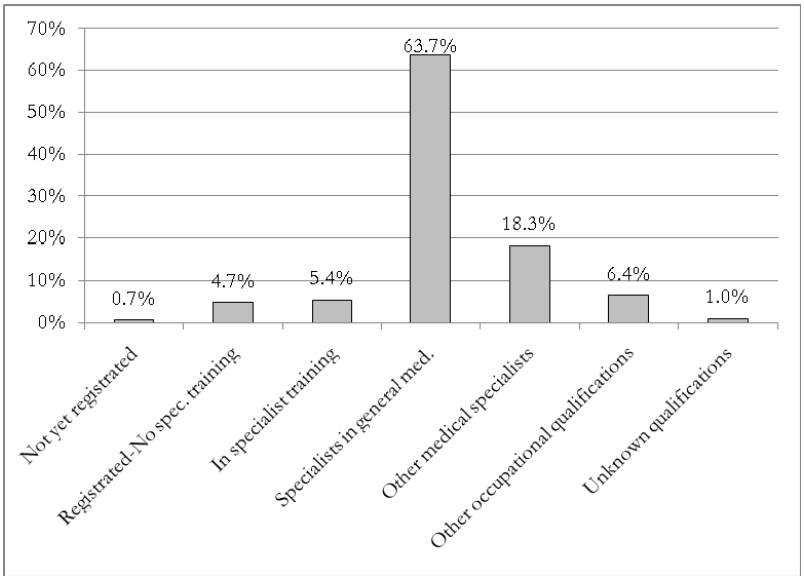


Figure 8.3. Professional qualifications of the participants divided into seven categories as a percentage.

A total of 92 % of the participants were registered medical practitioners and most of the participants were specialised in general medicine or training to become certified in general medicine. Very few unregistered participants contributed in the OLC. Among the group of specialists with qualifications outside the knowledge domain of general medicine, many have competence in general internal medicine. Other disciplines include medical care for children, psychiatry, social medicine, occupational health service, clinical chemistry, geriatrics, radiotherapy (X-ray), obstetrics and gynaecology. In the small group of other occupational qualifications, there are editors, journalists, a health insurance officer, an educationalist in health care, a pharmacist, politicians, and one physiotherapist, to mention just a few. Only 1 % of all participants were not satisfactorily identified in the examination of qualifications. Some of the participants were also former or current members of the steering board of the professional association. There was also a group of participants working at universities such as professors, researchers and lecturers. My Internet searches

also showed that several participants were regarded as prominent actors in the national and international community of general medicine.

8.1.2 Age of the participants

The National Board of Health and Welfare also provided me with a list of birth dates for most of the doctors. For some non-GPs it was possible to retrieve their birth date through an Internet search. Altogether it was possible to retrieve the birth dates of 94 % of all participants. Below, the participants have been divided by decade.

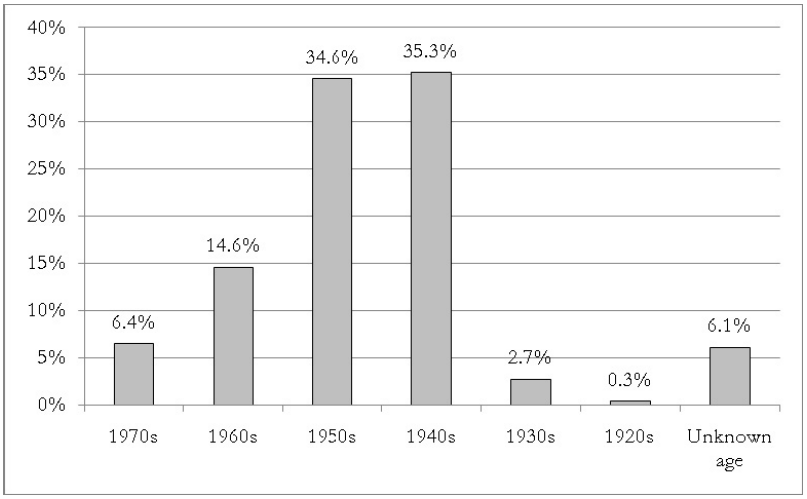


Figure 8.4. Age of the participants.

The figure shows that 70 % of the participants were born in the 1940s and 1950s. Most of the participants for whom no birth date could be retrieved were male and non-GPs. Based on pictures and information I found on the Internet about these participants, they should most likely be added to the 1940s and 1950s categories. Only a few participants were born in the 1970s as they constitute the younger group of participants in the OLC.

8.1.3 Year of registration as medical practitioners

In the list of qualified medical practitioners, I observed that most of them had long careers that started long before the OLC had been introduced. Below, figure 8.5 shows during what decennium the participants qualified as registered medical practitioners. The examination complements the table of ages of the participants and medical qualifications with the table that explain the years of experience in the medicine profession.

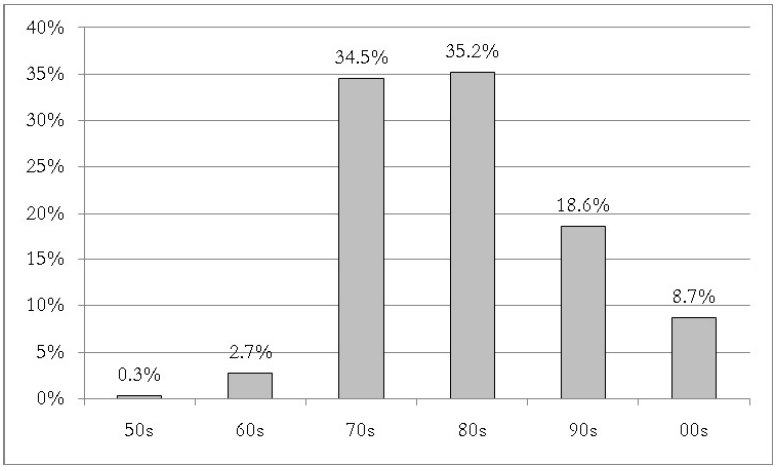


Figure 8.5. Percentages of participants who qualified as medical practitioners each decade.

Most of the participants, almost 70 %, qualified during the 1970s and 1980s. Only a few of the participants became registered medical practitioners during the years studied. This means that all new participants have been working in general practice for several years whereas not many recently registered medical practitioners contribute online.

8.1.4 Gender of the participants and initiators

Of the 295 the participants, 70 % were identified as male and 30 % as female. Since there were approximately 2,300 GPs registered in the professional association in 2006, the number of participants in the OLC is relatively low.

Participants introducing a new topic are called *initiators*. The initiators can be considered the driving force behind the OLC and it is they who provide the material to discuss. The figure 8.6 shows the percentages of male and female as initiators and non-initiators. Further details of the initiators will be explored in the following chapters.

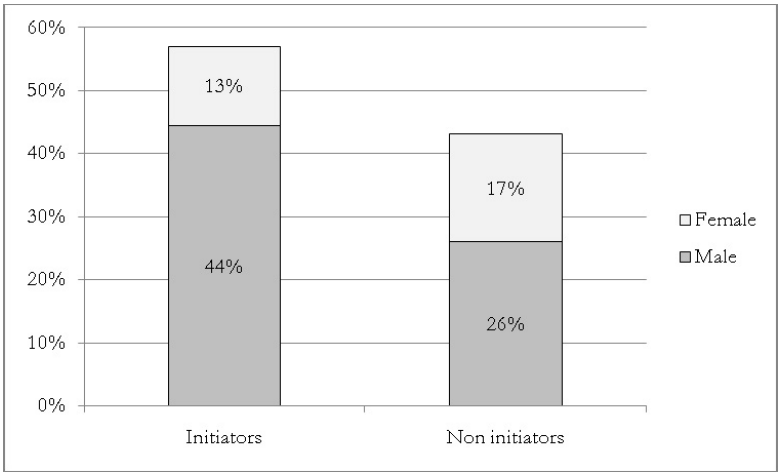


Figure 8.6. Distribution of gender for initiators and non-initiators in the OLC.

The percentages presented above are comparable to the British e-mailing list GP-UK, in which 89 % of the subscribers were male and 11 % were female in 1998. Males also dominated contributions to the OLC. In figure 8.7, the percentage of postings made by males and females in all years is given and also summarised.

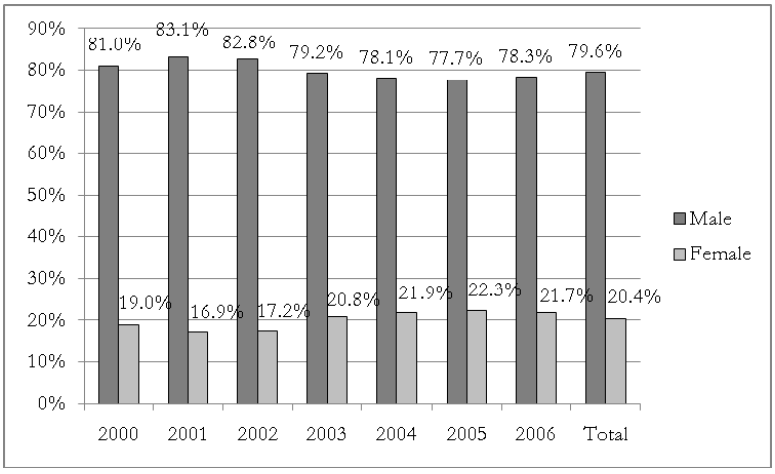


Figure 8.7. Contribution of postings by males and females in 2000-2006.

As figure 8.7 shows, most messages are posted by males, and the difference between the genders is fairly stable through the years, although the percentage

of females gradually rises from 2001 to 2005. These numbers can be contextualised within the medical speciality of general medicine where males also dominate, constituting almost 2/3 of all specialists getting certified (Socialstyrelsen, 2007).

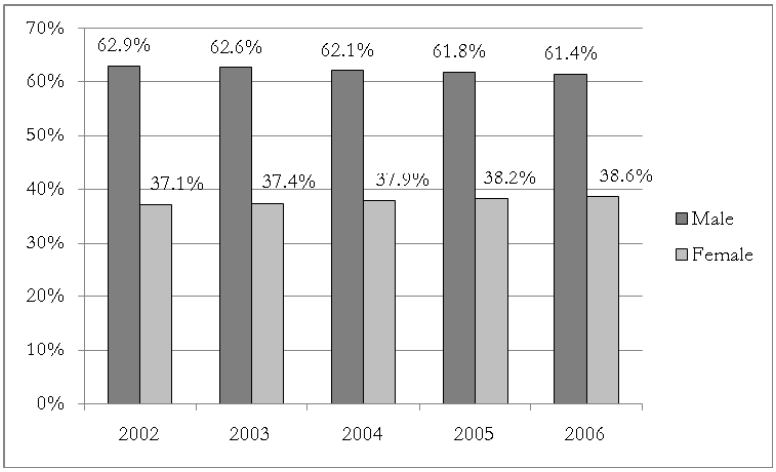


Figure 8.8. Total number of issued specialist certificates to males and females in 2002-2006.

These percentages have been compiled from a statistical report by the Swedish Board of Health and Welfare, which does not contain the figures for 2000 and 2001. Consequently, it is impossible to determine the total number of specialists in general medicine, or the percentages males and females. However, the trend of an increasing percentage of qualified female specialists is comparable with the trend in the OLC.

8.1.5 Geographical distribution

The signatures in postings reveal that the participants are located all over the country; from Jokkmokk in the far north, to Ystad in the south, and also on the eastern islands of Öland and Gotland. Some of the participants were also located outside Sweden. The information on geographical location was revealed by the IP numbers derived from the empirical material. On the map of Sweden below, the geographical distribution of the participants can be viewed in percentages, including the participants outside Sweden. The reason for this geographical examination was to be able to explain clusters of participants based on certain physical contexts rather than just the online conditions. Participants in Sweden were divided in cardinal points based on county councils. In the north, south, west and east parts of Sweden, I localised

the participants and placed them on one of the cardinal points. Only a couple of the participants moved from one area to another during the years studied. The most frequent number of postings sent from one of the IP addresses determined where to place these participants. Below, the percentage of participants for each cardinal point is given, as well as the percentage of participants outside Sweden.

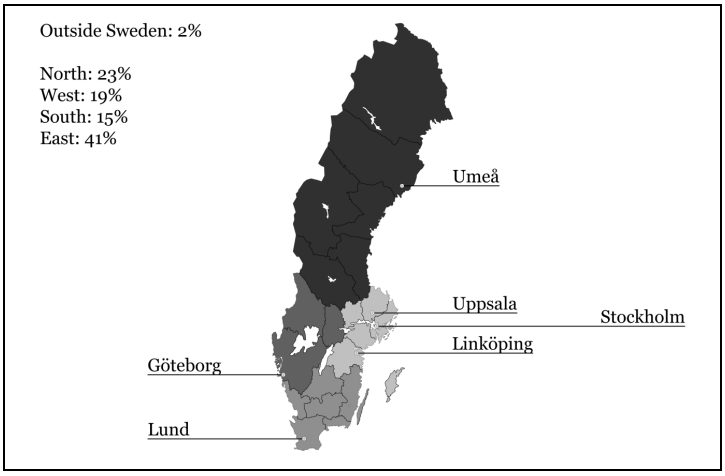


Figure 8.9. Geographical distribution of participants related to map of Sweden.

An explanation for the high percentage of participants from the east is the fact that three cities offering medical programs; both Linköping and Uppsala are geographically close to the capital Stockholm, which is the third university offering medical programs in that region. Otherwise, the participants are fairly evenly spread over the country. However, the south is somewhat underrepresented by participants in the OLC. The number of participants in the OLC can be compared to the overall number of medical practitioners geographically situated in Sweden. In the figure below, the average number of medical practitioners derived for the years 2000-2006 has been distributed over the cardinal points in order to situate the participants above. Unfortunately, the numbers include all medical practitioners and not just GPs. Nevertheless, it explains the distribution of participants related to the cardinal points above.

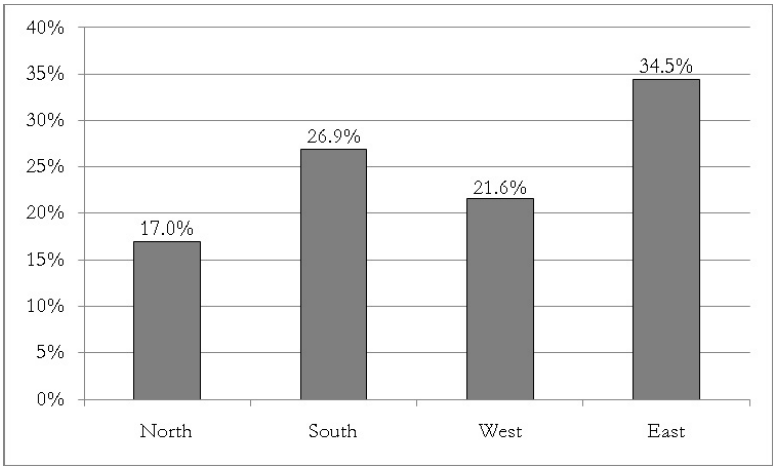


Figure 8.10. Distribution of average number of medical practitioners divided by cardinal point in Sweden.

The average number of medical practitioners derived for the years 2000-2006 has been distributed over the cardinal points. The table shows that the south is underrepresented compared to the participants in the OLC. The percentage of medical practitioners in Sweden is quite similar to the figures presented in the map above.

8.1.6 Distribution of geographical work locations

The participants were categorised according to the size of their location at work. The most frequent number of postings sent from one of the IP addresses guided where to place these participants. All the categories were derived from the Swedish Association of Local Authorities, providing the following definitions:

Metropolises with a population of 200,000 inhabitants or more, including the most common commuting destinations. For example, Stockholm, Gothenburg and Malmö.

Large cities with a population between 50,000-200,000 inhabitants. For example, Umeå, Uppsala, Linköping and Lund.

Other municipalities that do not belong to either of the previous categories, and have a population of more than 25,000 inhabitants

Small municipalities that do not belong to any of the categories above and have a population of less than 25,000 inhabitants.

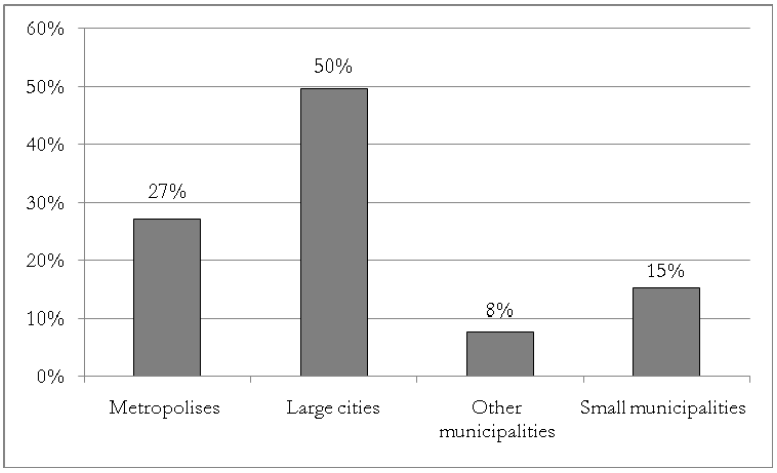


Figure 8.11. Participants divided according to size of population categories.

In figure 8.11, most participants are located in large cities or metropolises. A small percentage of the participants are located in smaller municipalities with a population of less than 50,000 inhabitants.

8.1.7 Distribution of participants by university city

In Sweden, medical training is offered in Gothenburg, Linköping, Lund, Umeå, Uppsala and Stockholm (see the map of Sweden above). In university cities, participants provide medical training that influences the professional networks of colleagues since they can recruit medical students as new colleagues and participants in the OLC.

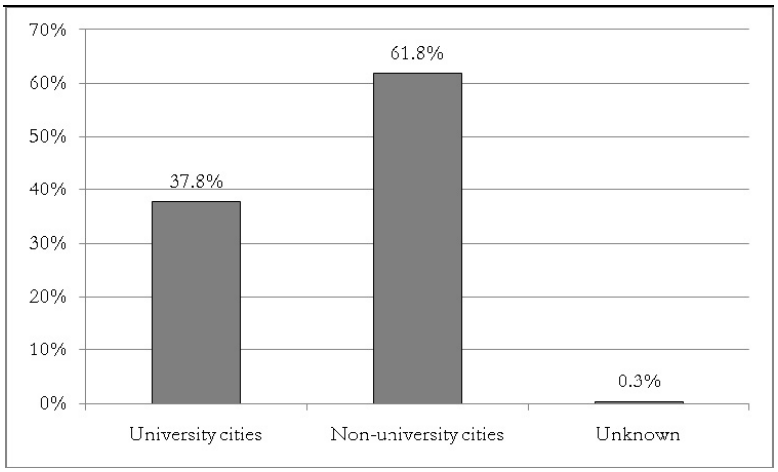


Figure 8.12. Participants located in university cities offering medical training by percentage.

The figure above shows that more than a third of the participants work in regions close to a university city.

8.2 The participants' online participation

In the following section, the participation patterns of the participants are examined in terms of the extent to which they contribute postings on an individual or collective basis. Certain types of participants can be defined due to the number of postings they send through the years.

8.2.1 Distribution of total contributions by the participants

In the figure 8.13, all the participants, except for the moderator, have been lined up based on their number of contributions, showing the participants with a small number of postings going from the left to the right as their contributions increase.

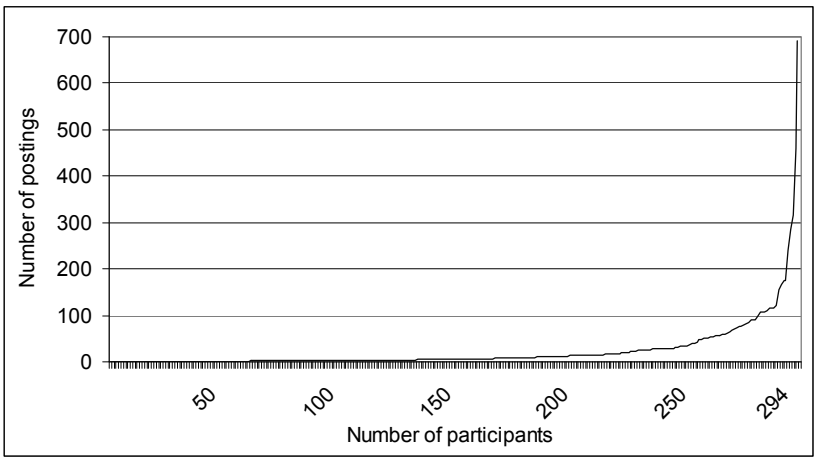


Figure 8.13. The median of postings sent by each participant.

In the figure, the median number of postings is six, and the average is 25 postings. This does not adequately explain the individual contributions since there is a group of participants who contribute more heavily than most of the others. The figure above shows that the first 200 participants can be considered as either single or small contributors. The sharp curve up towards 692 postings starts around 250 participants, which shows that approximately 50 of the participants constitute a group of more frequent contributors. Based on this observation, a categorisation of different types of contributors can be made:

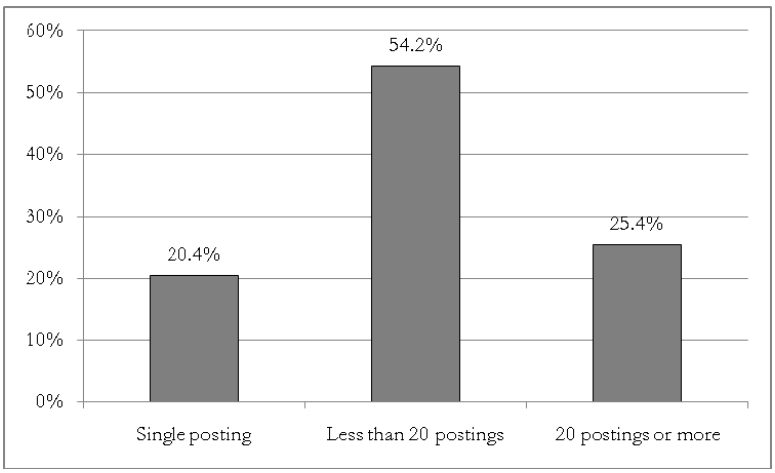


Figure 8.14. Distribution of the total number of postings by the participants.

Only a quarter of the participants posted 20 postings or more during the years studied. Below, figure 8.15 continues to explore the number of contributions made by the participants each year. The idea is to gain an insight into the individual contributions as these might change over the years. The postings sent by individuals have been categorised as follows:

Single contributors: one posting sent that particular year

Regular contributors: less than 20 but more than one posting that particular year

Frequent contributors: 20 or more postings that particular year.

Figure 8.15 below shows the percentage of all three categories over the years since one participant might be categorised differently over the years depending on number of postings.

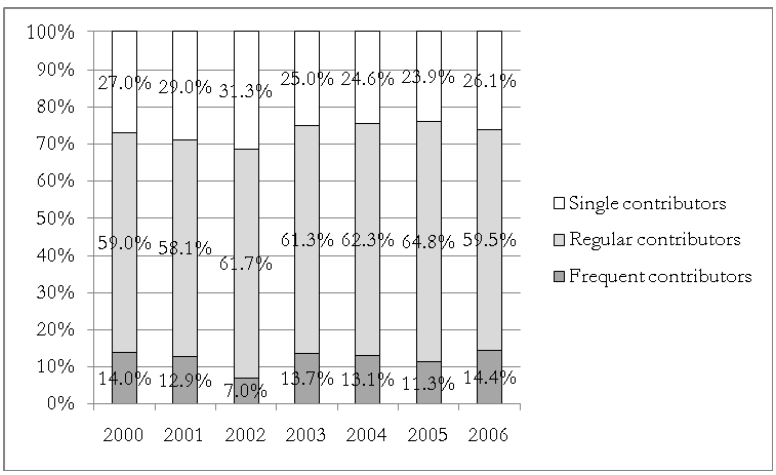


Figure 8.15. Percentage of contributor types for each year.

As already noted earlier, the table shows a critical year in 2002 when the percentage of frequent contributors decreases dramatically to a minimum of 7 %. However, table 8.15 indicates that there is a fairly stable number of contributors in each group. A closer examination of all individuals shows that frequent contributors tend to stay frequent contributors, while those who post sporadically seem to vary between regular and single contributors. In a few isolated cases, frequent participants in one year stopped posting the following year. There were also some participants who stayed in the category of single contributors as they only posted one message several years in a row. There was

also a group of participants who ceased their contributions temporarily, but then continued to post again after a few years.

8.2.2 The distribution of membership years

This section measures membership length by considering the period between the first and the last posting sent by each participant. Single contributors are categorised as having zero membership years as they have not completed a full year. Being a member for one year means that at least two postings are sent in a full year. Unfortunately, the frequency of online participation can only be derived from the postings sent by each participant. This means that the lack of information makes it difficult to scrutinise the individual involvement in detail concerning the intensity of their contributions. A small number of participants stop posting for some years, and later continue again; these intervals have not been taken into account in the examination. Table 8.16 shows the membership lengths of all participants.

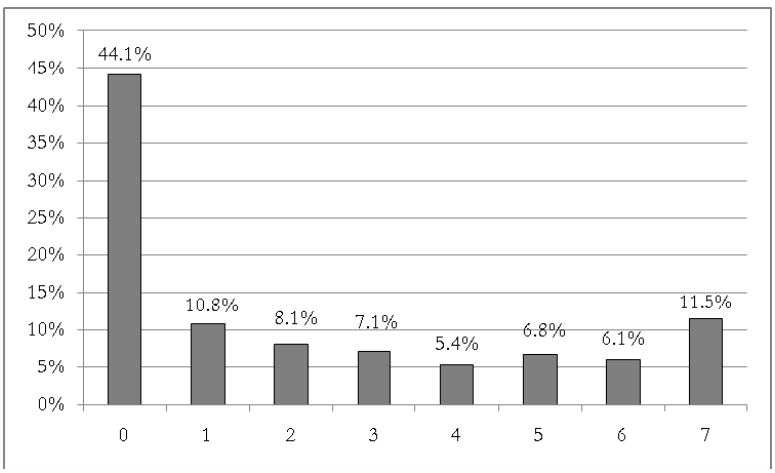


Figure 8.16. Membership length of all participants in years.

If we define long-term participants as participants who have posted for at least three years, between the first and last postings, the table shows that this involves 36.9 % of the participants. However, there is a group of participants who have contributed more frequently from the beginning to the end of the empirical material. In the group of short-term participants with zero membership years, most were identified as single and regular contributors, with just a couple of them categorised as frequent contributors. The group of single contributors will be explored in chapter 12.

8.2.3 The number of long-term participants

The number of long-term participants is an important factor in the sustainability of the online activities. As mentioned above, all the participants who contributed postings three years in a row were categorised as long-term participants. The changes in numbers of long-term participants will be presented in table 8.17 in order to explain how this group of participants evolves through the years. The table starts from 2002 because that was the first year in which long-term participants could become visible, taking the year 2000 as the first year.

Table 8.17. The number of long-term participants summarised for each year.

	3 years	4 years	5 years	6 years	7 years	Total
2002	49					49
2003	13	44				57
2004	12	11	39			62
2005	21	9	10	39		79
2006	14	15	7	7	34	77

The changes in the numbers of long-term participants are visible on the diagonal. Only 15 participants have left the group in year 2006 as they were 49 participants from the very beginning. Even if this group slowly decreases over time, there is also a constant flow of new long-term participants. The number of new long-term participants is higher than the number of participants who cease to contribute. This creates a sustained group of social relations that will be explored in social networks in the following chapter. However, individual reasons among the *drop-outs* cannot be obtained from an analysis of the empirical material. Below, the postings sent by long-term participants are viewed as percentages through the years.

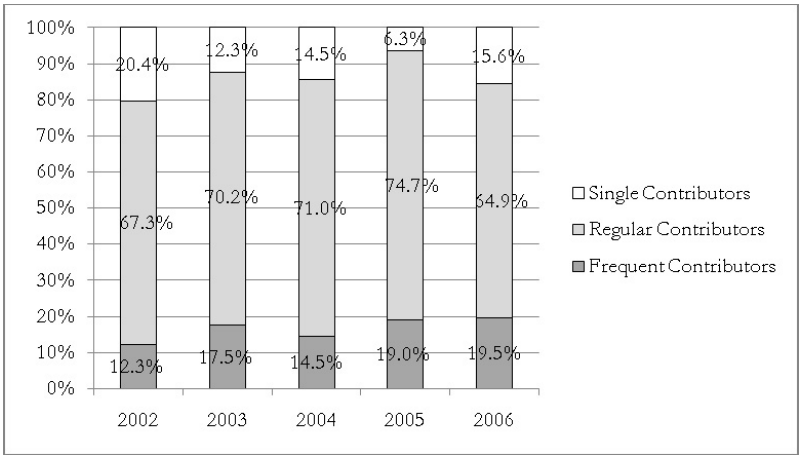


Figure 8.18. Distribution of long-term participants in categories of contributions for each year.

Being a long-term participant does not always mean that one is also a frequent contributor. For example, one long-term participant posted only once a year throughout the period studied and was thus also a single contributor. However, most long-term participants are regular contributors. Long-term participants constitute a stable base of frequent contributors and are an important group to consider when investigating professional networks.

8.3 Summary and comments

The chapter showed that the increasing number of subscribers does not automatically result in a higher number of contributing participants. In all, only a fifth of all subscribers posts messages to the OLC. The remainder of this study will focus on the contributing participants. Even if the postings by non GPs are allowed, these are few in number. A large number of the participants are qualified GPs and more specifically, specialists in general medicine. The majority of the participants in the OLC were born in the 1940s and 1950s, and thus registered medical practitioners since the 1970s and 1980s. Most participants have long experience working as GPs as well as participating in the OLC. A large number of participants are located in metropolises and larger cities close to university cities offering medical training. Males dominate as participants and in contributions made to the OLC. Initial postings were posted by more than half of all participants and especially by males. However, this dominance by males can be related to the

high number of male GPs in Swedish health and medical care. However, the number of females increases slightly both in general practice and in the number of contributions to the OLC. A closer examination of the individual contributions reveals that most participants are regular contributors while there is only a small group of frequent contributors. Although the number of postings sent by these frequent contributors is fairly low, they generate a continual flow of discussions in which the participants each contribute a little. The examination of long-term participants reveals that these participants do not automatically contribute more frequently than the others. The number of long-term participants increases over the years since only a few members from the very beginning of the OLC drop out. In a sense, they emerge as a small but consistent group of contributing participants.

9 THE CONSTRUCTION OF PROFESSIONAL NETWORKS

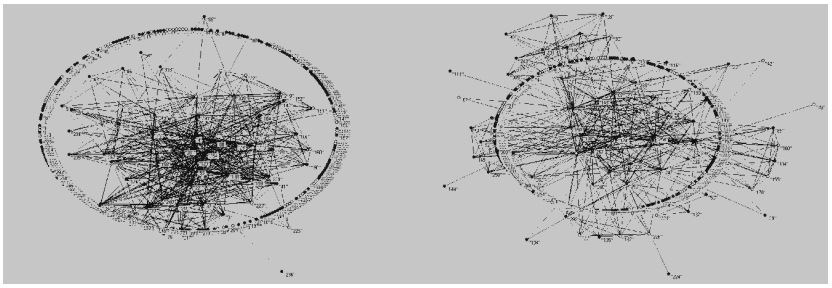
When performing a social network analysis, matrices and sociograms can enhance the understanding of social interactions in the e-mailing list by means of visualisation. This chapter explores the development of professional networks in four main sections. In the first section, series of sociograms represent the changes in the OLC based on the social interactions. Section two presents how participants can be categorised in the professional networks explained in terms of Wenger's notion of core and periphery positions and participation in sub-networks. In the third section, long-term membership is explored by looking at the number of years the core members participate compared with those participants who only post occasionally for one or two years. This examination provides insights into shared attributes of the participants, such as gender, or the role as an initiator, and the ego-network of the moderator. So far, the examinations in the first three sections treat the whole network, that is, on a macro level. The forth section examines social structures on a micro level, looking at the threaded structures with the help of sociograms.

9.1 The origin and development of professional networks

The contributions made by each participant enable me to position them in a sociogram concerning a specific period of time, such as the whole period, for every year, in quarters, or within the time of just one single thread. When comparing different periods, sociograms show how the position of each participant tends to shifts over time, making it possible to examine the progress of social structures. In this section, a series of sociograms will be used to investigate the emergence of professional networks in four quarters of a year. By using this strategy, the distribution of postings allocated in quarters adds both the unique author codes and visualises the social structures of the postings. The idea is to explain the process of institutionalisation visualising how the OLC originates from and develops social structures.

The first sociogram below represents the first quarter of 2000. It shows that the participants are gathered together and take part in all the topics that are initiated. The small number of lines outside the circle indicates that only a few sporadic postings are sent to the OLC. The second quarter sociogram reveals that the participants form sub-networks when they select specific topics to comment on, which indicates individual interests and sporadic contributions.

The participants in the sub-networks are on the periphery of the professional network as they only post in single threads. They can be distinguished from the core group that interacts more frequently.



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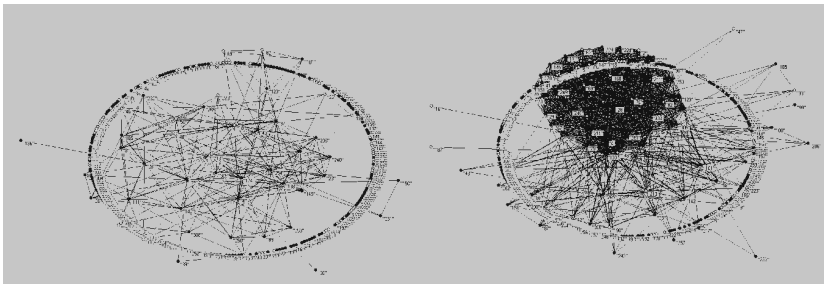

3. 4.

Figure 9.1-9.4. Sociograms for the quarters of the first year (2000

In the third quarter above, the participants become more cohesive in social interactions as they strive to contribute to the topics that are introduced. During the summer, the small group of active participants becomes more cohesive when they contribute to initial postings in order to maintain the OLC. Based on the unique author codes, it is clear that the group of core participants continues to post during this period while the peripheral participants cease to post temporarily. This becomes explicit when the activity increases again in September (the last month in the third quarter). In figure 4, the sociogram for the last quarter of the first year shows a close-knitted group of participants being established as the core. During this period, the group is compact although there are also participants positioned on the periphery.

One strategy for sustaining the online activities is to recruit new members from existing professional networks outside the Internet. The increasing

number of participants is clearly visible in the recurrent introductory posting provided by the moderator. As the number of participants increases through the years, the moderator posts an updated list of all participants, especially when another hundred have subscribed. This in turn tends to trigger the present participants to recruit new colleagues and friends to subscribe to the e-mailing list. They promote the e-mailing list in their general practice as they are aware of the small percentage of GPs in the country who are subscribers. They recruit subscribers by sending existing threads to non-participants who might find them useful, as explained by Ida:

> For my own account, according to some other colleagues, I copy postings in order to inform presumptive subscribers to the e-mailing list, about good ideas when it comes to medical treatments, important discussion about medicine etc. (Ida) (f).

Ida describes her use of the threads in her daily work as a GP:

> One excellent example for my own sake was the lively discussion about the treatment of slipped disc as outbreaks, after my presumptuous question this spring. I have used that [discussion] as basic information when writing a letter of referral to the local pain centre. (Ida).

Ida explains the advantage of being a participant as enabling her to ask the collective questions and to use the outcome of the online discussion in practical situations in her everyday work.

9.2 Identifying categories of positions

The variety of positions based on the number of contributions and the structure of the online discussions between participants means that there is a need to define categories in order to understand this OLC and the professional networks therein.

The series of sociograms makes it possible to see changes in the position of each contributing participant. It clearly shows that participants do not have a static position; they are members of the core during one period, and part of the periphery during the next. Depending on the time periods when constructing these sociograms, several shifts in contributions can be traced. Using the theories of communities of practice (CoP), two main types of position were identified: core participants in the middle of the sociogram and peripheral participants who are spread out on the periphery. However, the analysis of the sociograms revealed some additional positions stretching between the core and periphery. Based on an analysis of the number of postings sent and with whom a participant shares threads, it should be

possible to determine categories of positions to a degree useful for this study. In order to perform this analysis, I used the computer programmes for SNA. Four categories of positions of the participants have been identified in the sociograms:

Isolates discovered on the outer edge of the social networks without any lines connected to the other participants. The contribution by an isolate consists of one initial posting that does not receive any responses from the others. The isolate position can only be changed by the participant herself by continuing to post in other threads, thereby constructing new relations.

Peripheral participants were observed in the same area as isolates, but they were connected by lines drawn to other participants. Their position in the sociogram depends on the number of core participants taking part in the same threads. Peripheral participants do not become core participants just because they receive the attention of core participants. Thus, they have to engage in the online discussion to acquire a more central position.

Core participants were found at the centre of the sociograms due to their frequent participation and shared postings with other core participants in threads.

Hardcore participants could be discerned among the group of core participants. Together they maintain a core position in all the years.

The next section will further examine these last two kinds of core positions in the social network.

9.2.1 The network of core participants

It is possible to construct an individual trajectory for every contributing participant during his or her period of membership. This section describes the trajectories of core participants. In all, 36 participants were identified as core participants for at least one year on the basis of their position in the sociograms. Eight of these participants were women and 28 were men. However, to obtain a clearer picture of their contribution to the network, these core participants were verified against the database of contributions. This verification revealed some interesting patterns when core participants take part online. For example, participant no. 112 posted the same number of postings for two years in a row, but only had a core position in the first year. This was due to the fact that this participant shared postings with other core participants that particular year. This example makes it clear that frequency of

posting alone does not determine whether a participant becomes a core participant. Another example is participant no. 265 who was a core participant only in the first and last year of the empirical material. However, this participant did participate in all years, thus making him one of the long-term participants. This example makes it clear that being a participant for a long time is not the same as being a core participant.

Another finding is that posting in connection with one specific theme or a special topic can exclude participants from the core. Participants who only discuss a single theme can be placed outside the core even if they contribute more frequently than some of the core participants. Single-theme interest goes against the characteristics of being a core participant as well as a general practitioner. The themes that core participants tend to discuss are political, organisational and clinical. These themes correspond to the earlier presentation of some of the most frequent distributions of postings.

A final pattern showed that core participants tend to post in situations where a topic has been initiated by another core participant or if other core members post. However, they do not limit their interactions to the core participants. All 36 core participants, based on their position in the sociograms, were included in the table 9.5 as viewed on next page, visualising the years in which they had a core position.

This table shows that only five of the core participants are hardcore participants. Two of them are women, that is, nos. 148 and 213. They constitute a fifth of the hardcore, which is similar to the overall gender distribution in the OLC presented earlier. Further examination of the postings of these participants revealed that their contributions were sent in discussions involving several core participants. This positioned them more centrally than they actually appeared to be in the online discussions. Like the other core participants, they tend to discuss organisational, clinical and political themes. In contrast to the core participants, these hardcore participants strive to maintain the rules towards the others and manage appropriate online behaviour together by posting about procedures.

Table 9.5. Core participants over the years.

	2000	2001	2002	2003	2004	2005	2006
Moderator (4)	x	x	x	x	x	X	x
5					x	X	x
22			x				
29				x	x		
34				x			
36			x		x		
37	x	x	x	x		X	x
43				x	x	X	
47						X	
64				x			
71							x
74		x		x	x		
75	x	x	x	x	x	X	x
101						X	
112					x		
129	x				x	X	x
138	x	x	x	x	x		
142					x		
148	x	x	x	x	x	X	x
182				x	x		
213	x	x	x	x	x	X	x
215	x						
223				x			
240			x				
250						X	
253	x	x	x			X	x
254	x	x	x	x	x	X	x
259				x	x		
262			x				
265	x						x
266				x	x	X	x
267	x	x	x	x			
281	x	x					
282					x		
291		x			x		
305	x	x					

In the sociogram below, the group of 36 core participants is depicted with the five hardcore participants at the centre. This sociogram shows the relations between all core members. This can be explained more dynamically by using a computer programme that supports zooming in on the participants.

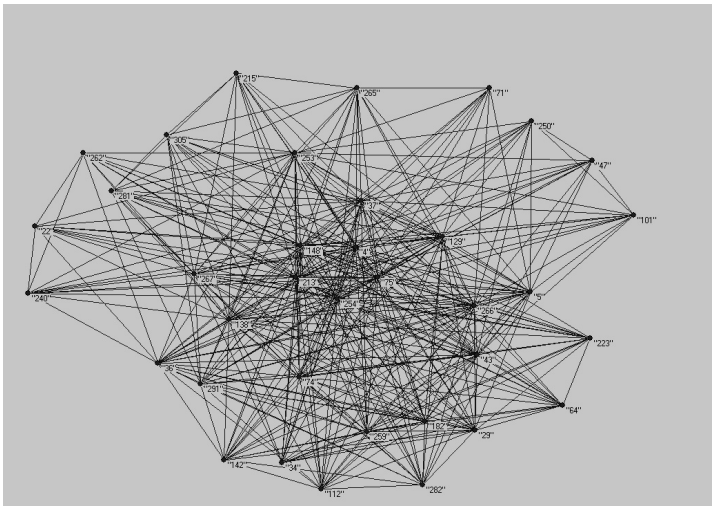

Figure 9.6. Core participants represented in network.

9.2.2 The composition of peripheral sub-networks

Although most attention in this study of the professional network is paid to the core participants, it is important to look at the peripheral participants as well. These participants share minor contributions in threads and their position shifts depending on the extent of their interaction with the core. To explore the peripheral participants in greater detail, sociograms were created for each year and then split into quarters of a year. These sociograms reveal certain threads outside the core which can be used to analyse the engagement of peripheral participants in greater detail. All 28 sub-networks were studied in order to view crucial patterns and to explore whether certain themes were only discussed by the peripheral participants. Below, one of the 28 sociograms is presented since it visualises a common pattern of sub-networks that emerges when peripheral participants post. Peripheral participants are positioned outside the circle. Since the whole network is divided into quarters for every year, those participants who did not post at all during the current period are placed in the circle.

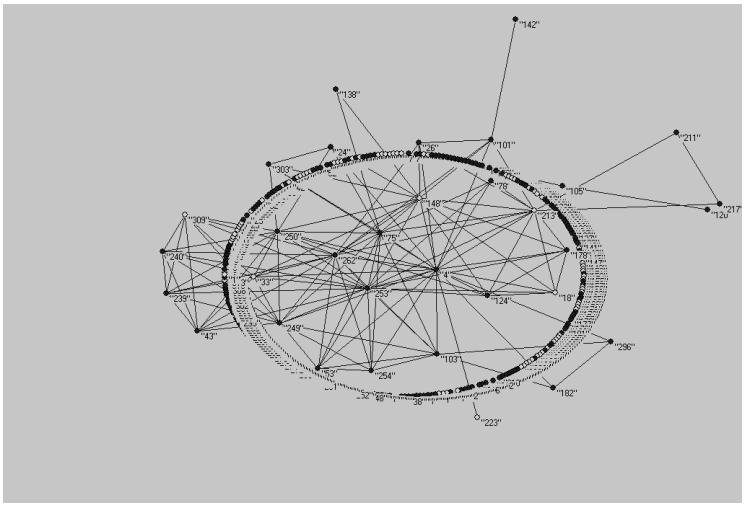

Figure 9.7. Sub-group of peripheral participants in one quarter of a year.

To the left of the sociogram, one peripheral sub-network can be identified between authors 309, 240, 239 and 43. They are positioned as peripheral participants since they only participated in one thread during the quarter. Together, they form a sub-network in a discussion about medical treatment. However, some of them have been involved in other threads during that period as they share lines with participants within the circle of the sociogram. This social structure indicates that even peripheral participants share threads with other participants. Another position in the sociogram is held by author 223 (at the bottom of the sociogram) who comments on a message sent by the moderator concerning a comment on a provocative subject heading about free Botox injections published by the moderator. The other single participant, no. 142, comments on a posting sent by no. 101, who invites members from the e-mailing list to take part in a symposium about a clinical matter. No. 142 does not contribute more than once during the current quarter, but becomes one of the core participants later on as presented in figure 9.6 (core participants represented in network) above. Those participants who only post announcements are automatically positioned on the periphery since these topics do not need to be answered.

In contrast with the themes discussed by the (hard)core participants, the peripheral participants tend to discuss topics concerning patient cases in need of medical treatments, organising events (i.e. conferences and internal meetings) and support for dealing with technical issues.

9.3 Examination of attributes and roles in professional networks

One way of examining social structures is to view the extent to which participants take part in social networks, based on homogeneous attributes and roles such as being long-term participants, having different genders and being an initiator as well as the influence exerted by the moderator. The attributes and roles in professional networks provide information about social structures involving certain participants who share characteristics.

9.3.1 The network of long-term participants

Three years in a row were indexed to identify long-term participants. Earlier in table 8.17, my examination showed the distribution of the length of membership for all participants. In the sociogram, all long-term participants were represented by dark dots whereas short-term participants were represented by light dots. This strategy made it possible to observe patterns for participants who have been participating for a short or long time, viewed in clusters of cores and periphery. All author codes have temporarily been removed in order to view the social structures among the participants more clearly.

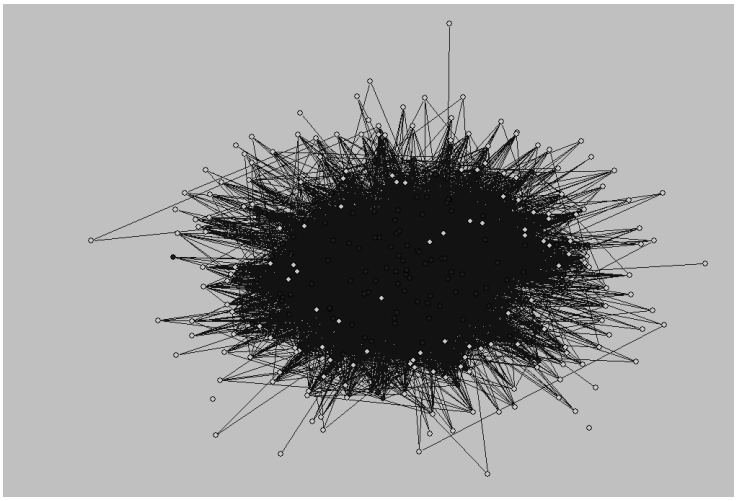

Figure 9.8. Network of long-term participants.

This examination showed that the longer they participated, the more central their position was together. Being long-term participants does not automatically mean that they also are frequent contributors. Some of the long-

term participants are positioned on the periphery because they only contributed sporadically.

9.3.2 Gender in professional network

All previous analyses included both men and women without distinguishing between them. A separate analysis of the social networks of men and women only may possibly reveal new patterns of online participation. A sociogram including only women is shown in figure 9.9 below.

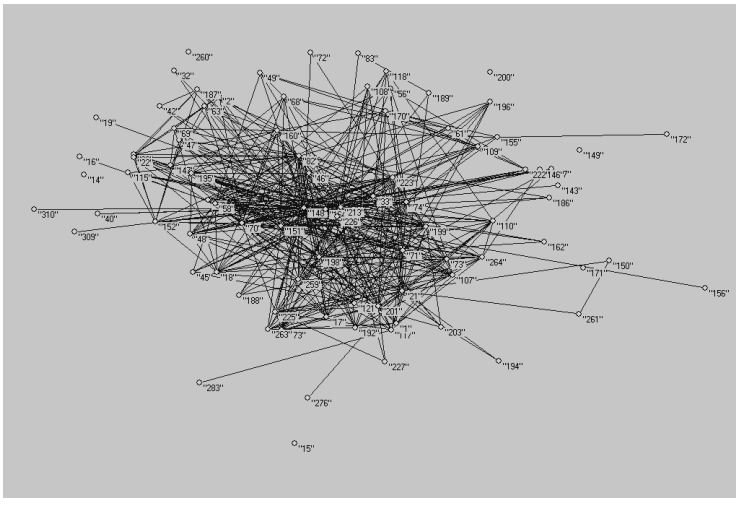

Figure 9.9. Sociogram of network of women only.

No sub-networks were found in this sociogram. The social network of women shows a cohesive social structure. Women are represented in all categories of positions, but more often on the periphery than men. The contributions of postings made by the two female hardcore participants connect most of the other women in the sociogram. The sociogram shows that women on the periphery contribute to discussions when other women do. In the sociogram above, some women are isolates as they have no connections to any other women. Rather, the whole network analysis reveals that these women only contributed to online discussions together with men. Continuing the examination of social structures in networks of gender, the sociogram below shows the network of men.

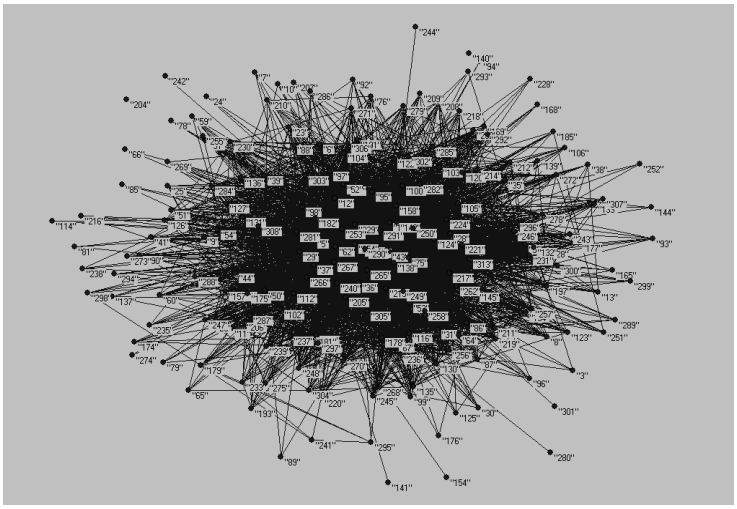

Figure 9.10. Sociogram of network of men only.

In the sociogram of men, social structures similar to those found in the network of women were observed. Men are represented in all categories of positions, as isolates as well as hardcore participants. In contrast to the isolate women, the isolate men did not connect only to women or men. The reason that they became isolates is that their initiating topics were not responded to.

9.3.3 Initiators' contribution

Initiators were observed in all the four positions of the participants. In this analysis, the exchange between initiators will be explored to determine the extent to which they contribute to each others' discussions when they have received responses themselves.

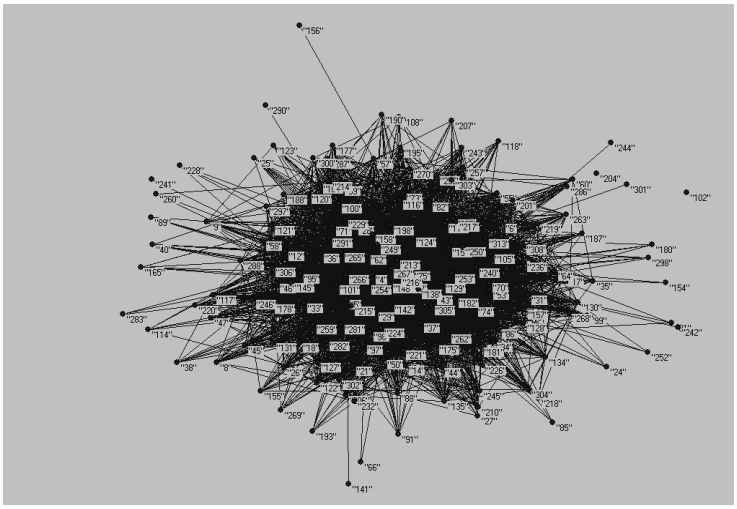

Figure 9.11. The network of initiators.

Initiators take part in each other's threads, not only because they share specific interests, but also because they feel obliged to support one another once they have been helped. The two initiators who do not receive any response in the sociogram above – initiator 102, who can be found on the right side of the sociogram above, and 204, slightly to the left of 102 – have each only initiated one. Initiator 102 sent a message to unsubscribe from the e-mailing list, and initiator 204 published an announcement about medical equipment. The sociogram also indicates that most initiators actually receive a response to the topics they introduce in the OLC. The five hardcore participants, including the moderator, generate a total of 47.4 % of all the initial topics whereas the core participants produce 20.5 % of these. This means that members in a central position are also most often initiators.

9.4 Social structures in threaded discussions

So far, social structures in the professional networks have been analysed on a macro level considering the whole network. To continue the examination, social interactions will be explored in the threaded structure and visualised on a micro level in order to enhance the understanding of positions in single online discussions visualised in sociograms. These sociograms describe various positions based on how they interact and place their answers to the initial posting. Besides the frequency of postings in specific threaded discussions,

these sociograms also reveal important participants and add information to what happens online.

When reading the longer threads, I found that the structures of postings were not always completed in one long tail of answers. Rather, they were constructed out of several smaller threads and sometimes even with single postings beside the threaded structure. Still, all these postings concerned only one topic. However, the participants seemed to be able to deal with this complex structure. They coped with the threaded structure, which indicates that they read the postings about the topic, but sometimes did not answer by placing their postings in the ongoing thread. These observations motivate an investigation of threaded structures with the help of SNA.

Based on my reading of the postings, numbered nodes were stored in an actor-by-actor matrix based on contributions made by some of the participants in the specific thread. After analysing several threaded discussions with sociograms, three patterns could be derived from the analysis. The matrix stored numbered nodes based on the frequency of postings between pairs when sociograms were generated for the selected threads. Unfortunately, no temporality can be analysed since the sociograms only show the social interactions in the frequency and direction of answers. Nevertheless, it was possible to analyse and visualise the patterns of social interactions in greater detail. Various social structures were visualised in three kinds of threaded structures, that is, cohesive structure, star structure and dispersed structure. Threads were selected in order to make the threaded structures for the e-mailing list explicit. A comparison of several threads shows that these structures refer to the conditions of a public forum.

9.4.1 Cohesive threaded structure

The sociogram below explains the interactions between the participants who sequentially respond to previously posted messages. This structure is viewed mainly in short threads and supportive threads as a group of participants adds information based on previous information posted about the topic.

Figure 9.12. Sociogram based on responses to previous postings in a thread.

In this sociogram, no. 215 has initiated a topic derived from the category of question-answers. He only posted the question as he let the others add what

they know about the matter. The first person to answer the initiator is David (no. 151):

> Patrik,
>
> What I remember about the ideas from the project was that… (David).

The focus in analysis is not on the content itself, but rather the technical structure that emerges from social interactions that build further on previous answers. Katrin continues to add information on the issue that complements the vague information provided by David:

> Project information can be downloaded at [URL-link] as it explains the results from the project…./Katrin
>
> --- In E-mailing list@..., "David" David@...
>
> wrote:
> What I remember about the ideas

The contributing participants fill in the information about the project stressed by Patrik as the arrows point in the direction of the previous participant rather than to Patrik. This social structure is seen as a cohesive line of responses that constitutes a thread based on earlier contributions.

9.5 Star formations in threaded structure

The most frequent structure was has the form of a star. As the initiators receive answers from the other participants, they are positioned at the centre of the sociogram. The participants thus interact together with the initiator's responses. Below, one of three examples of a star formation is given:

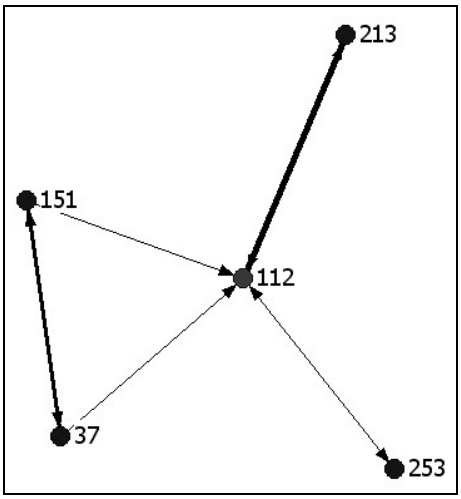

Figure 9.13. Star formation of a sociogram.

The threaded discussion in figure 9.13 was initiated by author, code 112, who stressed a clinical topic. No. 253 sent one message, which was responded to by the initiator, represented by a thin line with arrows at both ends. The lines become thicker as the participants discuss more frequently in comparison to all the interactions in the thread. The other participants respond directly to the initiator, except for nos. 151 and 37 who exchange arguments on the pharmaceutical issue with their peers. Arrows pointing directly to the initiator show that all the participants present their ideas to the initiator. No. 213 asks for more information from 112 which is visible in a thicker line between these two based on a total of seven messages sent back and forth. The initiator answers both no. 253 and 213, but lets the two other participants comment on the topic on the side, but still in the current thread. The star formation visualises who are in charge of the online discussion. In the example above, no. 213 is an important person as the initiator exchanges more information with this participant than with any of the others. One thread can consist of a variety of positions as some contributions in the discussion be more crucial for the initiator than others.

In another example, participant no. 5 initiates a topic consisting of the professional theme that involves a group of fifteen GPs. Together, they discusses the topic that initiated by participant no. 5 and participants no. 148 and 197, together with moderator no. 4.

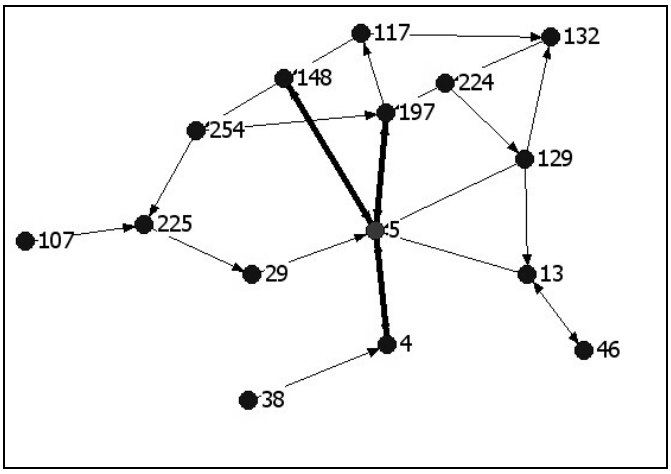

Figure 9.14. Sociogram of a star formation.

In this sociogram, there are participants who discuss the topic without involving the participants in the centre. On the periphery, no. 107 (left side of the sociogram) comments only once to a message sent by no. 225 who also posts once; together they have the position on the periphery.

Since the arrows point towards the participant one is responding to, it is clear that the four participants in the centre do not contribute postings to someone else outside this quartet. The initiator acquires the position of leader of the discussion. However, this is not always an obvious situation since online discussions are dynamic with the star of the social structure varying depending on how responses to whom and to what extent the participants interact.

In the sociogram below, no. 21 has introduced the topic, but it is participant no. 306 who manages the online discussion. No lines connect these two since the topic is about changing the professional title they use to a more accurate on. This will be further explored in following chapter on positioning. Novice no. 21 initiates the debate, and as the discussion evolves, the core participants 306, 148, 254, 29 and the moderator change their attention towards the conversation with the actual star of the thread, that is, no. 306. This shift shows that the initiator is not necessarily the centre of attention.

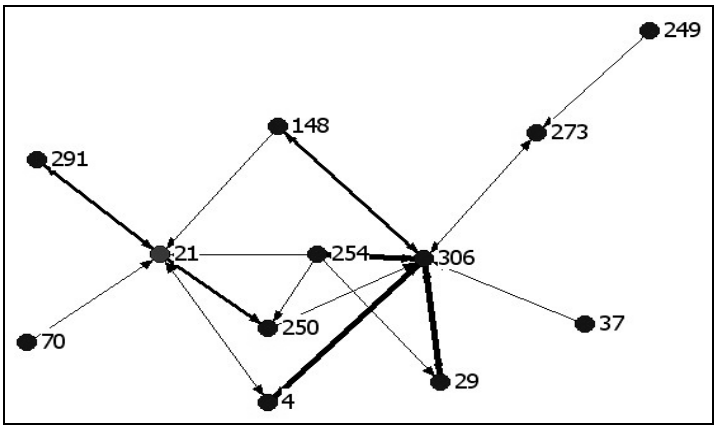

Figure 9.15. Position of participants based on social interaction in a thread.

The path of the discussion between the novice and the hardcore participants is overlapped by the postings by participants 148, 250, 254 and 4 (the moderator) who respond to both of them. Peripheral participants contribute single comments as they not always receive comments in response.

9.5.1 Dispersed threaded structure

As the topic evolves into a longer discussion, the participants tend to place their contributions outside the existing threaded structure when they respond to the active topic. A dispersed structure is created when participants send a posting as the initial one, outside the existing thread, that is, not last in order. This may also happen if they change the name of the existing subject heading originally introduced by the initiator. The subject headings are explored separately in the last results chapter. The dispersed structures that emerge encourages the participants to place their responses in the thread that fits the conversational structure of what is being discussed. As a result, the online discussion emerges in various structures observed in several smaller threads along with single postings addressing the same topic. In the example below, the discussion develops into an exceptionally dispersed but rather short structure. Accordingly, this thread is especially suitable as an example.

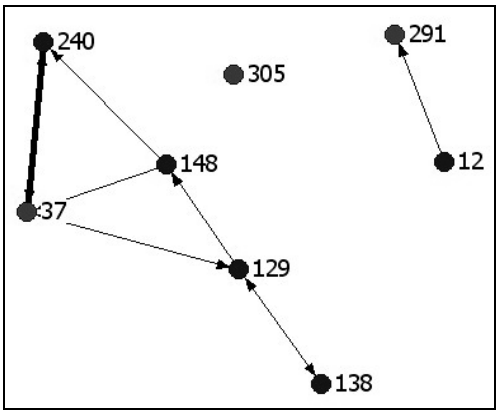

Figure 9.16: Position of participants based on social interaction in a thread.

The dispersed structure shows a group of five participants who are discussing in the threaded structure. Among the participants who interact, nos. 37 and 240 exchange information more than the others. In the online discussion about an upcoming meeting, there are three initial postings, in which number 37 is the primary initiator. Participant no. 305 has sent a posting outside the threaded structure as a comment in the debate. Since nobody responds to this specific message, this participant becomes an isolate. Nevertheless, this single posting contributes to the online discussion. The third initiator is identified as participant no. 291, who posted a message asking a question related to the topic. However, the posting only receives one response from participant no. 12. To sum up, dispersed structures can be visualised as smaller cohesive structures, single postings and short comments to such messages.

9.6 Summary and comments

Sociograms can enhance the understanding of positions and social structures in professional networks that are not always clearly visualised in the threaded structures. Visualisation of online participation can be carried out on both macro and micro levels based on analyses of the whole network as well as single threads. This makes the positions explicit in the professional networks. Using SNA software, this chapter has explored the origin and development of the OLC during the first year. The formation of professional networks consists of periods when participants engage in all the topics, followed by periods when they only participate in selected topics concerning their professional interests. In the social interactions, four main positions were identified for hardcore, core and peripheral participants, and isolates. Few

isolates were found which shows that participants respond to one another when initiating a topic. Some core participants only kept their position for a short period whereas some of them maintained their core position for several years. Hardcore participants post in most threads in all the years studied. Participants in the centre of the professional network contribute to various themes rather than contributing to one special theme only. They are the ones who initiate most of the new topics. Initiators take part in each other's threads. The hardcore participants contribute to procedural themes as they maintain the rules together. The more they post, the more they care about how the participants need to interact collectively. Peripheral participants create sub-networks through their contributions to certain topics. The examination of gender in professional networks showed that women do not discuss topics separately from men, nor do men discuss topics separately from women. One pattern showed that peripheral women tend to contribute to discussions when other women do. The threaded discussions were also studied as sociograms, which revealed some patterns of the conversation itself that complement what is visualised in the threaded structure of posted messages. Three kinds of threaded structures were derived empirically: cohesive line, star formation and dispersed structure. Cohesive line structures showed that participants based their answers on what had been said in the last postings in the online discussion. Most of the online discussion emerges in various star formations. However, the central position of the initiator can shift to other participants depending on how participants interact and to whom the participants respond. A dispersed structure of the sociograms sometimes emerges in longer debates that indicate ways of participating that not strictly follow the idea of threading provided by the e-mailing list. In a sense, the participants take part under online conditions in which they engage in ways that suits their actions. They overcome the problems with these threaded structures by reading and following the debate more intensively.

10 POSITIONING AND POSITIONING WORK

The aim of this chapter is to show how the collective of GPs formulate and position their professional practice in online interaction. They use various ways to mark their positions within the collective. This chapter will provide qualitative analyses of how this is done that complement the quantitative examination of professional networks in the previous chapter. A total of 5 % of all postings published in the OLC focus on professional themes in which the material has been derived in order to analyse the formation of the general practice. These postings contribute narratives about the general practice, bringing up issues such as what it means to be a part of the general practice, both in the international community and the national health and medical system, or what attributes constitute the characteristics of a GP. They deal with strategies for the development of general practice, and challenge the dichotomy of generalists and specialists and the definition of general practice and its content shared in the knowledge domain of general medicine. In the postings, they provide descriptions of how work is performed in interaction with patients, colleagues and others. Below, the exchange of professional cues is scrutinised together with the positioning work performed in presentations and introductions of professional actors, how they defend rank in disputes concerning online participation, how they position a non GP in attempts to confront arguments and, finally, the work on positioning theirs specialist competence.

10.1 The exchange of professional cues

A *professional cue* is a note in postings that reveals some characteristics about a participant as a professional actor. For example, notes about their careers and where they work, what kind of workplace such as a health centre, hospital or other institutions, what special interest they have in general medicine, and how they relate to the professional association that manages the OLC. Thus, it is a matter of positioning oneself, through text, in the broader professional context, geographically, conceptually, professionally and organisationally.

10.1.1 The use of full names and age

What characterises the e-mailing list is that the participants sign their messages using their full name. All participants need to be identified by names, as is declared by the moderator:

> [Magnus] has to sign with his name even though he is well-known by most of us on [the e-mailing list] (Andy) (m).

The use of full names allows the participants to check up on each other's professional status. Full names provide the conditions for participating online as they also implicitly add gender in social interactions.

Some GPs refer to a specific decade of birth, without mention what year, thus positioning themselves as the old or new guard of general medicine. By adding such cues, they position themselves as being experienced GPs. As can be seen in the demography of the participants, being a "junior GP" is not about being unqualified as a doctor or not being an adult. Experience of being a GP determines what position they have in the OLC.

They also identify the participant who sends a message to the OLC by the e-mailing address they use or publish in e-mails. However, some e-mailing addresses also reveal their private e-post addresses.

10.1.2 The use of titles, degrees and organisational affiliation

Postings are often signed with professional titles, and sometimes the health centre they work at, which adds geographical location. This is enough information to start forming an image of the professional status of the participants. Some refer to their current formal competence as being either AT or ST doctors. One some occasions, special interests related to the field of general medicine are mentioned by some of the participants, that is, if they represent a special organisation in health and medical care. The participants reveal their interest in general medicine through the topics they initiate and respond to. Based on the prestige of being skilled in various fields of general medicine they would not contribute in online discussions that would jeopardise their reputation. In the excerpt below, one participant adds his concern for diabetes as being more specialised in this clinical matter.

> I have long followed the debates about diabetes. It [diabetes] raises many concerns about health in society. I participate in several e-mailing lists that enable me to cover the knowledge about that issue (Olof) (m).

Olof explains his interest in diabetes in terms of his engagement in various OLCs. His knowledge needs to be updated constantly in order to act as an expert in clinical matters concerning diabetes.

If a participant merely acts out of individual interest, he or she receives comments from the moderator, since individual engagement needs to be an

advantage for collective knowledge. Accordingly, one-sided interest is less accepted in the OLC. Some aspects of their professional activities are not allowed to be included in the postings. Participants are not allowed to use the e-mailing list in ways that can be understood as marketing their own businesses, promoting books that they have written or courses they want to organise; nor are they allowed to post job advertisements. Their positioning in this OLC is something that requires competence in how to participate. As a participant, you provide information so that others can contextualise your activities, but you must also know how to do this without violating the formal and informal rules of participation. What is added in the positioning work is restricted, as it needs to exclude some professional cues based on collective rules for online participation.

The exchange of professional cues is closely connected to the intertwined conditions for what is performed in the OLC and outside the Internet. Who they are as persons, and primarily as professionals, has an impact on how they participate in the OLC. Formally, participation is the same for all participants, but the offline status of each participant affects online status, although it is the intention to maintain equal rules for all participants in the OLC.

10.2 Introduction of a message

How you begin a message is closely related to positioning in social practices. The introductory text in the collected messages was read looking at how participants introduced themselves, greeted others, or presented their topic. Three ways were identified in the empirical material:

The majority of the participants begin their message with 'Hello!', followed by the body text. Variation of greetings can be found that address all participants in messages, such as "Hi everyone!" or "Hello members of the list".

Some introductions start by addressing the full name of one specific participant, indicating that he or she is the main recipient of the posting or more precisely, the addressee for the topic in the posting. In such greeting situations, they often intend to question or comment a statement, or approach someone who potentially has an answer to a question or has already provided information to the OLC. For example, "Thank you Andy", or just the name of the addressee as in "Lennart!", when they respond in an ongoing topic. Using a name places the focus on one of the participants, making him or her appear to be an individual contributor rather than merely part of the collective. This can be both positive, when one participant has specialist knowledge in an area,

as well as in situations where there are disagreements and conflict. In those cases, participants sometimes add exclamation marks after the name, indicating an authoritative voice, and also often do not include any "hello" greeting at the beginning of the posting. If a specific participant is addressed, the others are not excluded from the debate and can continue to post.

Some postings lack an introduction, and the initiator deals directly with the topic without any greeting. These are typically postings of patient cases as the message is short and to the point as in the following example below:

> One man aged 87…. [description of the patient case]. He leaves the decision to me completely. Viewpoints? Arne Svensson. (m)

The lack of a greeting frames the message as more formal. Lack of a greeting in messages happens occasionally. The content is consistently about the patient case. However, the message generates quick responses from several participants. Together, the other participants create options to consider when making a decision. A minimal greeting in messages posted by the participants can be understood as a strategy for focusing the discussions directly on the subject initiated.

10.3 Requests to present oneself

The moderator, a core participant or even a peripheral participant may ask for a complementary presentation that introduces those members who contribute postings. The stated purpose of these presentations is that if they know more about one another, this will increase the number of postings sent. Although, one participant who introduces herself as a reader, suggests that the others say something about themselves:

> Hello, I think that those of you who post to the [e-mailing list] should present yourselves so that we who read [the messages] are able to know who has sent the postings (Elsa) (f).

Elsa signs her message with her name together with her professional title showing that she is a family physician in [a city in north of Sweden], who has been a member since the start of the OLC. Regarding the frequency of Elsa's participation, she can be defined as a peripheral participant who posted 27 times in seven years. Her suggestion is not commented on by the others, nor do they present themselves as was suggested by Elsa. Similar attempts to provide personal presentations have failed completely, even when introduced by the moderator and a core participant.

10.4 Presentation of a prominent participant

The focus of this section is on when the introduction of a participant is performed by someone other than the person herself. The moderator acts as a host when he introduces prominent participants from authoritative institutions and organisations connected to general practice. This is also used occasionally to inspire existing participants to interact and maintain their membership. In the excerpt below, one such prominent participant is a political appointee:

> At the moment, we have a government representative from the social department who is eavesdropping to the debate… (Andy) (m).

In the excerpt, the moderator uses the prominent newcomer in order to persuade the participants to engage online, suggesting that the reason for his presence is that they all are given the opportunity to debate political topics. The moderator positions the prominent newcomer as a "listener", rather than as a contributing participant. The moderator does not reveal the name of the political appointee, just his affiliation. This illustrates how discussions can be triggered by the explicit introduction of a reader.

> The moderator Andy has informed you all about my appearance, listening to the [e-mailing list], and therefore I would like to introduce myself. My name is [Carl Johansson] and I have been working with…. (Carl, the political appointee) (male).

> He provides his reasons for taking part in the discussions in the e-mailing list. "Since there will be some time, at least at the beginning of the autumn, I have been given the task by, the management of the department, of travelling and in other ways "keeping my ear to the ground" concerning matters that could be important for the [project]. [The e-mailing list] really gives an interesting opportunity, but if someone wants information about the official report and/or wants to present or state something, you can also make personal contact by e-mail or at telephone number (Carl).

He adds his availability for the participants to contact him about relevant issues. The time period for his participation is restricted to the autumn, which explains his use of the e-mailing list to guard interests in general practice, which are of the concern of the department. Carl declares that he uses other media as he says that anyone wanting to ask relevant questions should send them directly to his private e-mail address or get in touch with him over the telephone, which will reduce the opportunity to debate collective questions that interest him in the public arena of the OLC. He did not join any further debates online; nor is it clear whether the participants contacted him or not.

10.5 Positioning of a prominent participant in presentations

Another introductory sequence is when the moderator, Andy, introduces another influential, newly arrived member, called Walter, using the metaphor of an elephant in order to shed light on the dignity of his appearance. In the following excerpts, the prominent participant is positioned as an influential member of the general practice.

> The big elephant dances into the [e-mailing] list. Our [initial letters] alias [professional title] Walter is making his entrance on the stage of [the name of the list]. We welcome [full name] and hope that there will be a constructive debate with many creative ideas about the content and direction of the [professional] institute! (Andy-the moderator)

Walter is the recently appointed director of the professional institute which will develop general practice. No further description of the prominent participant is needed. The position Walter is given in the OLC indicates that all GPs should know about his importance. This sequence emphasises how someone who is a newcomer in online discussions can still be old-timer, known by everyone in the general practice. In his response to the presentation, Walter addresses the need for support in solving various issues in his assignment as the investigator. Because of the attention he receives online, he positions the collective of general medicine, and especially the OLC, in order to neutralise the attention to him as a person. Below, the excerpts show how introduction can be a matter of stating not only name or title but also the reason for someone to participate and how such a presentation is picked up by other participants in further communication.

> I am convinced that every effort in Swedish primary care is necessary if we are to succeed in turning a decade-long period of downward spiral into success for our common cause, good general medicine. I will do my best as an investigator to unite and strengthen our cause. It is important that all point of views and convictions are paid attention in a future institute.

> I am very much interested in any suggestions that could help the investigation about the institute to result in a possible success for Swedish 'family medicine' - please help!! Either through [the e-mailing list] or through mail sent to me.

The knowledge that prominent participants bring to the collective fulfils the purpose of using the collective as a resource when they take in information and adopt ideas in their missions. Lisa asks further questions about his current assignment:

> I think it would be interesting to hear about your plan for the work with the commission. Is it perhaps confidential since You are a single investigator or how do You proceed [at

> work]? Many of us are surely interested in following your work (and certainly many will have points of views) so it would be exciting if You could keep us informed. How do You want us to help? It must feel good to actually be in position to score! (Lisa) (f).

Since the assignment was given specifically to Walter he acquired status in general practice as being the chosen one. Lisa addresses Walter with "You" with a capital letter Y, not once but four times, in order to show respect and to be polite. Lisa says that the challenge is being alone with a huge assignment that involves both responsibility and hard work, and she offers support if Walter needs help. She also understands the difficulty with being the centre of attention, and having people with opinions all around, taking into consideration these concerns and at the same time the urge to be left alone. Lisa ends her message with the same sense of power that Walter might achieve as being the special *One* picked for the mission. This shows how a presentation of a prominent participant can trigger further discussion in the forum. Walter continues to post and initiate topics for several years that not only concern the commission, but also general medicine as a subject of discussion.

10.6 Defending rank in disputes

The position of a participant is not something that is done only through introduction but also in the ongoing discussions. Disputes sometimes occur when professional status and hierarchal order are questioned in discussions. The following excerpts in this section have been selected in order to portray one situation in which the moderator reprimands Walther for not fully completing his arguments in a clinical discussion and for not having "cut the tail[16]" off answers. In a short explanation, Walter referred to his clinical experiences in one topic when he stated that his experience speaks for a connection in the medical matter. The moderator then steps in:

> Hi, First one YELLOW CARD that warns WALTER for not cutting the tail! All of you who are new, and everyone… think about cutting the tail before you send away a posting, [explaining the idea of cutting the tail to all newcomers]… End of the nagging Man of order. So a comment on the posting sent by Walter: in my experience, one should be sceptical of one's own experience as a statement for too far-reaching conclusions. ;-) But as a basis for provable hypotheses it can sometimes work. Andy

[16] "Cutting the tail", means that the participants delete parts of the text in the message when they answer a posting, otherwise the messages tend to expand and become difficult to overview. Cutting the tail is important to make it possible for those how subscribe to a weekly digest to read the messages. Only smaller text sections on which the existing message is based are allowed in answers. This will be further investigated in the chapter 14 on moderating online activities.

To lighten the already tense situation, the moderator takes the position of a referee. Andy uses a yellow card, as in a game of sports (e.g. football), in order to warn the players about being cautioned. The yellow card is intended for Walter, but also to remind any newcomers at the same time. Walter is at the same level as the newcomer since they share the same yellow card in the procedural posting. By this time, Walter is no longer a newcomer in the e-mailing list, and he is reminded that only such mistakes from newcomers are accepted. Andy ends by referring to himself as "the nagging man of order". Andy expresses the obvious thing about online participation: that Walter should have known better than to break two rules at the same time. In addition, Andy also comments on Walter referring to his own experiences, as he draws "too generous conclusions" in a topic discussed without any scientific evidence. Andy adds a smiley, as an emotion of a "winking" eye, which indicates that he probably is aware of this. However, Walter answers the accusations when he refers to his professional status and long experience in order to prevent loss of face in front of the others:

> Dear Andy, You must have missed [participant 1] and [participant 2] asking us about ideas and hypotheses. You should refrain from your elementary-school comments if you as moderator wish to maintain an open, broad and experienced-based debate. Or do you mean that people like me with 30 years of professional experience, doctor of medicine and a long list of publications should remain silent in the [e-mailing] list!! (Walter) (m).

In conflicts *who you are* can be used to argue for how you act in the e-mailing list. In this dispute Walter reminds the moderator of his titles, his distinguished work and his experience. He questions the comment by the moderator when he argues that postings by the moderator are treating him like a child. One way of understanding this is that Walter defends his high status in general practice after his actions have been questioned in the OLC. However, Walter positions himself in relation to other professionals, "people like me", knowing that there are several members in the OLC who have similar professional status. The dispute does not continue after the statement by Walter; instead the discussion is led back to the clinical topics. In the remainder of this section, defending rank in disputes is one way of positioning work by prominent participants when rules have been broken. The rules apply to all participants, which might offend prominent participants if they forgot to maintain negotiated rules or did not provide enough scientific evidence in debates.

10.7 Positioning the non-GP lacking presentation

One online conversation emerges as two topics throughout the discussion. The first topic deals with the national health care system while the other topic turns into a professional theme when one participant disputes the perspective of generalism when they are discussing the national health care system. The online discussion intends to reveal the professional title of the non-GP in order to attack the opposing arguments. In this section, I will follow the issue of the positioning work of the non-GPs. The sequence of framing the non-GP will explain how the collective of GPs handle opposing voices. As already explained earlier in chapter 8, only a few non-GPs contribute in the OLC even though it is a semi-open e-mailing list.

The selected thread is particularly interesting since a non-GP posts a message that questions the organisation of primary care, which goes against the general opinion in the OLC. An initial posting is sent by Anna who comments on a statement in the news by a Swedish politician. The topic deals with a proposal for how the development of a national system of primary care needs to be carried out. Anna argues that the proposal does not include a specific interest of GPs, and that this is typical since politicians do not seem to listen to them. Another participant, Barbro, states a different opinion in this matter and is referred to as a non-GP. The main idea of the new system is that patients want a national health care system that guides them directly to specialists. In short, if your throat hurts, go visit a specialist on throats etc.; the current system requires the patients to visit a GP in order to get a letter of referral, which, if necessary, will result in an appointment with a throat expert. Barbro's provocative argument questions the existing consulting procedure in which the patients consulting a GP rather want to visit a "specialist". The current proposal has consequences for Swedish primary care as it implies a degradation of GPs as a profession. Barbro argues that various competences need to be considered when they discuss the proposal, not only GPs. Barbro is a new participant and this is only her second posting ever to the e-mailing list. In the future discussions, she takes the position of the opposing voice, questioning the statement by Anna. Barbro points to the fact that the health care system consists of more professional groups than just GPs.

> Besides that, [Swedish] primary care consists of various other [professional] categories as well as GPs, there are about 23,000 of in this country and if you consider the others; nurses, paramedics and others, you are in a minority and we others do not want a family doctor care system (Barbro) (f).

At this moment, they do not know what professional title Barbro has. She mentions a number of other professions in her message, but it does not automatically place her in that profession. Rather, she positions herself as a "non-GP", the representative of all the other professions. At the beginning of the discussion, the participants take neutral position in debate. From now on, they try to discover what professional title she has in order to contextualise her arguments. Daniel assumes that Barbro is a nurse, maybe because she refers to the professional group of nurses in her message above.

> I, as a member of the profession, am talking about the general practitioner and concerned patient, not about how the patient should reach their nurse, occupational therapist or chiropody. All of you [non-GPs] who talk about patients not going to the doctor, but instead to……? (Daniel) (m).

Daniel, who represents the collective of GPs, leaves an opening that could be understood as inviting Barbro to fill in her professional status. A dualistic position between GPs and the group of nurses is presented by Daniel, which will have consequences in the further discussion. In spite of the dichotomy in discussing the content of the national health care system, several participants on the e-mailing list welcome her ideas. Felix says:

> I think it is very good that you as a non-GP are balancing this debate [on the national health care system] (Felix) (m).

Not everyone in the collective of GPs thinks her idea is well-reasoned. Ideas conflicting with the collective ideas of GPs tend to inspire subscribers to post. Her "hostile" ideas about general practice are commented on by Ingvar who has never ever posted a message before:

> Hello. My first posting to the [e-mailing list]. I have been eavesdropping for a while… I would like to welcome Barbro to the debate. But why are you so hostile towards GPs? Where do you see that we will fit in?" (Ingvar) (m).

> I can not understand why the nursing profession has abandoned the perspective of generalists?" …/ "Do you mean that nurses should be the ones who sort out, and carry out the initial consulting? What would be better in that case? (Ingvar).

The current organisational structure, as mentioned in the excerpts above, positions the GPs ahead of all other specialists, which makes rethinking problematic. The questions raised by Ingvar place the group of nurses in a central position. He also asks Barbro why she, as a nurse, would abandon their shared generalist perspective that is based on an underlying agreement between the GPs and the nurses. He makes a martyr of himself by giving away one of their work tasks to the nurses by asking what would be better if nurses

carried out the initial consultation. The ideas in statements by Barbro are interpreted as odd even for 'nurses'. However, the participants still do not know if Barbro is a nurse or not, and they do not ask her directly. Once she reveals her professional title she loses her advantage in the debate as the GPs will know how to position her and they will then more specifically confront her ideas not only as a single participant, but as profession against profession. In the debate, Barbro continue to state her ideas about the proposal:

> On the contrary! I want a doctor, that is, an ear specialist, orthopaedist, gynaecologist, etc. In order to avoid the vicious circle, one should organise a procedure that makes it easier for the patient to reach the doctor. Not as it is [organised] at the moment, when they need to call the health centre, visit the health centre, letter of referral for an X-ray, eventually a letter of referral to another specialist, meet the specialist and not until then get an answer (Barbro) (f).

She questions procedures in primary care and portrays the GPs as only a logistic authority delaying the actual care provided by other specialists. As the only woman in discussion, she is the one that holds the power in the current debate, which is difficult to marginalise. In the end, Barbro gives her professional status by mentioning herself in the third person singular:

> No, Barbro is a physiotherapist. Yours very sincerely, Barbro".

During the online discussion about the national health system, she has created a mysterious person, the non-GP who goes against the GPs. After Barbro reveals her professional title, they continue the debate on the national health system and involved the perspective of being a physiotherapist in contemporary primary care. In a sense, the non-GP becomes the interlocutor, and less of an enemy, as she later became one of the core members. The participants will surely both remember her name, occupation as a physiotherapist and her opposite point of view on the issue on how national health care system needs to be organised. In the remainder of this thread, the positioning work functions in terms of using professional cues in order to confront each other's statements.

10.8 Positioning of specialist competence in general medicine

In this section, the participants attempt to position their specialist competence in general medicine. The negotiation of boundaries is analysed in order to understand how they carry out the work of positioning themselves as GPs in the medical profession, and in relation to the citizens they serve. Such positioning work is repeatedly performed, but on irregular occasions, as these

are only initiated on a small number of occasions during the years studied. However, it always ends in intensive discussions by a larger number of participants in the OLC than is usual in other topics. These online discussions can easily be observed already from the very beginning, mainly because of the explicit subject headings such as "Change the title?" or "Listen to the profession!!" etcetera. Together, they endeavour to clarify what knowledge they possess as specialists in general practice and what professional titles best characterise their work. Positioning work also involves efforts to place the general practice in the medical profession as a whole and to discuss the dilemma of having dispersed terminology based on various professional titles to choose from, and finally, the confusion of being specialists in general practice. All matters mentioned above are closely related. The e-mailing list offers a professional arena for the exchange of ideas about and perspectives on these matters.

The selected excerpts have been chosen from one thread taken from the thematic category of professional. Four participants in a group of fifteen are active in the discussion. They discuss what professional title suits them best as there are several to choose from. The title of *general practitioner* is diffuse in its definition as the term does not satisfyingly define what they know and what knowledge they possess of their medical speciality. The term *general* tends to refer to GPs who "know a little about everything". This concern point out the main dilemma facing almost all GPs, both nationally as internationally, as regards shared terminology. The participants endeavour to endorse their status in the medical profession and in Western society. In English speaking countries, general practitioner[17] is commonly used when talking about specialists in general medicine. Some use *family physicians* as the synonymous term in order to solve their dilemma. The initial message in the selected thread was posted by Michael. He asks if they should not change the existing term since it is a struggle to define the meaning of the discipline of general medicine.

> We have always had the problem, especially those outside the inner circle, of keeping apart the terms such as institutional care/non-institutional care, hospital care/primary care/, district care/health care, generalists/specialists, family medicine/general internal medicine, etc. Maybe we can be explicit and powerful in our argumentation, if we GPs called ourselves specialists and consequently call organ and infirmity specialists sub-specialists? (Michael) (m).

[17] In this thesis, the professional title of general practitioner has been chosen and translated into Swedish in order to keep the unison concern for the dilemma involving the term.

The initial posting appeals to the readers of the e-mailing list by using *we* (personal pronoun), referring to them as GPs. In his opening proposal, Michael invites the others to join the debate. He describes the concern for general practice and the advantages of having a uniform terminology, and being able to position themselves in relation to others. There are especially two dichotomous pairs of terms that become explicit. First, the synonymous term in *family medicine* as it refers to *general medicine*. Second, the term that specifies the competence they possess as being *generalist* or *specialist*. The suggestion is intended to raise their status as general practitioners. This requires a new way of positioning the specialists outside general practice. The borders of general practice only exist in relation to others, rather than as some self-contained group, independent of the surrounding setting. This also becomes obvious when Michael argues for the crucial need to recruit new adepts to general practice. He argues that:

> the huge imbalance in Swedish health care comes from having too many doctors who are sub-specialised.

The participants discuss how a clear definition of general practice is important in order to recruit new medical practitioners to their field. The borders are not fixed in terms of 'we' and 'them'. The first participant to answer the initial posting is the moderator Andy. He positions general practice in relation to existing health and medical care practices by using the metaphor of a tree:

> General medicine is the trunk of the tree in medicine, the TRUNK SPECIALTY. Then, comes the branches called DISCIPLINE 1, DISCIPLINE 2, DISCIPLINE 3, DISCIPLINE 4, DISCIPLINE 5 etc. = BRANCH SPECIALISTS. On the branches there are twigs, the sub-specialist such as SUB 1, SUB 2, SUB 3, etc. (Andy).

Using the tree structure is one way of trying to understand general practice in a structure of professions in which a hierarchy of disciplines is positioned. It defines GPs in relation to the other specialities and provides a somewhat more comprehensive view. Andy creates a prominent place for general practice as the entrance and main foundation of health care, but also in the organisation of health care work. The GPs meet the patient in the first consultation with the patient, that is, before the patient sees a sub-specialist.

> In a European perspective, people, sometimes in a humoristic manner, talk about General Practitioners (we general/family physicians) and Limited Practitioners (other specialists) (Cecilia) (f).

Besides treating the issue with humour as Cecilia does, Daniel remembers the debate from before, as most of the participants have worked in general practice for long time:

> General practitioner – family physician – district [regional] physician. The term created agony a couple of year ago and we hardly agreed then. The fact that we are specialists is not disputed, but we do not "brag" about it. We should make it explicit (when it's true) as it appears on doorplates, business cards, etc. As it is now, we often use 'District physician' – and that plate is used whether we are specialists or not (Daniel).

The whole discussion shows that who you are, professionally, is not only dependent on what you do, or know, but also on how you present yourself to others. The presentation of the practice is not only used by others, but also by the GPs themselves in order to define general practice. Daniel states that the concern is due to not being straightforward when they talk about what they do as GPs. He asserts that most people know about their professional status, and that it is a matter of marketing the specialist knowledge. Fredrik shares his experience in his response to Daniel's idea of marketing themselves:

> As a specialist [in family medicine], I am aware that few in my circle of acquaintances (metropolitan area) know what a specialist in general medicine is about. In the public medical area, the term will do, but in order to market ourselves towards the large masses requires a uniform and easy name. Several [of my acquaintances] have asked whether I will be a GP? Of course, we can never hope for a political change in the question /.../ when the large masses do not know what we do! (Fredrik).

> I think that it is general medicine that confuses people. Remarkably many thinks I am doing my period of practice after medical school. Specialist in *family medicine* [my italics] is a good alternative I guess. Actually, I think we can choose whatever we want, just as long as we have a uniform nomenclature all over the country (Fredrik).

Fredrik says that the matter about being a generalist is based on the general public's ignorance of their speciality. The term general makes the population unaware of the qualifications they have. The various professional titles do not fully define their competence as specialists in general medicine. Some of the GPs are researchers, managers in primary care, etc., which make it problematic to use a single title. Ida also remembers the debate from before:

> I think I had a letter sent to the Newspaper of General Medicine many years ago (in a polemic with X.X? when the debate about titles was a burning issue too). I am a specialist in general medicine (although it was not suitable then, actually I have [what is called] a competence in general medicine). I am therefore a general practitioner. I am employed as a district physician. But I call myself a "public health physician", because that is what I am working as (Ida).

Ida explains that she has colleagues who work with various tasks connected to the field of general medicine. She is sceptical about using the term family medicine which does not have anything to do with their speciality. However, Klara expresses her confusion at being a general practitioner:

> There is something about being a "general" practitioner that is a little imprecise. I have never felt comfortable using that term. How does it sound to be general? What does general means?... (Klara) (f).

Ivan is quick to respond, using the dictionary to define the term general.

> All-embracing, universal and common sounds rather nice, but ordinary, unspecified and vague do not sound too good (Ivan).

Klara states that if they choose another term, it will generate respect from outsiders as it will promote a profession that is something more than general. The term consists of various nuances in meaning, which mirrors the mixed emotions in the group of participants in the OLC. Ivan refers to the dilemma as an "identity crisis of discipline". He explains that the diffuse terminology raises a pedagogical problem for the patients they serve, the general public itself and even colleagues from other medical specialities and the medical professional as a whole. The dilemma does intrude on his professional pride and self-esteem as he is viewed as less skilled than any other specialists. In the case of general practice, it might solve the difficulties in recruiting new colleagues to the profession, he concludes. The threat from outside is based on a decreasing number of certified specialists in general medicine. A comment by Klara turns the discussion in another direction, which is similar to how previous topics in the matter have ended:

> I think that the more we adhere to the "old" terms, the less confusion for all – the more we change the more confusion there is (Klara).

She explains her satisfaction at being a GP as it will only create confusion if they change the term. The idea of keeping the existing terminology causes new voices to add their opinion on the matter. Gunnar adds that the discipline of general medicine has been a well-accepted discipline for more than 25 years [at the time of study], respected inside as well as outside the health and medical care practices, but foremost established in the academia. Michael repeats his claims in a response:

> Maybe that is the problem, that we are satisfied as it is, even our patients, stakeholders, decision makers, taxpayers and others are sometimes dissatisfied and do not understand our nomenclature and therefore find it difficult to understand the point of having their personal GP, whatever they may call us? (Michael).

The discussion ends abruptly with some unanswered questions that are characteristic of previous similar topics on this matter. The excerpts presented in this chapter reveal the importance of topics derived from the professional theme that cannot satisfyingly be measured in terms of their frequency in debates. Topics concerning the professional practice are important for understanding the formation of professional identities constructed in the OLC of GPs.

10.9 Summary and comments

The positioning work by the participants is based on the general practice constructed by mostly GPs in the OLC. The positioning work is a way of socialising as professional actors online. The use of professional cues and the minor situations in which they get to know one another outside the professional contexts indicate the strict focus on the subject of general medicine. The positioning work becomes intensive and is carried out on both an individual and collective basis. The presentation of prominent participants makes the distributed knowledge they share in the collective of participants explicit. These presentations serve the purpose of getting participants to discuss certain issues connected with these persons' assignments. All the participants need to follow the rules regardless of what professional status or degree of prominence they might have. Incidents involving breaking the rules are used by the moderator to maintain the rules in the OLC. General practitioners repeatedly position their specialist competence in general medicine in the OLC, but also with the intention of drawing boundaries between general practice and the contemporary medical profession. This is the work carried out in terms of belonging to the medicine profession. The importance of professional cues, that qualifications are revealed once they disagree, underlines their ability to confront one another in debates. Participation by non-GPs is rare, but when they do become involved, they are not automatically marginalised in the online discussions. The negotiations on the boundaries of the general practice and what is known and defined in specialist competence places the focus on how they are viewed by non-GPs, that is, the patients, citizens and stakeholders, politicians and even practitioners from contiguous medical practices. The inconsistent terminology employed for what they call themselves as professional actors, or the unsolved dilemma of being a generalist as a specialist competence, is not a failure in itself since this kind of talk constructs important ways of belonging to the medical profession.

11 ONLINE PARTICIPATION OVER TIME

In this chapter, online participation will be captured through an analysis of the complete list of postings sent to the OLC. The chapter explores time aspects in two sections. The first section deals with the distribution of the total number of postings over time and the length of threaded discussions, identifying both intensive and critical periods. The second section deals with online participation explored in time conditions related to when, and how long, participants take part in the OLC. This chapter provides an explanation that is valuable for understanding the sustainability of online activities.

11.1 Distribution of postings over time

The first examination scrutinises the comprehensive empirical material in a description that explains the extent to which postings have been sent. Table 11.1 below shows the number and percentage of postings per month during the period 2000-2006, clearly showing periods of more intense activity as well as periods when activity is low.

The participants sent a total of 8,310 postings during the period of seven years. The number of postings is highest in 2005 and lowest in 2002. Below, figure 11.2 visualises high and low activity over the years.

Postings were sent more intensively during late autumn and winter. Not surprisingly, the number of postings decreased during holidays, especially summer vacations[18], Christmas and the New Year. The drop in activity during the Easter holidays is less notable. One has to bear in mind that some GPs might work during these periods. However, as they know that most of their colleagues are away, they do not post unless they are sure to receive responses. In several months, the number of postings peaks at 150 or more, although the average number of postings is 99.

[18] It is reasonable to believe that the participants do not send as many postings on their vacations as they normally do. Swedish people usually have vacations approximately four-six weeks during the summer.

	Jan	Feb	Mar	Apr	Máj	Jún	Júl	Aug	Sep	Okt	Nov	Dec	Total
2000	4.1%	7.3%	17.8%	5.0%	11.4%	5.9%	2.3%	0.7%	10.3%	14.5%	12.5%	8.0%	100%
	(41)	(73)	(177)	(50)	(114)	(59)	(23)	(7)	(103)	(145)	(125)	(80)	(997)
	6.1%	13.2%	13.0%	10.4%	2.6%	9.1%	0.8%	6.0%	14.7%	17.2%	5.6%	1.2%	100%
2001	(53)	(115)	(113)	(90)	(23)	(79)	(7)	(52)	(128)	(149)	(49)	(10)	(868)
	7.3%	3.3%	6.8%	9.6%	10.0%	5.5%	6.0%	3.1%	4.7%	4.6%	19.6%	19.5%	100%
2002	(59)	(27)	(55)	(77)	(81)	(44)	(48)	(25)	(38)	(37)	(158)	(157)	(806)
	7.7%	11.3%	10.7%	3.8%	6.8%	6.4%	1.3%	2.2%	5.1%	10.3%	10.2%	24.2%	100%
2003	(109)	(159)	(151)	(54)	(95)	(90)	(18)	(31)	(72)	(145)	(143)	(340)	(1407)
	25.0%	8.4%	12.7%	7.8%	7.1%	4.5%	4.7%	1.6%	4.5%	6.6%	7.7%	9.3%	100%
2004	(278)	(94)	(142)	(87)	(79)	(50)	(52)	(18)	(50)	(74)	(86)	(104)	(1114)
	5.0%	11.4%	9.0%	5.1%	6.9%	4.8%	3.2%	5.0%	13.2%	14.6%	11.0%	10.7%	100%
2005	(83)	(188)	(149)	(84)	(114)	(80)	(52)	(83)	(217)	(241)	(182)	(177)	(1650)
	5.4%	8.7%	12.5%	5.2%	6.7%	9.9%	4.0%	4.6%	11.3%	9.8%	9.9%	12.0%	100%
2006	(80)	(127)	(183)	(76)	(98)	(146)	(58)	(68)	(166)	(144)	(146)	(176)	(1468)
	8.5%	9.4%	11.7%	6.2%	7.3%	6.6%	3.1%	3.4%	9.3%	11.3%	10.7%	12.6%	100%
Total	(703)	(783)	(970)	(518)	(604)	(548)	(258)	(284)	(774)	(935)	(889)	(1044)	(8310)

Table 11.1. Monthly posted messages in 2000-2006.

Figure 11.2. Monthly posted messages over the years.

11.1.1 Intensive periods of online participation

Some months are more intensive than others, mostly depending on what happens in the general practice. What happens outside the OLC is mirrored in the online discussions. In September 2006, Sweden changed governments and the GPs discussed how this would affect them as professionals, and especially when working in primary care. Some other intensive months can be explained by certain topics that generate involvement among the participants. In March 2000, one topic dealt with the organisation of specialist education, which is considered relevant to the professional association. Some topics are more or less relevant to the professional association, which can be seen in the collective engagement. One topic that creates enormous engagement on some occasions deals with the participants' professional role and identity as GPs. Thus, the intensive periods online can be explained by what the topic means for general practice, and how the participants incorporate the online activities in their general practice. In the continued examination of intensive periods, it is clear that there was a peak in December 2003 and January 2004. The engagement in December generated the highest number of postings ever: 29 messages sent on two days in a row. One explanation is that the participants discussed several topics at the same time during these two months. Topics discussed during this month include conditions for applying health insurance and organising guidelines that would be compiled into a shared document. They also comment on colleagues' articles published in medical journals. They consider how to discuss certain topics online when they deal with the fact that there are participants other than GPs who are listening to their conversation. Another intensive period of postings occurred late autumn 2005, although an increase in postings had already begun in August 2005. Since this was after the holidays, participants discussed a lot about how one is expected to contribute. In all the intensive periods, participants who interact in one thread tend to post in parallel topics, and the ability of the participants to introduce new topics while there are already a few running becomes crucial during these periods of highly intensive participation.

11.1.2 Postings sent on one day

The number of postings sent on one day can explain online participation in further detail. The average of 4.8 postings sent per day in the OLC can be compared to participation in GP-UK, when the average number of postings per day was 40 (Thomas & James, 1999). Below, figure 11.3 shows the categorisation of low activity days (1-2 postings), regular activity days (3-9 postings), and high activity days (10-29 postings).

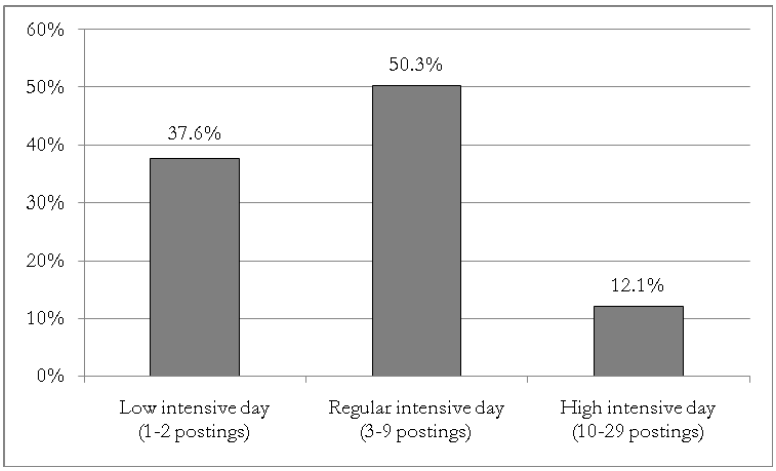

Figure 11.3. Postings sent on a single day.

On 370 days, only one posting was sent to the e-mailing list whereas on five occasions, as many as 29 postings were sent at most. The figure shows that intensive days only constitute a small number, regular days constitute exactly half of the days, and low intensive days constitute almost 40 %.

11.1.3 Number of topics discussed in one day

An initial posting is defined as a posting that introduces a new topic. Most of these postings can be found as the first posting in the threaded structure. However, some new topics are also introduced in types of cross-subjects. A small number of topics were introduced in an already ongoing discussion. All initial topics have been given an ID number, which indicates the total number of topics in the OLC and these numbers can be used in order to scrutinise the number of parallel activities. Thus, the number of ongoing topics in one day indicates the intensity in online activities as a complement to the examination of the number of postings in one day above.

1,410 different topics identified out of a total of 8,310 postings. The low number of initial postings indicates that postings are interlinked in the threads. Below, figure 11.4 shows how many initial postings and threads are created in one day, divided into categories of few or high number of topics. Since the average number of topics initiated in one day was 2, only two categories of low and high numbers of topics in one day were used to identify the intensity of online participation.

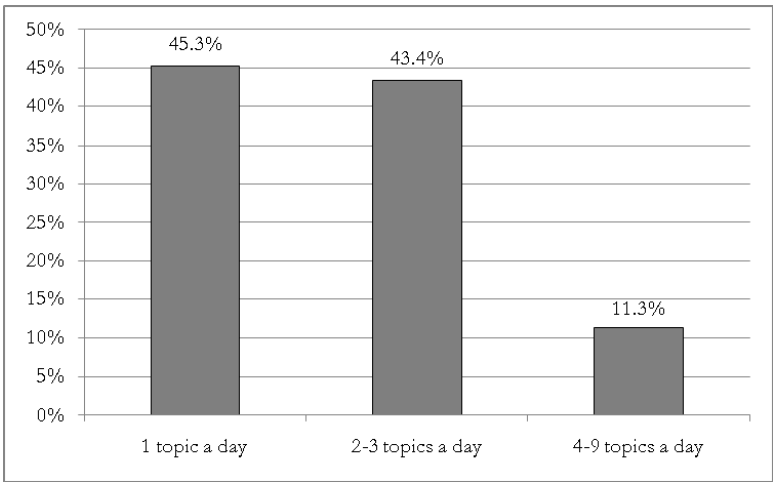

Table 11.4. Total number of topics discussed in one day.

On 778 days of all active days, just one topic was discussed, whereas only on one occasion were nine topics discussed. Most of the time, only a few topics were discussed.

11.1.4 Number of participants in threaded discussions

The collective engagement can be explored in terms of numbers of participants who post in the same threads. For this investigation, all single postings have been deleted since these have no responses. In total, there are 891 (of 1,410 initial topics) threads. For all threads, the average is 5.6 participants in threads, which indicates that participants do not just communicate in pairs but also in groups.

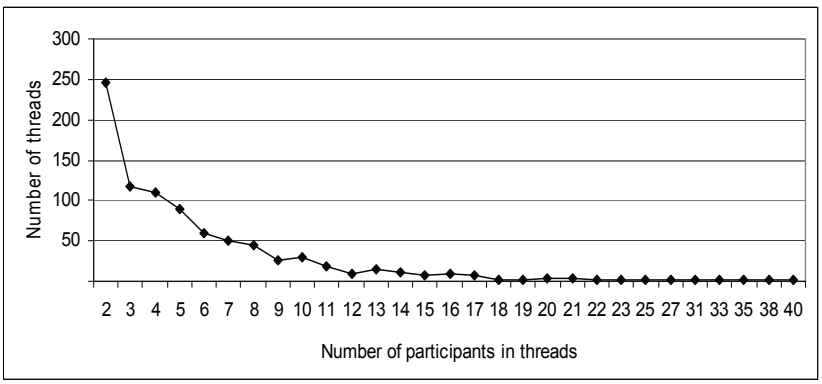

Figure 11.5. Number of participants engaged in threads.

Figure 11.5 shows that 245 threads are between pairs. At most, there are 40 participants involved in one single thread. The thread involving 40 participants was about the conditions for health insurance in welfare for the (for unemployed or poor?) patients. The number of threads falls dramatically as the number of participants in a group increases.

11.1.5 The length of threads

One way of understanding online participation is to divide the single postings presented in table 11.1 into structures of threads. The length of the threads can be viewed as a collective engagement based on social interactions between at least two participants. All single postings without responses have been excluded in the examination of the length of threads. Below, figure 11.6 presents the number of threads in relation to thread length (minimum thread length is 2, maximum thread length is 130).

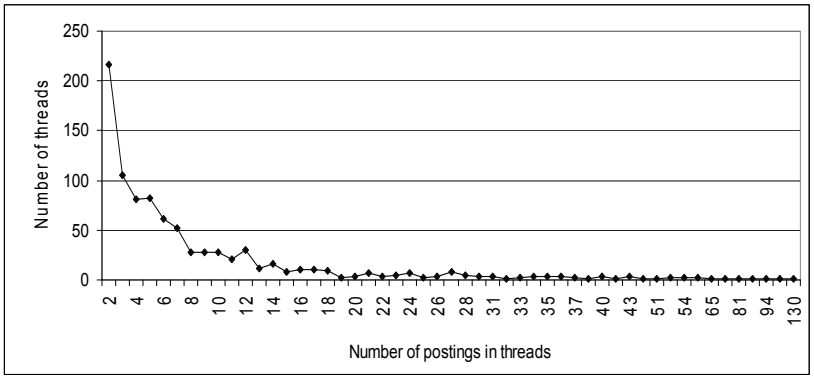

Figure 11.6. Number of threads in relation to thread length.

The curve shows that postings with only one response dominate since there are 216 threads consisting of two postings. The longest online discussion deals with the topic of the rules for health insurance and the statistics for national unemployment. The curve shows that shorter discussions, up to seven postings, are held most frequently, whereas discussions consisting of eight postings or more are rare. The lengths of threads can be linked to the examination of the number of participants in threads previously.

11.1.6 The duration of threads in days

One way of examining online participation is to study the duration of threads in days. This analysis investigates the duration of threads in days, and describes

one aspect of the sustainability of online discussions. The duration of the threads is determined by the period between the initial and the last posting in a thread. Consequently, this means that all single postings are excluded in the current examination. In this approach, the use of clock time in the analysis is important since the postings could be sent late one day, and answered first the following day, which would indicate two dates instead of one. Table 11.7 shows how many days the threaded discussion continues before it is closed.

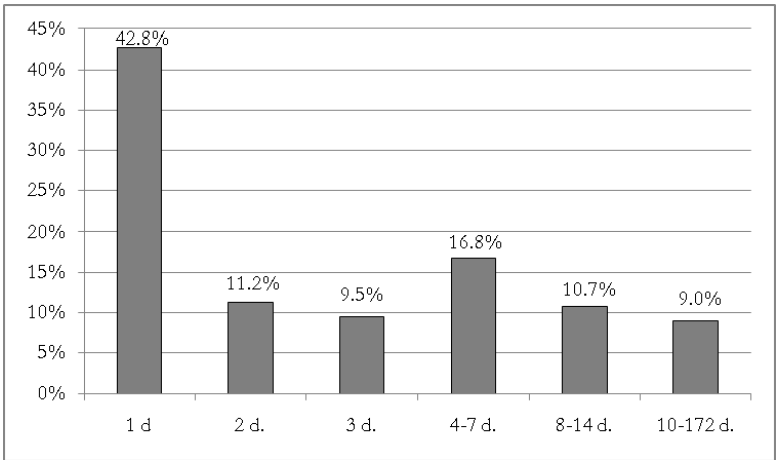

Figure 11.7. The duration of threaded discussions in days.

Threaded discussions lasted for 4 days on average. Most threads are terminated within 24 hours, and 4/5 of all online discussions end within a week. In some threads, the very last postings tend to stretch the online discussion over an enormous time span (e.g. over several months). The longest online discussion lasted for 172 days. However, this thread only consisted of 9 postings, which calls for further investigation. On closer examination, it became clear that one participant, or the initiator, reported the outcome of some actions performed outside the OLC after he had received some advice from the others. However, this is not very common as most of the online discussions end abruptly, and even lack a final report by the initiator who once asked for responses in a topic. Another explanation of some extra long online discussions is that participants contribute new information on the topic as they still remember the topic once discussed. Some participants just arrive late in the discussion, as explained by Nino:

> Have only followed the debate with one eye and this [message] might come a little beside the existing discussion, but as a separate comment it would be interesting to hear what people really think (Nino) (m).

Nino did not receive any comments. Being late in a discussion is a disadvantage if the others have already closed the discussion and moved on to other topics. In the excerpt above, Nino reduces or talks down? his efforts when he marginalises himself as not having been fully involved when the actual discussion was in progress. It was observed that intensive online discussions attract participants who contribute to topics commented on by others. The late contributor does not always successfully revive the topic unless the topic had become inactive because of holidays. Thus, one kind of duration is actively created by the participants as topics are again discussed after holidays or weekends. Unless no relevant information is added, this indicates that the topic has been closed down, and therefore it ends abruptly. Thus, the participants begin to discuss new topics instead.

11.1.7 Periods of no online activity

In figure 11.2 above, some periods generate extremely low numbers of contributions and on some occasions the activity has come to a complete halt. A period of no online activity is defined as a critical break when no contributions have been sent for one full week. Some of the critical breaks can be explained by national holidays and vacations, so these have been excluded from further examination. Participants comment on the current situation of no postings with worries about having been excluded from the e-mailing list:

> Haven't received any messages for a couple of weeks. Has the site [name of the e-mailing list] closed down? Have I been erased? If so, I want to be added again. (Tony).

These kinds of postings show that readers notice the continual postings and discussions carried out in the OLC. Some participants think that the e-mailing list has been closed down or that they have lost their subscription. Tony mentioned the lack of postings "for a couple of weeks" which spurred me to continue to explore the periods of these critical breaks.

There were critical breaks on fourteen occasions,. Most critical breaks occurred during the first three years, from 2000 to 2002. There were three breaks in 2000 and 2001, and as many as six breaks in 2002. 2002 was also the year in which the lowest total number of postings was sent to the e-mailing list, see in table 11.1 above. In 2003, only one break occurred, and not until 2006 was another last critical break observed. No breaks occurred in 2005 as this year was the most productive. The longest break lasted for 12 days, and

there were a total of ten breaks observed that lasted for 7 to 9 days. In the excerpt above, Tony seems to have experienced the lack of postings as lasting longer than it actually did. To some extent, one reason for the halt in postings can be explained as a latent form of online participation in which the participants rest. During this period, they recover from more intensive periods of contributions. Unless the moderator initiates a new topic, as he normally does, the other participants step forward in order to maintain the OLC. In the work of bridging the critical periods, they do not initiate just any topic. In fact, the critical breaks sometimes make passive participants come forward as contributors. On one such occasion, Elin breaks the silence by introducing a topic in order to resume the online discussions:

> At the moment, it's all too quiet to call this a discussion forum. I will break the silence by letting you all know that …. (Elin) (f).

Elin points to the lack of ongoing activity when she initiates a new topic. These kinds of postings are essential for a sustainable OLC. The content of these postings consists of medical abstracts, literature reviews and suggestions for reading, invitations to conferences and rules for participation. These types of postings fulfil the purpose of explaining that the e-mailing list is still working and that the break is over.

In the remainder of this first section, online participation is viewed in periods of intense and critical periods depending on the number of postings and the structure of threads as the participants contribute more or less to the collective.

11.2 Time aspects of the postings

In the following section, online participation will be explored in terms of when postings are sent by the participants during the week and during office hours, and also when topics are initiated. Postings made by the moderator will be explored separately in chapter 14 and then compared with the figures below.

11.2.1 Online participation during the week and during office hours

Since the OLC studied is situated in a professional context, it is necessary to investigate whether postings are added during *office hours* and at *other times*. As most GPs work at health centres and during day, office hours have been set between 8.00 a.m. 6.00 p.m. from Mondays to Fridays. Even if not all GPs work with patients, not even during these hours, it still indicates times when most of the participants are expected to work. Time outside this time span is

defined as *other times* which includes weekends when most health centres are closed. However, this does not mean that all the participants in the OLC are off duty but working anyway, since some of them do not work at health centres or during regular office hours. In the forthcoming examination, holidays and vacations, as mentioned earlier, have been included since some of the participants work during these periods. In figure 11.8, the percentage of postings is divided between weekdays and office hours and other times.

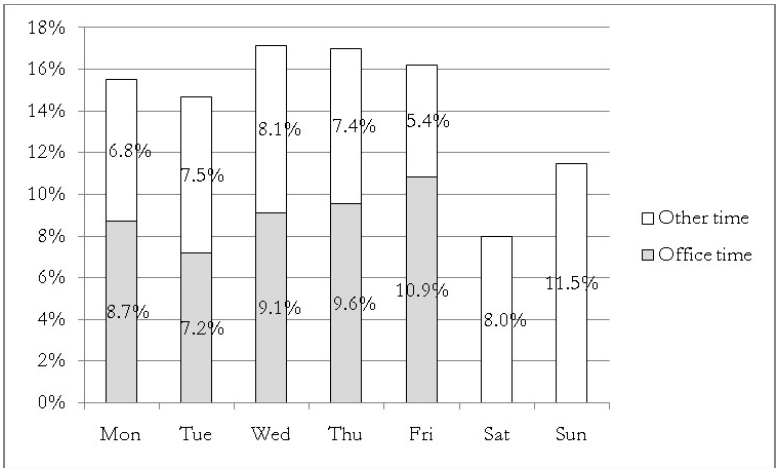

Figure 11.8. Contributions sent on all days during office hours and at other times.

The figure shows that online participation occurs fairly equally during office time (54.5 %) and outside the normal working schedule (45.5 %). The figure also shows that participants post fairly evenly during the working week (Monday to Friday). During office hours, the postings increase slightly from Wednesday to Friday when they reach their highest point. On Saturdays, the frequency of postings decreases by approximately 50 % compared to the number of postings from Monday to Friday, whereas the number of postings increases around 25 % from Saturday to Sundays. On Sundays the number of postings is higher than during office hours on Fridays or any other working day. This indicates that participants post heavily when they are off duty as well as that they include participation in the OLC among their other work tasks.

11.2.2 Distribution of postings around the clock

Since postings have been sent outside office hours, it is necessary to explore online participation around the clock. Below, figure 11.9 presents the number of postings sent every hour, i.e. between 01.00-01.59 at night and so on,

ending with 24.00 representing all postings sent between 00.01-00.59. Postings sent by the moderator will be explored separately in chapter 14 and will also be compared with the figure below in order to examine the influence of his actions. The reason for separating the moderator from the participants is that including the postings sent by the moderator would result in an unreadable figure.

During office hours, postings are sent more frequently in the morning than in the afternoon and peak before noon. In the evening, the number of postings increases from 19.00, peaks before 23.00 and then drops. One way of exploring the patterns of participation is to view the initial postings alongside the total number of postings.

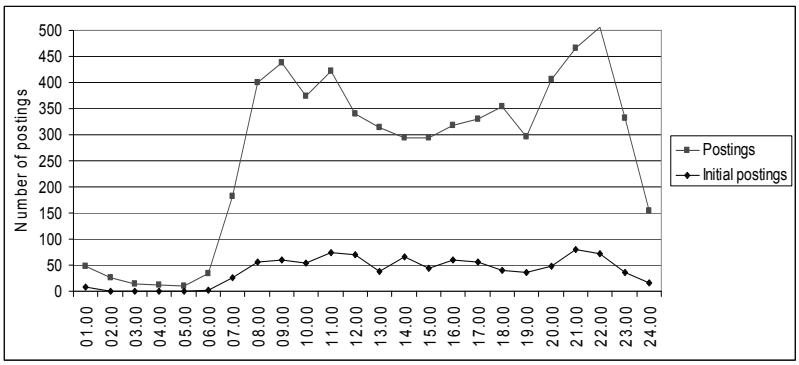

Figure 11.9. Distribution of postings and initial postings around the clock by the participants excluding the moderator.

The figure above indicates that new topics are introduced fairly evenly between 08.00 and 23.00. The postings curve follows the initial curve except at around 19.00 when participants are probably on their way home from work. The figure shows that the higher number of postings sent during the morning hours compared to the afternoon can be explained by the fact that the postings sent in the morning are usually responses to topics discussed or introduced the night before (around 21.00). One can see that curve of initial postings rises after the lunch break around 14.00.

11.3 Summary and comments

This chapter scrutinised online participation over time by looking at the total number of postings sent to the OLC. During the seven years of posting there were more and less intensive periods. The examination showed that there is a

continual flow of postings during all the year round and on every weekday, during office hours as well as out-of-office hours. Even in relatively calm periods, such as (summer) holidays, participants help to sustain the OLC by posting once they are back at work. The examination of both intensive and critical periods of online participation was explored in more detail. The examination of postings and topics discussed on one day indicated the pace of online participation. There are not many highly intensive days since participants are usually active in a small number of parallel topics. Participants express a collective responsibility for ongoing discussions and therefore initiate new topics after a period of low activity. Most topics receive a response on the same day or shortly after the day they were initiated. However, some online discussion live quite a long time as participants often finish the discussion by presenting the results of the support they received from the OLC. Other time patterns are related to the time the initial topic was introduced and when it received a response. During office hours, participants post more actively in the morning than in the afternoon. This chapter has explored online participation over time based on the time aspects that are influenced by work

12 CONTENT OF THE ONLINE ACTIVITIES

The content of the postings will be explained and measured by constructing thematic categories that reveal what they talk about and to what extent they engage in certain themes. The construction of thematic categories generates patterns of participation that can later be explored in the thesis. The thematic categories fulfil two purposes. First, they enhance the understanding of the content discussed as they explain what knowledge is shared and what is considered crucial to talk about in the OLC. Second, they support the selection and organisation of excerpts for the content analyses. Notably, the empirical material covers some of all topics that can be included in the knowledge domain of general medicine. However, the construction of the thematic categories covers all the empirical material and shows which themes tend to engage the participants of the OLC and the characteristics of the content. A table will provide an overview of all thematic categories and sub-categories. The sub-categories add some aspects of what they talk about based on the context of content rather than what type of thread is constructed in the OLC. At the end of this presentation, the category system will be scrutinised in terms of a similar categorisation of content in a British e-mailing list called GP-UK. It will provide an extended explanation of the characteristics of the content that international networks of GPs share together online. Later in this chapter, the distribution of thematic categories will present the occurrence of talk measured for every posting and for every posting in threads. The quantitative examination will show the extent of what they discuss in the OLC by comparing the results of this study to the British e-mailing list GP-UK. The topics outside the knowledge domain of general medicine will be revealed as they explain what kind of topics are rejected or not permitted to be discussed. All single postings and non-responsive topics are explored at the end of this chapter.

12.1 Thematic categories

Eight thematic categories, with some themes divided into sub-categories, provide an overview of what participants talk about in the OLC of general medicine. In the table below, all thematic categories have been placed in alphabetical order that show the range of themes that constitute the content.

Table 12.1 Thematic categories in the OLC of general medicine.

Main category:	Sub-category:
1. Clinical	1.1 medical abstracts
	1.2 pharmaceutical matters and guidelines for treatments
	1.3 patient cases
	1.4 scientific discipline
2. Financial	2.1 economical issues etcetera
3. Organisational	3.1 practical
	3.2 ethical
	3.3 legal
	3.4 educational
	3.5 recruitment
4. Other	4.1 on- and off topics
5. Political	5.1 political debates etcetera
6. Procedural	6.1 negotiation of participation
	6.2 existing rules for participation
7. Professional	7.1 definitions, identity formation, status, roles
8. Technical	8.1 medical equipment
	8.2 information technology
	8.3 e-mailing list

All thematic categories constructed in the current study will be presented in detail along with the criteria that constitute all the themes. Sub-categories indicate some kind of structure in which talk is organised by the participants in social interactions.

12.1.1 Clinical

The content of medicine that reveals pharmaceutical issues and guidelines for medical treatments is placed in the thematic category called *clinical*. Topics belonging to this category refer to clinical issues in general medicine. Talk about clinical themes is based on research and deals with how participants carry out scientific work. This category explains general medicine as a medical domain of knowledge and can be divided into four sub-categories.

Medical abstracts

Participants publish medical abstracts taken from research studies on general medicine. These abstracts provide information about clinical matters in the shared subject of general medicine. The headings of these postings indicate what clinical matter is introduced. Subject headings will be examined in detail

in chapter 15. Medical abstracts are structured by a short introduction of the clinical topic relevant for them to know about when new scientific results are presented on a regular basis. The short introduction is followed by the original English text, which has been copied from the original source with full reference for further reading. Medical abstracts can be viewed as a collective updating service. The participants do not always respond to these postings. More information is added in case they need for complementary information or if they want to discuss the topic in greater detail. Most of the medical abstracts are sent by the moderator. Managing the online activities will be explained in chapter 14. Not all content is structured for informative purposes. Clinical topics emerged in discussions as these kinds of conversations can be placed in one of the following sub-categories depending on the direction of the discussion.

Pharmaceutical matters and guidelines for treatment

Clinical discussions reflect the collective interest in general medicine among the participants. They introduce topics based on what is happening in the domain of clinical knowledge. In this sub-category, the talk is structured for discussion on pharmaceutical matters and guidelines for treatment. Sometimes medical abstracts emerge in discussions. Some of the clinical topics are more or less frequently discussed, showing the collective character of the OLC. These topics are not always formulated in connection with the patients. Rather, the content in this category treats the pharmaceutical effects of drugs and treatments. Topics have been compiled in order to explain the domain of clinical matters in general medicine. The following clinical topics were found to be more frequently discussed: diabetes type-2, health food consumption and physical exercise, hypertension, otitis, health care including topics such as anti-smoking treatments, alcohol related health problems, guidelines for diets, preventative measures in health care for alcohol consumption, and stress. Some of these topics are also frequently published as medical abstracts. However, general medicine is constituted by a large array of clinical topics, only some of which are mentioned in the empirical material and reported in this chapter.

Patient cases

A characteristic of some of the topics introduced in the clinical theme is the request for individual support in order to solve dilemmas in patient cases. Patient cases are discussed in order to gain knowledge on medical treatments and to receive support for pharmaceutical decisions. The initiator often refers to the patient and the stress situation when having to deliver on-demand

support. 5.6 % of all the messages sent were patient cases. The length of these threads was 9.2 postings on average, which indicates the intention to give full support to one another when they initiate such postings. In the case of patient cases, the total number of contributing participants was higher compared to other themes discussed. The large number of participants discussing the patient cases could be seen to form a pattern. Each contributor posts a single message that adds to the information already presented when they provide complementary information on the case. Then, the initiators have to decide on their own how to use the information they receive. Together, they produce clinical guidelines for medical treatments suggested as the best solution by the collective. Patient cases tend to be solved quickly. Some patient cases were resolved in a couple of hours. In one excerpt, the answer from one of the participants is sent immediately as the responding participant thinks the initiator is still online.

> I am not quite sure if you are still near the computer, but I suggest that you… (Dennis) (m).

Dennis reacts quickly as the initiator seems to be in need of immediate support. Participants are able to see themselves in the situation of the initiator and respond more quickly since they contextualise the need for support in the clinical matter. The initiators of patient cases can be found among both core and peripheral participants, both women and men, and in various geographical locations, both in small rural municipalities and in larger cities.

Scientific discipline

Some of the clinical themes deal with the scientific contribution of the studies in general medicine. These discussions examine how research studies have been carried out and how they contribute to the knowledge domain. The participants "talk about how to talk" about general medicine. The negotiation of what discourse to apply is important for them as professionals. The discourse of general medicine can be observed at three levels. Firstly, they demand scientific evidence when discussing clinical themes. Secondly, if the specific clinical matter lacks satisfactory scientific knowledge, they discuss how to complement it with research managed by evidence-based medicine (EBM). EBM can be explained as existing contemporary knowledge, which has not always been scientifically proven in satisfaction for how they carry out general practice. In these situations, GPs must use what they know at the time about the clinical topic more or less without scientific proof. EBM is a recurring topic discussed in the e-mailing list. There are various ideas about how to carry out work in support of EBM. These online discussions often end in research

proposals that aim to point out relevant aspects for the collective that will develop general practice as a scientific field. Thirdly, they use narratives based on individual experiences and opinions in specific medical responses. These are not always correct to mention in clinical debates, but these narratives function as they contextualise the clinical situations they want to solve. Personal opinions make them discuss the scientific discourse. In case that EBM or professional experiences are being used, the other participants, especially the moderator, corrects them by questioning their arguments and statements lacking scientific proof. They also discuss the contributions of complementary disciplines such as *alternative medicine* in order to define the domain of general medicine. In these discussions, they specify what they do as members of general practice. Several topics in this sub-category inform about forthcoming dissertations and relevant theses to read, support for the need of correct references in the medicine literature, scientific information from the medical industry, requests for further research in general medicine, critical reviews of articles before publication, the independence of the universities, scientific organisations, definitions of EBM, questions of medicalisation (the process in which health or behaviour conditions are defined and treated as medical issues, based on changes in social attitudes and terminology), statistical measurements of certain medical considerations and discussions about participation in medical surveys and audits.

12.1.2 Financial

All economical aspects addressed in the postings have been categorised into the financial theme. Topics in this category explore, for example, the national budget for organisational development, financial management of primary care, the economical situation as regards employing foreign GPs in national primary care, the cost of medical products, discussions about the salaries of Swedish GPs and pay structure that are dependent on efforts at work. The minor contributions of financial topics motivate the construction of one category only, instead of dividing these issues into sub-themes.

12.1.3 Organisational

How GPs and professional actors work in general practice is placed in a category called organisational. Organisational themes include online discussions about performance at work and activities intended to develop general practice. For example, they discuss how to organise the list of patients, the organisation of medical training, ethical and legal considerations and strategies for recruiting GPs. The topics focus on how they proceed in order to contribute to the development of general practice. One topic addressed

what they should do about the large number of pharmaceutical advertisements that is sent to them by the medical industry. The sub-categories divide central issues involving work in practical, legal, ethical, educational and recruitment topics. A characteristic of these themes is the focus on the professionals themselves, and not primarily the patients they treat at work.

Practical

In the sub-category called practical, topics deal with managing work on a daily basis. Discussions involve work routines and situations in the workplace, which in most cases is carried out at health centres or in offices. In the discipline of general medicine, national documents on primary care regulate the work of GPs, which tends to trigger debates about practical issues. For example, discussions explore how to manage the list of patients, how to tackle dilemmas at work, what to consider when they need to formulate referral letters and guidelines. Practical issues deal with the exchange of experiences based on existing guidelines they need to construct solutions for how they carry out work. *Health insurance* is one dominant topic discussed in this sub-category. Mostly, this topic discusses how to formulate referral notes since the guidelines for this tend to change. However, not all these topics penetrate the organisational aspects, some of them also deal with the political and economical aspects of health insurance. Accordingly, the categorisation of topics depends on what aspect is addressed in text when they talk about organisational themes.

Ethical

The sub-category of ethical discussions discusses norms and rules for acting professionally. The ethical aspect concerns topics where participants need to solve dilemmas and get sufficient information to make moral decisions. For example, ethical topics deal with situations such as when the medical industry offers GPs free lunches in order to inform them about pharmaceutical products. These discussions deal with the issue for maintaining an independent relationship with the medical industry. These discussions execute the extent they are being influenced when participating in activities organised by the medical industry. The main question for GPs is whether or not they should accept invitations from the medical industry, but also how to act when they need information about the products. These discussions examine the ability to choose an appropriate medical treatment.

Legal

Topics that deal with all the legal aspects are categorised in the theme of legal. For example, one topic dealt with how to handle death certificates. The sub-categories of ethical and legal tend to be intertwined since these topics are close connected in discussions. Participants explicitly mention human values or legal issues in discussions, which make it feasible to separate these in two categories. Some of the ethical discussions end up in written reports to Swedish authorities. The participants use the e-mailing list to take action against unsatisfactory information published by the medical industry or by the media e.g. information about medical drugs or inaccuracies in articles about treatments published in the media that could have legal consequences. The participants use the e-mailing list to coordinate their actions by acting as a collective of expertise to report the publisher about unsatisfied information.

Educational

Another sub-category in the organisational category consists of topics about specialist training programmes, medical training programmes and strategies for continual professional development. Education and professional development are topics dealing with how to develop conditions for medical practitioners to become GPs through specialist training, how to involve general medicine as a specialist subject in medical training programmes, medical exams for AT and ST doctors and conditions for supervision during specialist training. Some of the postings in this category consist of invitations to courses, seminars and conferences.

Recruitment

Topics dealing with strategies for recruiting medical students to general practice as well as information to qualified doctors about specialist studies in general medicine comprise the sub-category of recruitment. For example, the participants discuss strategies for increasing the number of national GPs as more qualified doctors are needed in general practice. Recruitment also involves the option of employing non-Swedish GPs as the participants discuss the differences in competence and strategies for practising in Sweden. Some of the topics in this sub-category are sometimes combined with topics discussed in educational themes.

12.1.4 Other

Only a few topics were found outside the knowledge domain of general medicine in the thematic category of Other. Some of these topics consisted of greetings, requests for documents, statements published in media by individual

participants, poems, invitations to music events, information about upcoming radio/TV programmes relevant for GPs, or literature worth reading, funny stories, compliments on doing good work in general practice or celebration notes for holidays. In all, 1.0 % were classified as being off topic. Off topics that the participants have all agreed not to post include job recruitment, marketing of individual businesses, invitations to musical events and information about environmental movements.

One question about what the participants do not talk about emerged when it was observed that there were few exchanges of *personal cues*. Personal cues express something about themselves in the postings they send that does not primarily concern their professional character. A personal cue is expressed as hobbies, planned activities after working hours, such as sports, skiing, or family status such as being a grandmother/father, etc. In 2006, only 12 postings addressed some kind of personal cue. If a personal cue was mentioned, it was often placed as a note at the end of the message. No postings consisting only of personal topics were found. Some attempts were made to socialise such as ways of getting to know one another outside the professional arena. In these cases, the exchange of personal cues was introduced in order to enhance social interaction. These participants tried to exchange short descriptions of themselves without any success. Minor exchange of personal cues made it clear that they socialise as professional actors since they concentrate on topics related to general medicine.

12.1.5 Political

Topics that deal with political issues comprise one thematic category. Political debates involve power management based on the present political regime. GPs are subject to governmental directives since they work in Swedish primary care. Political parties and steering committees/organisations make GPs manage activities in ways that are decided by the government. The participants discuss and comment on Swedish health and medical care. They also draw up guidelines that they argue are suitable for them as GPs and the professional association. Together, they strive to maintain their power as an influential organisation. Some opinions about individual political convictions are expressed as well as personal opinions about working under certain conditions. Political documents and official reports are discussed as the participants strive to understand how they would impact on them as professionals and on their patients in the event of then being being implemented in existing organisational structures. The e-mailing list becomes a tool for managing power in the Swedish health care that stretches outside the

OLC. They act as a collective in order to look after their own interests when it comes to political activities affecting health and medical care. The political agenda is influenced by local directives in the regions where GPs are located. For examples, there are topics that deal with the establishment and management of privatisation of health centres and the conditions for entrepreneurs to become involved in the development of primary care.

12.1.6 Procedural

As mentioned above, in the thematic category of other, the participants have agreed that some topics will not be posted in the OLC. They want to keep the e-mailing list free of topics that do not concern general medicine and the practice they constitute. Topics emerged in discussions about what they should discuss in the OLC. The term *procedural* include all kinds of negotiations on how to organise and maintain the online activities. To a large extent, moderation and forms of online participation are topics that are discussed in this category. Procedural topics can be divided into two sub-categories based on the process in which they negotiate on how to participate and the existing ways in which participation is organised.

Negotiation of participation

The small number of off topics mentioned above can be explained by the continuous negotiations about what topics are relevant for the collective to discuss or how to use the e-mailing list properly. They express their dissatisfaction when activities do not meet their expectations. The moderator decides what topics are relevant based on what has been agreed on earlier. In the event of the rules being forgotten, these situations are used as lessons that explain how to participate due to those mistakes that happen when posting in the e-mailing list.

Existing rules for participation

The second sub-category of procedural is represented by a message posted repeatedly by the moderator who presents the existing rules for participation and invites newcomers to take part in the activities. Based on what they have already decided, some of the rules are reified in the posting called "rules for participation". If the participants forget the rules, the collective sometimes steps in to restore the routines maintained by the moderator by reminding each other about the existing rules. Consequently, these two sub-categories become very much intertwined that explain how the members participate in the OLC. Among the procedural topics, the rule called "Cut-the-tail" is the most frequently discussed by the participants online. They have agreed to

delete irrelevant texts that are stored from the previous text messages. Since the postings tend to be quite long, the messages become difficult to overview and read when subscribing to a daily or weekly digest. They intend to save those text sections that they refer to in the ongoing discussion, but often they forgot to delete the rest of irrelevant texts. The procedural topics and the process in which rules are created will be explained in chapter 14 called Moderating online activities.

12.1.7 Professional

One category is called *professional* and consists of those postings that deal with the roles of GPs and the constitution and boundaries of general practice. Some topics addressed in the empirical material deal with the formation of professional identities. The participants raise questions about themselves as professional actors in health and medical practice. In attempts to position the domain of general medicine, they create boundaries and definitions to explain who they are, what they do and how they are connected to the health and medical care practices. Procedural topics do not primarily end in a final solution or one common definition. In discussions, the participants struggle to define general practice and the domain of knowledge that explains what they consider to be knowledge that is characteristic of what they do compared to other colleagues in medical care. They promote themselves as GPs and want to improve their status in Swedish health and medical care. Procedural topics have frequently been debated over the years, as this theme stresses the important topic of how they develop themselves as professionals. From the beginning and throughout the empirical material, these topics have been observed and fairly easily found in subject headings such as "Should we change the term?", "Family medicine/general medicine?", "Safeguard the Interests of Family Medicine", "The Family Physician – generalist or sub-specialist?" or more precisely "Who are we?". These topics tend to engage a large number of participants as almost all the members can contribute to the debate based on their own experience. To some extent, these topics are introduced in periods of minor ongoing debates in order to inspire subscribers (i.e. just reading members) to post since this is a topic that engages many of them.

12.1.8 Technical

One significant thematic category consists of topics that deal with technical issues. Besides discussions about situations when the e-mailing list does not work properly, they also discuss various technologies. These can be divided

into the three sub-categories *e-mailing list*, *information technologies* and *medical equipment*.

The E-mailing list

Most of the topics in the technical category examine the use of the e-mailing list itself. Discussions about the e-mailing list could also be placed in the thematic sub-category IT, but since the participants discuss situations that arise when using the e-mailing list, these topics were considered sufficiently important to be categorised separately in order to distinguish what they do in the OLC. Besides the discussions when the technology does not work as expected, technical topics can address questions about delayed deliveries of postings sent to and from an American server.

Information Technologies

The second sub-category, *information technologies* is discussed in terms of practical solutions for how IT can be used at work. The participants discuss changes that occur when introducing and implementing IT when it is used in support of digital journals, or when they use e-mail for communicating with patients, and how to establish secure communications when consulting external doctors and nurses. They use the OLC to gather information about how they can implement specific tools in normal work situations. For example, how dictation tools function smoothly for verbal documentation, which is later transformed into text. They discuss how to carry out general practice in an emerging networked society in comparison to earlier settings, and what expectations they have of future work. The challenges of IT for the future are described in postings of shared experiences. They do not always feel comfortable using IT and are then supported by participants who have more experience of IT. One discussion about asynchronous forums emerged in a specification of existing conditions in order to develop as an OLC. When it came to the question of what technical platform they should use in order to increase the contributions from more participants, they were able to agree on the need to change to another technical platform. Thus, they share what they collectively know about communicating in web-based forums when they negotiate on how to proceed in their attempts to develop as an OLC. Their talk about what they do online becomes one issue that create a sustainable online environment.

Medical Equipments

The first sub-category of technologies they talk about is *medical equipment*. In the OLC, they receive support before purchasing expensive equipment, advice

on how to use medical tools such as making a correct medical analysis and so on. Most technical topics explore IT and the e-mailing list they use.

12.2 Discussion about the construction of thematic categories

The thematic categories presented above can be compared with the categories created by Thomas and James (1999) from the e-mailing list GP-UK. Thomas and James offer thematic categories that explain both the content and types of threads among British GPs. Primarily, the content of postings has been considered in this chapter, and not what kind of message or activity they perform, which was mentioned by Thomas and James in the form of cross-subjects, announcements, mistakes. Some of these issues have been explored in forthcoming chapters in the examination of the online activities. However, the type of posting and its content are close connected in some sub-categories, e.g. in the clinical category, which consists of content published as medical abstracts. This study endeavours to presents the content of what the participants talk about in this chapter and the types of activities in chapter 13 in order to explain what the participants accomplish when they talk about certain issues. Consequently, a category such as announcement, used by Thomas and James, can be defined as one type in any of the themes and, therefore, this will be further explained in the forthcoming chapter about types of threads. Some of the themes are typical in both studies, but have been arranged differently. However, the similarities observed show that general medicine is an international professional domain of knowledge. However, one must understand that GPs talk exclusively about general medicine and only some of all the topics of general medicine are addressed in the OLC.

The comparison of the content discussed in these two studies needs to begin with the current OLC. Eight thematic categories were created and four of these have sub-categories that more closely explain the content of discussions in these categories. This study has a main theme in *professional* compared to the study by Thomas and James who do not examine this theme. One characteristic of the OLC study here is the talk about the formation of professional identities, professional roles, the definition of generalist perspective, the knowledge they acquire and the boundaries of general practice. To what extent Thomas and James have noticed these kinds of activities is not fully clear since these topics might have been placed in one of the categories as they constitute only a minor part of the content.

The arrangement of sub-categories explains the characteristics of the main categories that extend the examination of the content. Due to their few

numbers of labels, some of the thematic categories have been re-arranged into sub-categories. Some of these were instead main categories according to Thomas and James. For example, *legal* and *ethical* topics were both significant main themes whereas in this study, these two categories are sub-categories of organisational together with *practical*, *educational* and *recruitment*. Topics that explain what they do at work and how they organise themselves in general practice are placed in the organisational thematic category. In the procedural category, the content was divided into negotiations on participation and the existing rules for participation in order to explain certain topics published that explain how to participate online. In contrast to the category of procedural by Thomas and James, the procedural themes in the current empirical material deal only with online participation, since the practical content is categorised in the sub-category of organisational. The sub-categories of technical show the variety of content rather than just technical problems. To sum up, the sub-categories explain more fully what the participants talk about when they explore certain main themes.

In contrast to Thomas and James' humour category (1999), mainly humorous postings are rare in the current empirical material and do not constitute a category in itself. Rather, the lack of humorous postings indicates a serious tone in the OLC, although participants do post amusing comments that relate to the ongoing topics. Together, they create a jargon while emphasising words and playing language games. One important issue concerning online participation is explained by the fact that the British e-mailing list is unmoderated whereas the OLC studied here is moderated. Consequently, moderation is an essential issue when organising OLCs in professional contexts. The influence of the professional association needs to be further scrutinised with regard to how the online activities is organised in the OLC.

12.3 Distribution of thematic categories

So far, the complete empirical material has been examined qualitatively in order to explain what the participants talk about online. In the following sections, a quantitative examination of thematic categories will reveal the distribution of themes in postings and threads (i.e. without single postings). The purpose of the examination is to understand the extent of themes and to reveal what topics most engage the participants and, additionally, to what extent they talk about topics outside the knowledge domain of general medicine. The distribution of thematic categories is performed in two ways with the intention of measuring the distribution of content based on each

posting. Postings are also counted in terms of postings in all threads. The most frequent topic discussed will close the chapter.

12.3.1 Cross-subjects in postings

Cross-subjects are defined as a type of posting that discusses more than one topic in a posting. In the case of cross-subjects, all topics have been included in the measurement of the distribution of themes discussed. In all, 4.2 % of all postings sent consisted of two themes or more, which has also been considered in the quantitative examination. As regards combination of themes, clinical and organisational themes were found to be the topics most combined. Procedural themes were also observed on a large amount because participants take the opportunity to comment on the use of the e-mailing list and organisation of text messages when they are already posting in another topic. Most participants discuss one topic in one message. Participants choose to send two postings rather than to discuss two or more topics in one message.

12.3.2 Distribution of themes in postings

The distribution of themes applies to the total empirical material. Figure 12.2 shows the distribution of all eight themes measured for each posting.

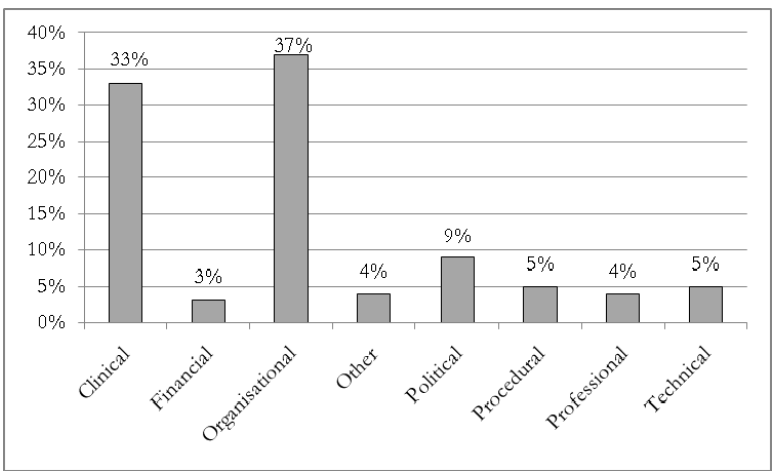

Figure 12.2. Distribution of themes in postings.

Based on the eight main categories, the three most discussed themes based on postings were found in organisational, clinical and political topics. These themes indicate that the OLC is a professional arena in medicine. In this study, all other thematic categories are fairly equally represented, that is, both technical and procedural themes contain ore or less the same number of

postings whereas the categories of professional, other and financial themes represent small numbers of postings. Small themes consist of topics that are important even if they are not discussed as frequently as organisational, clinical and political themes. Some themes are regarded as being constantly ongoing whereas some topics fulfil their purpose irregularly, but are still important for the participants to discuss, but not in the same extent as the other themes.

12.3.3 Distribution of themes in threads

When all the single postings have been excluded, the content in threads are examined to reveal what they talk about in online discussions. In comparison with the figure above, this analysis also reveals the content of the single postings.

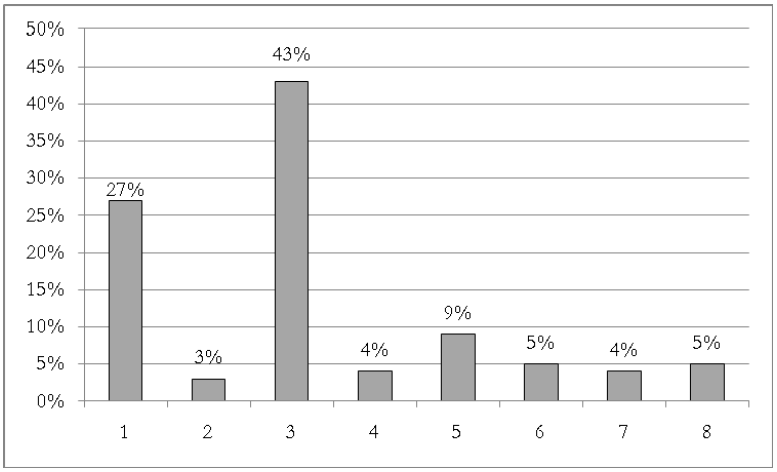

Figure 12.3. Distribution of themes in threads.

Compared with the previous figure showing themes in postings, the changes consist of a larger number of organisational themes (compared to clinical themes), as the distribution of the rest of the thematic categories is stable. The larger number of organisational topics shows that clinical topics dominate single postings.

12.3.4 The most frequently discussed topic

Health insurance was identified and measured as being the most frequently discussed topic. Topics on health insurance concern organising and composing referral letters for patients in accordance with national directives laid down by the current Swedish government. The participants discuss the national health insurance system. GPs struggle to write referral letters as they

share the responsibility as professionals to make correct decisions based on existing guidelines. Basically, the topic of health insurance can be found in the sub-category of practical, and in the clinical, political and financial themes. The topic of health insurance accounts for 10 % of all postings. This is noticed by most of the participants who comment on this topic once it has been introduced. Magnus comments on this issue when he plans to initiate a topic that does not have to do with the health insurance debate:

> To those who insist on discussing something other than health insurance, I want to introduce [another topic]... Magnus.

The excerpt above shows the large extent to which health insurance is discussed online by a group of participants who are constantly engaged in this topic. Even though health insurance has frequently been discussed, it generates numerous responses when the topic has been raised again. Only on one occasion was there no response, but this was exception. Basically, it turned out that the topic of health insurance has been introduced too soon to previous discussion. The frequency of discussions about health insurance is a consequence of the intricate issue of organising and carrying out the work involved. It deals with various ways of acting in situations supported by guidelines in order to make a decision.

12.4 Discussion on distribution of thematic categories

The three most discussed themes in the GP-UK e-mailing list were in numerical order: humour, technical, and clinical themes (Thomas & James, 1999). In contrast, the most frequently discussed themes in the current study were the organisational, clinical and political themes. The other themes in this study are equally distributed (e.g. between 4-9 %). In a sense, there are several themes that complement the more frequently discussed issues by offering a variety of topics on general medicine that relevant for the participants of the OLC. Two aspects can explain some of the result of distribution of themes. First, the professional association steer the focus towards certain themes that are important for the organisation. Second, the moderation of the online activities ensures that the topics initiated have a collective value for the OLC. The extent of professional themes is discussed now and then, instead of being a continual discussion like the topic of health insurance.

However, both issues result in most of the participants posting long discussions. The frequency of discussions will also be explained in the following chapter taking into account the number of postings in threads and

number of participants who engage in these threads. The frequency of technical discussions in the British study was considered to be very high compared with the frequency of technical discussions in the OLC studied here. In this study, technical topics also deal with several aspects of technologies. These discussions not only stress problem solving when the e-mailing list does not function satisfactorily. Rather, the participants discuss how IT is being used in general practice. This will be further investigated in chapter 15 when participants negotiate on what consequences IT has for online activities.

12.5 Topics without a response in single postings

This section investigates the distribution of all single postings. A single posting is an initial topic that is not responded by the other participants. This examination will divide single postings and the content of these messages. The idea is to explore what topics are ignored and what happens, especially to the single contributors mentioned in a previous chapter when they do not receive comments on their initial posting. The moderator posted 43.8 % of all single postings and most of these dealt with moderating activities. A total of 519 single postings were identified. In content, the single postings discussed clinical issues such as medical abstracts, rules for participation, invitations (to a course, symposium, conference), suggested reading (literature, articles and URLs), poems and humorious contributions, announcements of new e-mail addresses.

12.5.1 Non-responsive topics

There were also single postings like stories about what is currently happening in general practice, various subjects raised for online discussions and questions asked for support by the collective without any responses. I found fifty-six messages in which the initiator explicitly asked for comments, raised a question, or attempted to start a discussion. All non-responsive messages were spread out over all seven years. A non-responsive message differs from a single posting as the former explicit the intention to receive comments whereas the latter is defined as a type of announcement that does not necessarily need to be commented on at all. Non-responsive messages can also be found in ongoing discussions, but this study concentrates on initial messages that do not receive responses. A total of 0.7 % of all postings sent to the e-mailing list over a period of seven years were categorised as non-responsive messages, which is an extremely low number. These postings have been further explored in order to discover what kind of topics might be off

limits for online discussion in the OLC. Thirty-three of the non-responsive messages were found to be open for discussion related to general medicine. For example:

> About the new methods for identifying mental illness at the Child Welfare Centres, I asked one of our most experienced nurses with more than 30 years in primary care to reflect on this matter. Here are her reflections (Anders) (m)

This is followed by an extract from a letter about the methods used and conditions they face during work, without being commented on whatsoever. The other twenty-three messages consisted of a direct question to anyone in order to get some kind of support, as in the following excerpt when Donald wants to discuss the industrial health services, but receives no comments:

> Hi! I wonder a little about the industrial health service. What exactly is their responsibility? In my experience, so far, I see them more as a "bonus organisation" which in some cases may be accessible and give good help. Does everybody have the right to their own health service at work? (Donald).

To a large extent, the content of non-responsive topics deals with organisational themes. No extraordinary topics were identified among the topics ignored. Similar topics have been discussed before and are negotiated as relevant topics for discussion in the e-mailing list as they could be placed in the thematic categories above. The examination focuses on which individuals do not receive comments in an attempt to uncover crucial patterns in online participation. In another case, a topic about the delay of postings published on the e-mailing list is brought up by Yngve:

> Why does it sometimes take four hours before my posting is published on the [emailing list]" (Yngve) (m).

Even if they have previous messages stored in the web archive, they do not use that service to look for previous answers. Online participation in an e-mailing list requires continual reading of the ongoing discussions. Otherwise, participants tend to initiate topics that are too closely related to one already discussed. In my investigation, I found that the exact same topic had been debated a year earlier. The long-term participants, who continuously read about and discuss general medicine, ignore some topics because they have recently been discussed or because they have become of less interest. The examination of non-responsive messages explore further activities by the participants in order to examine how they proceed in online participation. Altogether there were 34 participants, both first-time and long-term participants, in the group of participants who did not receive comments in the

e-mailing list. Most of them were males as well as members of the core group. Thirteen participants had experienced this lack of response on several occasions. One of the core participants did not get any response on six occasions. Even the moderator did not received responses on two occasions. Most participants seemed to ignore the situation as they continued to engage in the online activities. Five of the thirty-four ignored participants did not initiate any topics after once being neglected, but they all continued to post. Only one first-time contributor stopped posting altogether. The number of non-responsive messages is considered to be low and has therefore been not investigated any further.

12.6 Summary and comments

The content of postings is executed in the question of what participants talk about online and the frequency of these themes. The construction of thematic categories covers all the empirical material. The content has been presented in eight main categories by numerical size: organisational, clinical, political, procedural, technical, professional, other and financial. The shared interest in general medicine is revealed in the online discussions as most of the topics are close to this shared interest. Discussing general medicine online varies depending on the social practice created by the participants themselves. There are both similarities and differences in content compared to other general medicine e-mailing lists. However, the content is arranged differently in thematic categories since the frequency might differ. The shared interest in general medicine deals with topics that are held in common internationally. A characteristic of this study is the theme of professional, which is not specified in similar studies. The national characteristics are viewed in the context of the general practice in Sweden. The sub-categories in this study explain essential aspects of the content discussed. These categories indicate what engages the participants, both as a collective and as individuals. The small number of patient cases discussed indicates that the e-mailing list is used on collective basis. Patient cases are initiated in situations where participants need a second opinion or more information to solve certain case. Very few topics are outside the knowledge domain of general medicine. Participants negotiate what topics are allowed to be initiated and considered relevant for the collective and the function of the OLC. In the most frequently discussed topic, health insurance is discussed not only in connection to the organisational theme, but also in debates of political and financial themes. The examination of the single postings revealed that clinical topics are highly represented in types of medical abstracts that do not require them to be responded to due to their informative

purpose. This type of posting provides the collective with updated knowledge in the domain of general medicine.

13 ACTIVITY TYPES IN THE ONLINE LEARNING COMMUNITY

The previous chapter dealt with *what the participants talked about* in terms of the thematic content. This chapter turns to the issue of *the types of communicative activities* that are unfolding. An important aspect of these activities is how the e-mailing list is used to accomplish certain tasks and the conditions under which these are performed. The first section examines four types of activities followed by a presentation of the distribution of these types. Then, a cross-tabulation between the types of activities and the thematic categories explains the extent of what they accomplish when they talk about certain themes in the threads. The chapter ends with an examination of the average number of participants who engage in types of activities and the average number of postings that these activities generate in order to capture the engagement in activities among the participants.

13.1 Activity types in the OLC

Participants of the OLC organise themselves in various activities. The examination of types of activities is motivated by the need to understand what participants accomplish when they talk about certain themes. Accordingly, the current study differentiates between what the participants talk about and what type of activities they carry out as this will show the organisation of participation. In all, four types of activities were identified: (1) announcements, (2) discussions, (3) question-answers, and (4) stories. These categories are further explained below.

13.1.1 Announcements

One type of activity was identified by its purpose of informing the collective about relevant news in the domain of general medicine. The activity, called announcements, was also captured by Thomas and James (1999) who examined the content in the e-mailing list of GP-UK. Announcements refer to activities outside (such as seminars and conferences) and inside (such as rules for participation) the OLC. The most frequent type of announcement is medical abstracts that inform the participants about relevant scientific articles on general medicine to read. What participants accomplish through the announcements can be exemplified in the ways that work is organised collectively.

Topics relevant for GPs are sometimes published in public news media, which tend to affect the work of GPs because they have to be prepared for questions raised by patients. Some of the news items warn about taking specific pharmaceutical drugs or eating certain food, which cause some of the readers to worry about their health, and therefore they contact the GP for further consultation. The GPs in the OLC use the e-mailing list to inform each other about possible questions that might be raised by groups of patients the following days.

> In your own interest, you should read the following article in [newspaper], since there will probably be a flood of worried patients calling you tomorrow (Lars) (m)

In the excerpt above, Lars warns the others after having read a news article that lacks information. He sees the information in the article as insufficient and that the article will probably scare his patients. He therefore assumes that this might also be a concern for the others. In such a strategic manner, the GPs prepare themselves by adding complementary information about the issue. In a sense, the e-mailing list functions as an alert system for questions that might require some extra preparation. The e-mailing list functions as a resource for carrying out daily routines at work. The news media thus influence what the participants talk about online

13.1.2 Discussions

The function of the e-mailing list indicates that they discuss matters concerning general practice. In order to start debates, the initiators sometimes address a topic by means of provocatively formulated questions. They take an open approach, and the questions are not always answered with a final solution. Rather, these discussions can be characterised as rhetorical questions intended to provoke, criticise or question existing assumptions. What participants accomplish through discussion threads can be explored by coordinating collective action against unsatisfactory clinical information produced by the medical industry or media. An example of such a discussion occurred after a commercial for pharmaceutical drugs. This commercial was considered to be partial in its information to the public, which goes against the rules for how such information must be produced.

> It is unusually impudent and deliberately false information about the effects of [the medicine]. In addition, it is covert marketing to the public of a drug available only on prescription (Andy – the moderator).

With a demand for correct information about the medicine, and concern for patients' health, the moderator Andy posts a proposal for a report to be

commented on by the others. He instantly receives comments on this and as a result, he discusses the arguments that are needed in order to finish the report. The proposal becomes a discussion about whether to send the report to the ethical inspector[19] of the national medical industry association for further investigation. The purpose of the action against unsatisfactory clinical information is to maintain the quality of marketing of medical products. The collective of GPs influences the pharmaceutical industry by using the e-mailing list as an examining authority. After some months of closer examination of the report by the board of the medical industry association a verdict is given. The OLC participants discuss the result of the verdict and the size of the possible fine the medical company would have to pay.

> If we think that the business of [the medical company] consists of 10 percent unscrupulous marketing (which is probably on the low side), they might be fined all over the world and still make a profit (Lars).

Oskar comments upon the previous statement:

> The fine will naturally have no effect on the economy of [the medical company]. Foremost, it implies a loss in prestige for a company that endeavours to maintain a reputation for being serious. At best, they will think twice before the next advertising campaign (Oskar) (m).

The e-mailing list becomes a tool that coordinates their actions and functions as a review system of pharmaceutical information. By using the e-mailing list, they show their power of as a collective that maintains the high quality of medical information.

13.1.3 Question-answers

This kind of activity fulfils the purpose of getting support in an individual matter, rather than what is examined in discussion threads. Individual problems are addressed through explicit questions in order to solve dilemmas at work, in patient cases, literature requests, or while planning a course etc. Not all threads treat clinical topics about the patients and clinical matters. The need for support also includes work-related dilemmas about organisational matters. In the thread called "How would you do?", one participant asks the others for support in a moral dilemma concerning the responsibility of a patient at the nursing home managed by the initiator herself. In this case, the

[19] This person is a member of the ethical board of the research-based pharmaceutical industry in Sweden, in Swedish: Informationsgranskningsmannen – IGM.

patient has a relative who works as a GP at another health centre who wants to take over the responsibility. However, this GP does not take the responsibility for the complete set of medical treatments, medical samples and costs. The communication between the two GPs is at this point quite strained. The first response to the dilemma is made by Mats who reminds the initiator of the formal documents and the support of the manager of the primary care unit. However, the situation contains an intricate moral aspect since it includes the trust of the patient:

> Morally, the situation is intricate, and here the patients come first, that's for sure. The medical samples are probably not so harmful to the patient, and I have a feeling that you two [doctors] have different opinions about this. (Mats) (m).

Mats suggests involving a third party who will decide what to do about the responsibility for the samples. The participants complement each others' suggestions and create scenarios that might occur based on what is addressed in the initial posting.

> I agree. The problem is the conflict between your responsibility for the patient and the wish of the patient/relative about your involvement in their contact (Stefan) (m).

Stefan explains the conflict. The contributing participants only post once as they base their answers on what has already been said in the discussion. Together, they build various scenarios of what will be the obligation of both GPs. If the patient is treated wrongly, the responsibility might have consequences for the initiator even if the medical samples are carried out by the other GP. The suggestion of full responsibility, and to not allow any samples to be taken by anybody else is given by two participants. The formal solutions are positioned against the ability to solve the conflict between the two GPs.

> Depends on what kind of samples – are these worth fighting for. Maybe both of you should be more amenable to having an open dialogue? (Olof).

They discuss the whole dilemma in order to decide whether the participant should take on the fight about the medical samples or go half way. GPs have to think about the best care of the patients instead of promoting their own interests. In their advice to the participant, the responding participants add new dimensions to the dilemma from the perspective of the two doctors, the manager of the primary care and also the nurse who will probably take the samples.

> The nurse can actually refuse to take the samples as [the other GP] does not have the authority to order them (Olof).

The excerpt above shows that the GPs involved are not one who will be affected by the decision concerning the dilemma since it will also have consequences for the whole health care team. In the online discussion, they all agree that one of the GPs should have full responsibility in order to avoid possible conflicts in which one of them hides behind responsibility. This would otherwise become a disadvantage for the patient in question. The patient's ability to decide which of the GPs he/she prefers becomes central at the end of discussion. The initiator of the dilemma received six postings with detailed information from different participants. However, the initiator does not return to the OLC to explain what happened or what final decision was taken based on the online support. Few question-answer type threads end with a report on how the problem was solved. However, it is unknown whether they used other media in order to present the results of their actions after they introduced a case in the OLC.

13.1.4 Stories

Stories are a means of describing general practice in terms of what happens at work. A characteristic of activities such as stories is the lack of an explicit need for comments by the others. The e-mailing list becomes an arena for sharing experiences, reflections and ideas. One such story is shared by Eva who captured an idea from an already ongoing discussion.

> Apropos the new pharmaceutical drugs: a patient who had booked an appointment to take care of her aching toe the other day actually had another matter concerning a prescription for the new pills for giving up smoking – the urge to smoke disappears and all of a sudden the habit is gone. She had read somewhere in a news paper. When we searched for "Anti-smoke" on the website of the medical products agency, I found information and read it together with the patient about how 90 % of the patients receiving a placebo had a relapse compared to 80 % of those who got the active substance. Well, of course, it was told the other way around – 10 % and 20 %, respectively, managed to quit smoking. It was I who turned the numbers round when I summarised. "Oh, I have been taken in by a commercial" was her comment, and no prescription was written. (Eva).

This story is commented on by a few participants who explain how to get rid of unwanted medical advertising matter in their mailboxes, and some of the postings in the thread are amusing comments on the topic of anti-smoking. The activity does not turn into a discussion about the initiated topic, nor does it become an announcement in purpose to inform, or explicitly ask for support of some kind. It just describes a consultation situation that once occurred

when discussing anti-smoking pills and the conflicting information that the patient got from a newspaper. The e-mailing list becomes a forum for just sharing experiences of and ideas about what the participants find urgent to express without any intention to getting support from the others.

13.2 Distribution of types of activities in the e-mailing list

The total number of threads was used as an entity when measuring the extent of activities distributed over the categories. In a few instances, some threads (the activity) changed character throughout the thread; going from one type of activity to another. A typical change of activity emerges when the participants, while discussing a topic, attach a URL link that does not open; the activity becomes structured as an activity of question-answers in which the participants ask for support. These kinds of instances have been left out of the calculation of the distributional frequencies since the analysis showed that the participants continued to discuss the ongoing topic. Such questions involving support need to be viewed as an activity incorporated into an existing activity. Another example of an incorporated activity emerges when one participant addresses a direct question to another participant structured as a question-answer, usually in the subject heading. Since the participants do not fully exclude others from contributing to the initiated question, these threads are regarded as a way of interacting rather than a change in activity. Participants more often initiate some activities outside the ongoing thread in order to keep the focus on the other topic. The above excerpt about the story about new anti-smoking pills exemplifies this pattern of participation. One thread became a reflection by a participant who started a new thread when referring to the ongoing discussion. In addition to the introduction of the body text, it was also discovered that the use of subject heading in the initiated topic reveals what kind of engagement is expected from the others. This becomes explicit in types of activity such as question-answers that aim to get quick support in patient cases.

Due to the observation of stable activities, the thread was chosen to be the entity (instead of the postings in a thread) for measuring what participants accomplish in activities. Even if a single posting could be viewed as one activity, the posting was previously used as the entity to describe the distribution of what they talk about. Using the threads as an entity will complement previous measurements of the statistical thematic categories. Figure 13.1 presents the distribution of the four types of activities:

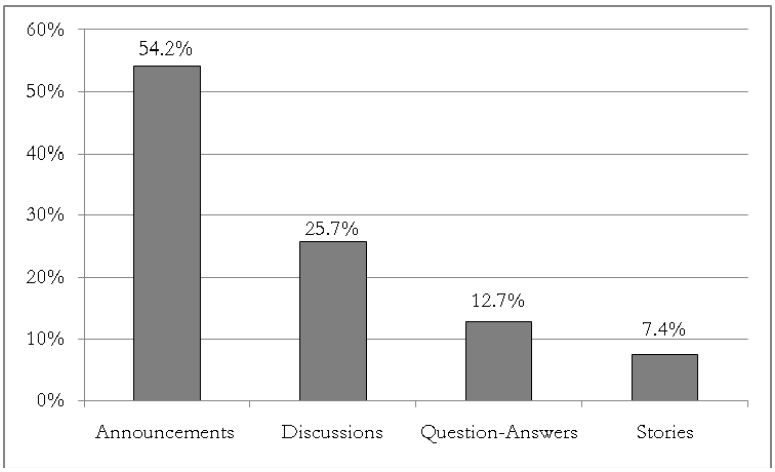

Figure 13.1. Distribution of types of activities.

The announcements make up more than half of all the threads, which indicates that there is continuous information about what happens in general practice. Most announcements are structured as medical abstracts, which makes the e-mailing list an important resource for covering the comprehensive knowledge domain of general medicine. Discussion threads are the second largest category of threads. The need for support in the type called question-answers is rather low. There are few story threads compared to all the other categories, which can be explained by activities not always being explicit when it comes to what task is to be accomplished. Most threads are initiated as the result of a collective character rather than to solve individual matters.

13.3 Cross-tabulation between types of activities and thematic categories

By adding the content of themes when exploring the types of activities, one can understand the extent of what participants want to accomplish in the OLC. In figure 12.2 in previous chapter explained the extent of what the participants talked about in the e-mailing list. That examination was based on counting the *postings in threads* whereas the current examination will measure t*he activities based on the total number of threads*. The difference between the previous examination and the current examination lies in the measurement entity selected. Since the present analysis explores the types of activities and not the threads themselves, all single postings that were earlier dismissed are now included. Even if longer threads tend to change themes, most threads have

stable activity. Cross-tabulations between the four types of activities and the eight thematic categories (as described in figure 13.2) enhance the understanding of what participants accomplish in the OLC. The first cross-table shows how the threads are distributed across activities and themes. It reveals the distribution of activities, depending on what the participants talk about, measured for all cells.

Table 13.2. Cross-tabulation of types of activities and thematic categories.

	Announcements	Discussions	Question-Answers	Stories	Total
Clinical	21.4% (302)	6.5% (91)	5.6% (79)	1.8% (25)	35.2% (497)
Financial	0.9% (13)	1.0% (14)	0.4% (5)	0.1% (1)	2.3% (33)
Organisational	13.9% (196)	11.2% (158)	4.0% (57)	2.8% (40)	32.0% (451)
Other	7.2% (101)	0.6% (9)	0.4% (5)	1.1% (16)	9.3% (131)
Political	1.6% (22)	4.1% (58)	0.2% (3)	0.5% (7)	6.4% (90)
Procedural	5.2% (74)	1.1% (16)	0.3% (4)	0.6% (9)	7.3% (103)
Professional	0.4% (5)	0.9% (13)	0.1% (2)	0.1% (2)	1.6% (22)
Technical	3.6% (51)	0.3% (4)	1.7% (24)	0.3% (4)	5.9% (83)
Total	54.2% (764)	25.7% (363)	12.7% (179)	7.4% (104)	100% (1410)

The percentages of threads that are considered to be *announcements* and *discussions* are highest for almost every theme whereas the percentage of questions-answers and stories is relatively small. Clinical announcements occur most frequently even more frequently than clinical discussions. A complementary table shows the distribution of each separate activity over the themes.

Table 13.3. Distribution of each separate activity over the themes.

	Announcements	Discussions	Question-Answers	Stories	Total
Clinical	39.5% (302)	25.1% (91)	44.1% (79)	24.0% (25)	35.2% (497)
Financial	1.7% (13)	3.9% (14)	2.8% (5)	1.0% (1)	2.3% (33)
Organisational	25.7% (196)	43.5% (158)	31.8% (57)	38.5% (40)	32.0% (451)
Other	13.2% (101)	2.5% (9)	2.8% (5)	15.4% (16)	9.3% (131)
Political	2.9% (22)	16.0% (58)	1.7% (3)	6.7% (7)	6.4% (90)
Procedural	9.7% (74)	4.4% (16)	2.2% (4)	8.7% (9)	7.3% (103)
Professional	0.7% (5)	3.6% (13)	1.1% (2)	1.9% (2)	1.6% (22)
Technical	6.7% (51)	1.1% (4)	13.4% (24)	3.8% (4)	5.9% (83)
Total	100% (764)	100% (363)	100%(179)	100% (104)	100,0% (1410)

Most announcements fall in the clinical or organisational theme or should be categorised as belonging to the category 'Other themes'. As already presented in previous chapter, participants in the OLC discuss organisational, clinical and political themes more often than the other themes. Individual support is given in clinical, organisational and technical themes. Most stories are of an organisational or clinical nature, along with stories falling in the 'Other' category. To continue this examination, the eight themes can also be distributed over the types of activities in order to see what the participants accomplish when they discuss certain themes.

Table 13.4. Distribution of activities over a specific theme.

	Announcements	Discussions	Question-Answers	Stories	Total
Clinical	60.8% (302)	18.3% (91)	15.9% (79)	5.0% (25)	100% (497)
Financial	39.4% (13)	42.4% (14)	15.2% (5)	3.0% (1)	100% (33)
Organisational	43.5% (196)	35.0% (158)	12.6% (57)	8.9% (40)	100% (451)
Other	77.1% (101)	6.9% (9)	3.8% (5)	12.2% (16)	100% (131)
Political	24.4% (22)	64.4% (58)	3.3% (3)	7.8% (7)	100% (90)
Procedural	71.8% (74)	15.5% (16)	3.9% (4)	8.7% (9)	100% (103)
Professional	22.7% (5)	59.1% (13)	9.1% (2)	9.1% (2)	100% (22)
Technical	61.4% (51)	4.8% (4)	28.9% (24)	4.8% (4)	100% (83)
Total	54.2% (764)	25.7% (363)	12.7% (179)	7.4% (104)	100% (1410)

This table shows that announcements and discussions are the two most frequent activities in most themes except for the technical and 'Other' theme. In the technical theme, question-answers and announcements are the most frequent activities. The theme called 'Other' consists mainly of stories and announcements.

13.4 The number of responses in types of activities

To understand what activity receives most responses, the total number of postings in threads is divided in types of activities. The figure 13.5 below shows the average thread length for each type of activity based on the total number of postings.

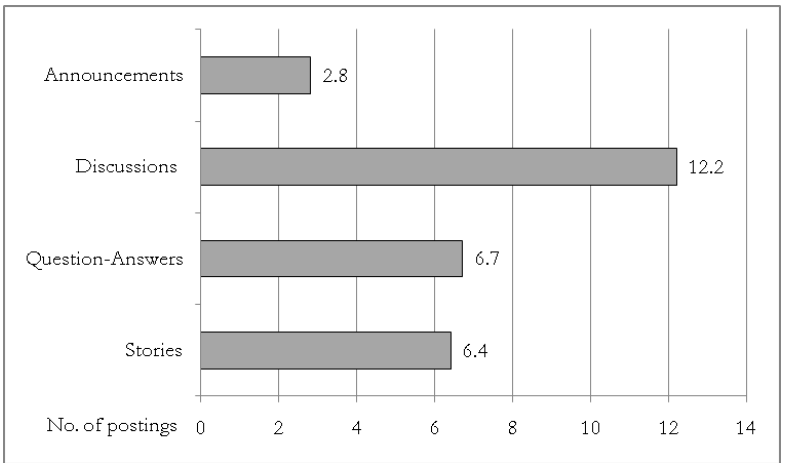

Figure 13.5. Average of thread length for each type of activity.

The analysis shows that announcements in general do not receive as many responses as the other types of activities. Most discussions turn into longer debates whereas question-answers and stories are only half the length compared to discussions. However, these last two activities have a similar response length.

13.5 Number of participants within types of activities

In order to deepen the examination above, a complementary analysis is used to investigate the number of participants who post in each type of activities. Then, the numbers of responses in types of activities can be understood based on the number of participants posting. The figure below investigates the total number of participants that engages in each type of activity.

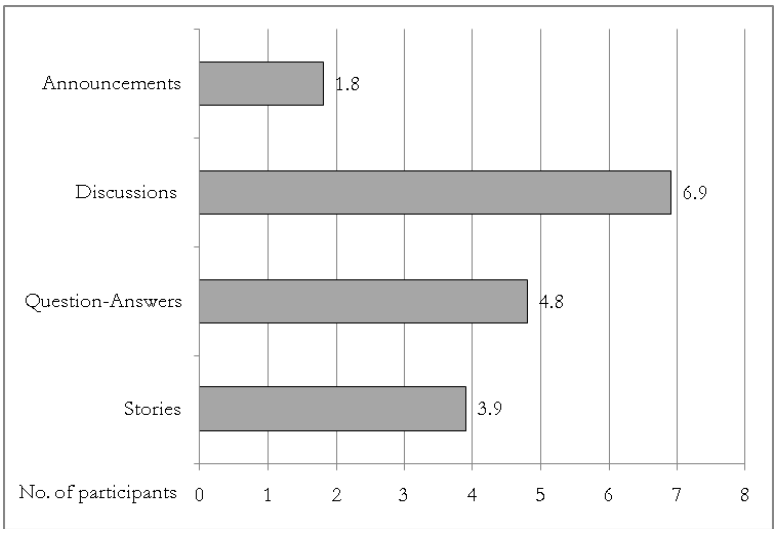

Figure 13.6. Average number of participants for each type of activity.

In an announcement, one participant informs the others, and usually receives a single comment that adds some complementary information or just to notify the posting sent to the e-mailing list. Several participants interact together in discussion threads rather than just interacting in pairs. In discussions, there is a group of participants who post 1 to 3 postings each. The number of participants is half the number of postings in discussions. Even in question-answers and stories, a group of participants posts 1 or 2 postings each. Stories tend to engage the participants less than question-answers. In view of the figures above, one can conclude that the accomplishment of various activities is mostly of a collective character as the number of threads that treat individual matters is rather low.

13.6 Summary and comments

The OLC becomes a resource for how participants accomplish various activities in general practice. This study shows that the e-mailing list is more than a tool for sending e-mail back and forth between the participants. A categorisation of four types of activities was derived that explains what happens in the threads divided in announcements, discussions, questions-answers and stories. More than half of all threads are an announcement, whereas discussion threads constitute a quarter of all threads. This leaves only small numbers of question-answers and stories. All types of activities reveal

how the e-mailing list functions, that is, both what they accomplish online as well as what they say that they do in the workplace. The types of activities were explored in cross-tables in order to find out what they do when they talk about various themes. It was discovered that announcements and discussions are characterised by being more of a collective matter. However, this does not prevent the participants from using the e-mailing list for individual dilemmas such as question-answers or just to express personal ideas about what they do as GPs. Announcements do not receive as many responses due to their informative nature. When announcements are found in comments, it is because more information is needed to complete the topic addressed. Types of threads like discussions, question-answers and stories are all maintained by several participants rather than only by pairs. One characteristic of activity showed that threads are structured as one kind only, and that the ability to start new activities from existing threads was viewed as a communicative strategy when wanting to carry out another activity.

Moderation can be viewed as an aspect that creates the sustainability of online activities (Kienle & Ritterskamp, 2007; Mazzolini & Maddison, 2007). The continual negotiation about participation in the OLC reveals positions of responsibilities and how moderation is shared among the collective of participants. The investigation of procedural themes explains the contribution that maintains how participation is carried out together. This chapter starts by investigating the numbers of postings sent by the moderator in order to understand the extent of participation compared to the other participants. This will be the starting point for examining the position and patterns of online participation by the moderator. The next section explores the positioning work around the moderator, viewed in social interactions. This will reveal what moderating activities are carried out in the OLC. The following section deals with negotiation of rules so that they become formulised in reification. The final section shows how the participants become aware of their actions, and what processes enable them to avoid conflicts and misconduct in their professional practice.

14.1 The patterns of the participating moderator

Due to the large number of postings sent to the e-mailing list, the moderator was easily identified among the participants who post in the OLC. Some descriptive statistics based on the contributions made by the moderator were derived from the SPSS file. It showed that the same moderator has been moderating the online activities for more than seven years in a row, that is, from the start-up of the e-mailing list. He sent a total of 11.8 % of all postings in the OLC, which motivated an examination of the ways of acting online in terms of managing the activities. The moderator sent one-third of all procedural postings, which means that two-thirds of the postings were sent by participants who engage in online discussions about how one should participate online. When taking a comprehensive approach to these postings, it was found that the moderator does not have the sole responsibility for moderating the online activities, even if the task is assigned to this person. However, a total of 13.7 % of all his postings concerned moderation. These postings can be further explored over the week and also related to when the other participants post over time.

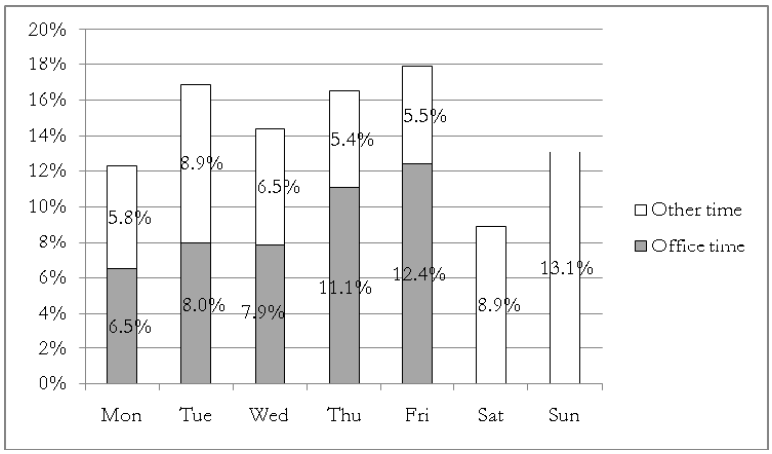

Table 14.1. Distribution of time in contributions by the moderation.

In figure above, the moderator posts most frequently on Tuesdays, Thursdays and with a peak on Fridays. These days differ from those when contributions were sent by the participants, see chapter 11. Postings sent by the participants are posted equally on all weekdays, except on the weekend, when the patterns are the same for both the moderator and the participants. One pattern shows that the moderator contributes more after office hours at the beginning of the week after which the pattern changes toward the end of the working week (i.e. Thursday and Friday) when he contributes more frequently during office hours. Contributions are sent mostly on weekends by both the moderator and the participants. To continue the examination around the clock, all initial postings and also the regular postings sent by the moderator have been placed in a time line in order to add more information to the existing patterns of online participation.

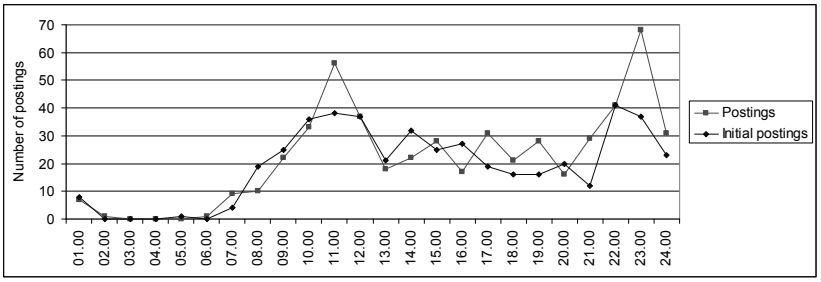

Figure 14.2. Distribution of postings and initial postings around the clock by the moderator.

Figure 14.2 shows that most initiating as well as regular postings are sent in the morning and late at night. The moderator tends to post in some online discussions at the end of office hours. He has initiated 32.4 % of all initial topics in the OLC. This high percentage can be explained by the high number of medical abstracts posted by the moderator. In the figure 14.3 below, the clock time for initial topics is divided between the initiators and the initiating moderator. It show a fairly similar curve when topics are introduced in the OLC.

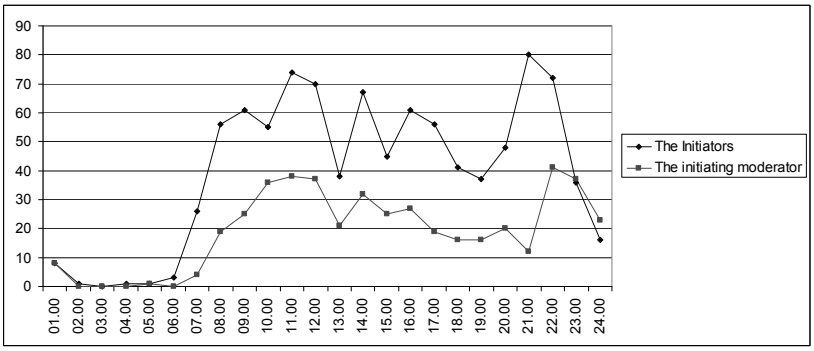

Figure 14.3. Activity of the initiators viewed in time.

The curves of the initiating moderator and the initiators are almost identical during office hours. The highest number of initial postings differs slightly, as the group of initiators introduce most of their topics around 21.00, that is, one hour earlier than the moderator who initiates topics the most around 22.00. However, the gap is at its highest range around 21.00 when the moderator reaches his lowest number of initial postings. During the last hour of the day, these numbers are almost equal whereas after midnight, the moderator initiates more topics than the group of initiators.

In figure 14.4 below, the contributions made by the participants and the moderator can be viewed separately in two timelines that show the frequency of postings around the clock.

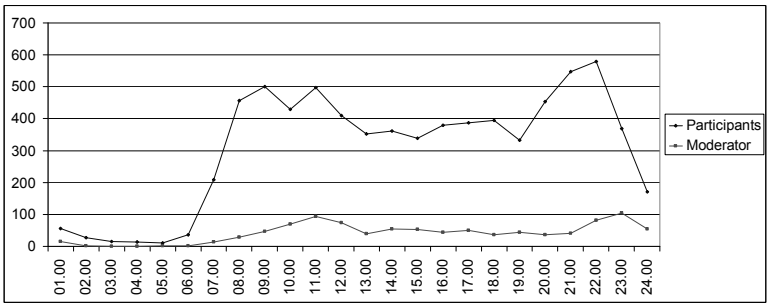

Table 14.4. Distribution of clock time made by the moderator.

The moderator posts extensively around 11.00 and 23.00 whereas the other participants contribute around 09.00 and 11.00 and at night around 22.00. During office hours (08.00-18.00), the contributions by the participants increase and peak around 18.00, which seems to mark the end of office hours. The contributions by the moderator are fairly stable throughout the working day. Since the moderator initiates most of the discussion threads, a pattern emerged of postings published in the evening being answered by the participants in the morning, with the moderator responding around 11.00 in order to manage the discussion to continue during the day. During office hours, all of them post more frequently in the morning than after lunch at around 12.00.

The influence of the contribution of the moderator can be explored by using SNA software. However, since a sociogram based on the participation in discussion threads with others would be blurred and unable to observe the influence of the moderator, a sociogram investigated his influence in terms of his absence. The sociogram 14.5 below shows a social structure of shared postings in discussion threads excluding the moderator in order to view his influence in online participation.

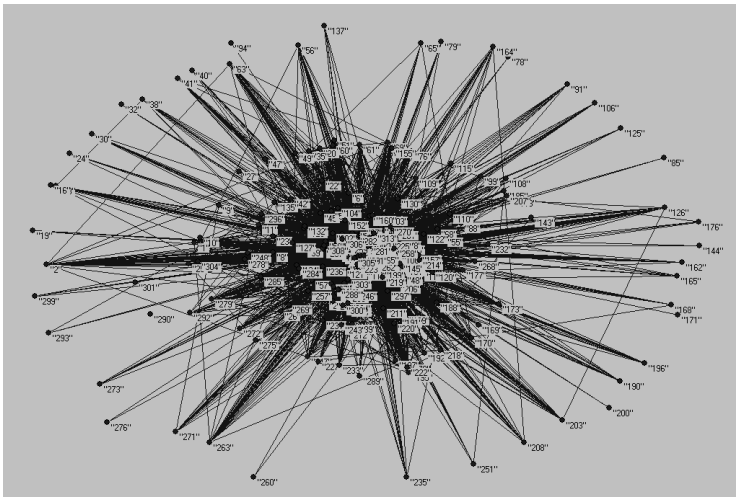

Figure 14.5. Sociogram without the moderator.

The sociogram shows that even if the moderator is excluded from the examination in the social network analysis, there is still a cohesive structure of relations among the participants. Even if the moderator sends large numbers of postings, the OLC is not influenced by his contributions alone. The sociogram and figures above show that participants and the moderator had similar patterns. The first section has explored the contributions of the moderator in terms of number of postings and patterns of online participation connected to the participants, thus making it possible to understand the influences of his engagement. In order to continue the examination, the analyses will capture situations in which participants moderate the online activities together.

14.2 The positioning work of being the moderator

One way of understanding moderation is to examine how the moderator signs his postings. In regular online discussions, he normally uses his first name since he acts as one of the participants. In moderating situations, most of his postings are signed by as the "the moderator", and sometimes as "the man of order" or "fixer of the list". The variety of moderator titles is combined with a humorous touch together with "smileys" in order to lighten up the tone of reprimands, as he wants to reduce nagging. The tone of the messages differs depending on whether the rule breaker is a newcomer or a long-term participant. The idea of moderation is not to be too harsh on participants if

they have done something wrong. Rather, it is to uphold the rules in the OLC so that all the participants know what is expected of them. Most participants actually are aware of the rules, but forget them now and then. Situations that require moderation are viewed as material for how to maintain the OLC once they occur. The most of the moderating work is assigned to the moderator. Some of his work is actually done outside the OLC and, furthermore, discussed in a private one-on-one conversation with the participant involved. The moderator is viewed with respect by the other participants in the OLC. They support his actions to moderate the online activities. Viktor describes the moderator as the authority with several qualities of his engagement:

> Andy [the moderator] has several "faces" here on the list. On the one hand, he is an "ordinary" [member], as he provides us with interesting announcements from other corresponding [online] discussion forums and on the other, he acts like a man of order. If the "Man of order" speaks, everybody has to listen; [members] can easily be deleted with a click. (Viktor).

The dignity of the moderator is explained by his ability to take action. Everyone needs to follow the rules and guidelines when they post. Viktor claims that the moderator acts in front of the collective and for the collective as they have all agreed to follow the rules. In moderating situations, the moderator acts when incidents occur. In the excerpt below, the moderator uses his status to hold a professional conversation.

> As the moderator, I will try to close [the current dispute] in order to prevent the topic from fading or any debate on the life situation of any single participants [of the e-mailing list]…/… Every life situation is unique and I think it would be wrong to discuss this specific case of [the name of the participant] in this forum and I think we would do best to avoid comments in public. If you want to react personally against [this participant's] letter, perhaps you could send a message via private e-mail. Andy Johansson – the moderator.

In positioning of his authority, he sometimes uses both the title "the moderator" and his full name as his signature. He motivates the need for his actions, and still shows his respect for the participants in discussions. Sometimes, but not often, he suggests that the topic should rest for a while, since they would otherwise become too emotionally involved in the specific matter. Most of them have been participating for several years and long-term participants know each other from earlier online discussions. The negotiations on how to discuss general medicine are situated in a professional context which forces them to defend their own reputations. They have to apply the scientific discourse when posting to some of the topics.

14.3 Negotiation of online participation

Procedural topics are raised by anyone when they want to discuss ways of participating online. Through the years, they have discussed what topics should be allowed to be published, how to strategically use texts in messages, and they have drawn up behavioural guidelines for how they can socially interact together. They coordinate their replies, reduce unnecessary postings to promote more crucial topics instead and they introduce discussions about the quality of postings, just mention a few of all the procedural discussions. They discuss what is important to maintain as guidelines for online participation. These negotiating situations form the background for understanding how moderation is carried out. Moderation will be explored in terms of how the rules emerge in negotiation.

14.3.1 The norm for commenting on initiated postings

One participant reminds the others about his urgent topic since he did not received any comments the first time:

> Maybe you remember my last posting I sent concerning the [topic], I still want to get some response on that issue, if someone dares answer (Stig) (m).

Not all participants are as insistent in their approach as Stig who asks for answers from the others. Together, the participants have tried to reduce the number of situations when initiators are completely ignored. The moderator declares the need to comment on initial postings in order to prevent participants from ceasing to post or unsubscribing from the e-mailing list. These situations lead to a collective agreement to respond to initial postings. A core participant called Olof comments on one of these initial topics even though he had never heard about the method that is introduced.

> Somebody was complaining earlier about certain postings that never get any response and it is rude to those people who have written. Since no one has answered yet, I would just like to say that I have never heard of the method. (Olof).

The response from Olof fulfils the purpose of re-introducing the topic. Olof asks the participant for more information in order to continue the discussion. The action taken by Olof resulted in a few more comments on the topic. The norm for commenting on initiated topics does not prevent participants from responding, unsubscribe, or thus avoiding alienation in online participation. This was later discovered in chapter 11 and 12 when examining what happens when single contributors or initial postings do not receive any responses. The established norm is a result of situations that occur, jeopardising online

participation. The collective agreement can be viewed as a result of online participation based on collective experiences over time.

14.3.2 Negotiation on relevant topics

The participants must know what kind of topics are allowed to be initiated in the OLC.

> Andy [the moderator] wrote yesterday: "It is too quiet in the [e-mailing list!] What are you all doing?" …. One should maybe reformulate the question: What kind of discussions need to be held in an e-mailing list like [the name of the e-mailing list]? (Lars) (m).

What can be discussed in the OLC is exemplified in either relevant or irrelevant topics. What is considered relevant to discuss or post is negotiated constantly among the participants, especially in periods when the activity drops or ceases completely. The excerpt above represents a common subject of discussion in the OLC studied. In negotiations, they can all participate to decide what topics matter to them. If the online discussion ceases, they actually break the silence by discussing what to discuss. On one such occasion, Tim breaks the silence with a report on his experience of participating in another international e-mailing list:

> The list has been ongoing for a couple of month now. In comparison to [other e-mailing lists in general medicine] I have been following through the years, I can confirm that these [lists] have a considerably broader range of discussion topics than [this current e-mailing list] so far. In one of the e-mailing lists, the participants have contributed with poetry. In another e-mailing list, the contributions (about 30-40 postings a day) included indecent stories, personal assaults, vacation greetings, etc. [This e-mailing list] has agreed on a considerably more serious tone. (Tim).

They all agree that general medicine should be discussed. This is followed by a discussion about whether they should broaden the range of relevant topics to include topics outside the actual shared subject. This would perhaps persuade more participants to post as well as newcomers to subscribe. They argue for a less serious tone in the online discussions. As to being influenced by another general medicine e-mailing list, poems could lighten up the otherwise so strict discussions about general medicine. However, not everybody was in favour of the poem suggestion. Johan claims that:

> All the suggestions are good except for poetry, which do not belong here [the e-mailing list] (Johan).

However, Johan ends his message by quoting a verse from a famous poet. His contribution goes against his own idea of relevant topics. Allan explains the idea of publishing topics, stressing what sustains the OLC over time:

> I do not have anything against poetic contributions, but not to compensate for "low activity in the e-mailing list". The activity should not be a means in itself? (Allan)

This implies the need to sort out what kind of postings should be allowed to be published. By using subject headings, they decide what topics the participants find valuable to read and respond to. The discussion ends in an agreement to skip irrelevant topics being initiated in the OLC.

> […] we should not have any commercial marketing of products or the like on our list. Only members can send [messages] so that no SPAM will occur. (Eva).

This kind of negotiation has two functions. Firstly, to keep the focus on what topics are relevant for the collective. As a result of these negotiations, they also define the shared subject for what is considered to be general medicine. The negotiation of meaning is stressed in certain topics where all the participants share knowledge. Secondly, they try to avoid individual concerns, such as job advertisements and marketing for individual profit, since these topics do not contribute to the collective interest. In the rest of this examination, the moderation of online activities is included in the reduction of unnecessary topics and the promoting topics of shared meaning.

14.3.3 Construction of rules for online participation

This section shows the process in which the collective formulises a rule for quotations of postings published outside the OLC. One such condition is stressed by Lena who tells the story of being contacted by a journalist about something she posted to the e-mailing list.

> When we first started [the e-mailing list], we decided that we should have an open [forum], that is, anyone is allowed to participate, not only members of the association, not only general practitioners, or any other limitation. And even if most participants are general practitioners, there are also others. For example, [the medical journal]. A few days ago, I received a call from one of their journalists who wanted to interview me about a posting [I sent] to [the e-mailing list]. It is nice that what we write [online] attracts the interest of others. As long as we are aware of what forum we write to (Lena).

Lena makes the others aware of the openness of the OLC. The fact that this OLC is an influential Swedish health care forum emerges in situations that force them to consider what they write in public when they are sometimes quoted by journalists in news about medicine, which is read outside the OLC. Journalists find their scoops by reading the discussion threads. The participation of journalists becomes formalised in a rule after one of them had quoted a posting without the permission of the participant involved. Stefan

posted an apology addressed to all the participants in the OLC after breaking the quotation rule. He had jeopardised the ability to speak freely in the OLC.

> I learned my lesson from my mistake and hope that the [the e-mailing list] continues as an open forum for ideas about health care and clinical issues that all concerned want it to be. You can continue to write to the list with complete confidence, and be assured that I will not use any of [our words] without first contacting the author. (Stefan)

The apology by Stefan is accepted, and the online discussion continues as before with the same intensive debates. The conditions for online participation emerged in situations that forced them to negotiate on how they should be allowed to participate online. The quotation rule is formalised as a result of the incident.

> [The e-mailing list] is an OPEN forum for discussion, which means that anyone interested in the subject of general medicine is allowed to participate. It is therefore not addressed merely to general practitioners, members of the professional organisation or associates, but even a few JOURNALISTS AND PEOPLE FROM THE [MEDICAL] INDUSTRY are participating. NOTE this!! So far, this fact has not obstructed our debate. A few incidents have forced us to introduce the rule that JOURNALIST MAY NOT QUOTE POSTINGS FROM [THE E-MAILING LIST] in newspapers without the approval of the contributor. (Andy).

In the excerpt, the capital letters forbid journalists explicitly to quote from postings followed by lower-case letters that explain that participants have to give their permission to be published. All journalists must to ask for permission. However, the representatives of the professional association see the importance of being mentioned in the news in order to get publicity that might recruit more participants. Therefore, they prefer having the name of the OLC published rather than just being referred to as an e-mailing list. The relationship between individual and collective character needs to be maintained, i.e. as an influential OLC. The quotation rule will ensure the safety of contributions by participants, which otherwise might affect individual intentions to contribute negatively. To sum up, this rule formalised in a series of situations that was negotiations between the participants in the OLC; starting by the awareness of its possible incidents further to reification of a specific rule. Then, moderating online activities can be maintained through the collective decision on an appropriate behaviour that allows them to participate in different ways.

14.4 Shared activities in moderation

Once the rules are negotiated, moderating becomes crucial in order to maintain ways of online participation which they have agreed on. When the participants talk about how to participate, they all know what matters to the collective. This means that the work on moderating can be carried out as a shared activity in the OLC.

Moderation can be understood as a constant process of negotiation of rules among the participants, not only carried out by the moderator.

> Well, I think it is time to assist [the moderator] when it comes to convince the others to cut the tail of their messages (Johan).

The shared activity of moderating emerges when the participants find it necessary to comment on what happens online, and in situations when they know that the moderator has recently commented on a rule. Most rule breakers are related to newcomers' mistakes or long-term participants who have forgotten the rules they once agreed on. The task of moderation activities becomes a shared responsibility, viewed as collaboration by the participants. Three different kinds of situations explore how the collective maintain the rules and moderate the online discussions.

14.4.1 Reduction of previous answers in postings

Long text sections are sometimes required when discussing a specialised subject such general medicine. Based on full descriptions of the initial topics, they need to raise the topic with a full explanation. They apologise for the long contributions, but at the same time, most of these postings are accepted and answered with almost as long answers as the initial posting. Moderation is carried out in collaboration by and for the participants in order to organise their text messages when answering in an ongoing thread. In order to read and comment on long text sections, they are all forced to organise their messages according to the structures of the e-mailing list. The most discussed rule deals with the reduction of long text sections. These text sections are added automatically to answers once they reply to a previous posting saved by the e-mail programme. This rule is called "Cut the tail", which refers to the tail of previous texts in the discussion thread. To some extent, these text sections serve as a reminder of what has already been discussed, but as the debate increases so do the long answers to texts written in postings. This means that it is very important for online participation in the OLC to reduce irrelevant texts.

> "CUT THE TAIL!!
>
> Sometimes it can be necessary for the context, especially if there are a couple of messages in between, to save some lines from the message in your reply. PLEASE CUT all unnecessary texts, "the tail", as it is good 'netiquette', otherwise the text sections will be unnecessary long.

Only relevant texts are saved in the posting that support the understanding of current text in answer. When they cut the tail, the participants show respect for those who subscribe to all the postings sent once a day or once a week when they receive a compilation for the actual period. Below, Allan explains that the daily subscription fits his work schedule better because he is not able to post to discussions during the day. He describes the problem he faces when attempting to read the unorganised tail of answers:

> First, there is some information on how to use the e-mailing list, then messages 1, 2, 3 follow. This is practical when there are only a few messages sent each day. However, if there are over fifteen messages sent in one day, it is difficult to cope with all the extra text that is added in between messages. (Allan).

There is no tool in the e-mail programme that removes the added text messages so this has to be done manually by each and everyone who contributes to the OLC. Only those who subscribe to the postings in this way would probably understand the problem and how serious they are about all participants following the rules. Marcus agrees about the problem.

> Some of the participants have used the sign "<" at the beginning of a new line, which make it easier to skip text, other [messages] do not have any indication whatsoever, so suddenly you discover that you are reading a message repeated from yesterday (Marcus).

The sign that Marcus is referring to indicate that it is a part of a tail of answers generated by the e-mailing programme and not by the participants. Only some of the participants complain about this problem, which shows that there are different ways of participating online. Robin explains:

> I think it is convenient if answers are connected to current postings in debate. It reduces the risk of being misinterpreted" (Robin) (m).

Some participants use the previous text messages as a reference for what they are commenting on. They tuck in their answers in between the topic examined in the discussion. However, most participants agree to reduce the text, but they tend to forget to follow the rules. This can be seen in the frequent reminders sent by the moderator as well as the participants who subscribe to the daily or weekly digest. Moderation is about reminding participants of what

they have agreed to. Participation in an OLC is about incorporating ways of participating that might differ from what would do oneself.

14.4.2 Handle the conflicts

In the moderation of the OLC, the professional context is embedded in what the participants actual do online. There are rules for making correct quotations, issues of secrecy in discussions of patient cases, censorship of jokes on gender, cutting back on irony and sarcasm in messages, the preferential right to interpret and ways of influencing other participants, proposals for quality checks of postings in debates, and message signatures, all of which for a framework of rules that require moderation if these rules are broken. What can be said or not said in the online discussion is closely linked to the professional context. Sometimes participants disagree in debates. If the debate does not include anyone else, they are moved to a private e-mail conversation in order to solve their conflict. The reason is to not disturb the others with their dispute since all their arguments end up in everyone's personal inboxes. Consequently, there is a need to scrutinise what kind of postings might concern the collective as a whole. The contribution to moderation lies in understanding the consequences of one's actions. Markus avoids a potential conflict by not responding to a previous message. He is sure that the wrong tone in his answer will result in a conflict that will have consequences for his professional character:

> The latest posting sent [by a participant] about [the topic] invited me to post an offensive message, which I was forced to refrain from posting (Markus).

Moderation is self-consciously performed in situations as participants know what is required of them regarding good manners. Even if they are offended, they are trying to avoid being a troublemaker. When a reprimand for unacceptable behaviour needs to be posted, the participants take the conflict outside the OLC. On one such occasion, a participant was given a dressing-down in front of the others by someone other than the moderator. Since the tone of that reprimand seemed to be rather cruel, the moderator stepped in and explained how he usually dealt with such matters:

> It seems to me that [participant X] has been given a dressing-down concerning a posting he sent, but I was discrete enough to send him this in private. ;) (Andy).

The moderator explains that he has already been taken care of that matter, but he suggests that they can tell the participant in private by sending an e-mail outside the list. Discretion is needed when sending a reprimand to a single participant when it only concerns individual actions. In the excerpt above, he

uses a smiley in order to avoid being misinterpreted when talking about how to comment on ways of acting. Moderation is about understanding the situation of online participation by being able to explain the need for taking care of misconduct when participants not longer follow the rules agreed on by everybody. Online participation also involves strategies for moderating the online activities equally for all participants without special treatment of anyone. Peter explains the need for online discussions based on respect:

> I think it is important that collegial discussions are held in climate that concern the topic, and in a respectful manner based on the conviction that all people with different opinions strive to understand each another

> I think that many [of the participants] have their keyboard blocked as they prefer to read other people's opinions. Talking about myself in several cases here. Sometimes I prevent myself from participating because of nasty attacks, over-interpretation and sarcasm that are sometimes present in discussions. (Peter).

Peter explains the crucial need to create an atmosphere in which the online discussions are fruitful. The participants in the OLC try to define and contribute to what they consider to be appropriate behaviour. Then, moderation then consists of a collective attitude that reduces the number of comments on how they should or should not interact. They all seem to share in the activity of moderating in situations where they find it necessary, which means that they all have to know what they have agreed on in the OLC. Participants step in to moderate their fellow participants when they find it appropriate so that the moderator does not need to be a nagging participant. The active moderator uses almost any incident that occurs as material for maintaining appropriate behaviour when participating in the OLC. This means that he gives reprimands to anyone who breaks the rules because if he discriminates in favour of the prominent participants or someone else, he would jeopardise established professional relations. Only newcomers are allowed to break the rules without receiving a reprimand.

14.5 Summary and comments

Moderation has been studied in activities rather than assigning this task automatically to the moderator. Using this approach, the moderating of online activities is revealed in terms of its collaboration. Participation is viewed in the context of its negotiation, which emphasises agreement on how online activities are to be carried out. The continual negotiations of procedural topics create continuity in how they expect one another to contribute to the OLC. This makes possible collective consideration, which means that everybody will

follow the rules since they all contribute to the negotiation of rules. The moderator has managed the OLC for more than seven years, which is a long time. The investigation of the postings sent by the moderator showed that his contributions do not only concern the task of moderating. The huge number of postings can be understood as a variety of positions and activities performed in the OLC. He participates as one of the participants and posts in all the thematic categories. There is a group of participants who manage the OLC in ways similar to the moderator. From the structure of participation it is obvious that the moderator is not always taken the leading role. His contributions show that he at times step back to promote the others to post. The high number of postings can be explained as a continual service for providing information about relevant research studies. These kinds of postings increase the number of his contributions compared to all the others. Another service provided by the moderator is information about the OLC itself since he posts the rules for participation on irregular occasions. This posting provides the framework for online participation, as the rest of the rules needs to be adopted by participating in the OLC. Nevertheless, the moderator applies several strategies in order to maintain the rules. Incidents when rules are broken become situations for learning how to participate. All participants are treated equally, without any exceptions for influential participants. Mistakes by newcomers, who are still learning how to participate in the OLC, are accepted. In most cases, the participants forget to follow the rules once they publish the message. Sometimes the reprimands are posted outside the e-mailing list to the participant in question in order to not disturb ongoing activities. Only a few conflicts have been observed. Since they sign their postings with full names, they avoid disputes because they care about their reputation. In the event of a dispute, they are asked to solve the conflict via one-on-one e-mail. Moderating online activities is not about pointing out for members that some participants have done something wrong. Rather, they have to share the responsibility for facilitating participation in order to generate activities that engage the others.

15 THE AFFORDANCES OF THE TECHNOLOGY

The affordances of the technology stress both offerings and constraints when using an e-mailing list (Gaver, 1996). From an ecological perspective on e-mailing lists, the technical infrastructure affords both predictions and explorations for social interactions. From such a perspective, social interactions are understood as embedded in and shaped by the affordances of the e-mailing list. The threading of a discussion is the underlying structure guided by the subject heading in the e-mail messages. Subject headings introduce the topic of the body text created by the participants themselves (Orlikowski & Yates, 1994). This enables the readers to grasp some of the content before they open and read the message. The heading of an e-mail becomes a resource that enables other participants to decide whether or not they will continue to read the body text and perhaps even contribute to the topic. *Why* and *how* the participants use the e-mailing list can be explained by the professional context. This chapter explores the technical infrastructures in two sections. The first section deals with negotiation of meaning when using the e-mailing list. As the participants make progress in participation, they need to negotiate about what technical infrastructure suits their activities in order to continue online. The second section treats subject headings as a structural device that provides information on how they carry out activities in the e-mailing list. This section explicates how participants use headings to strategically structure the conversations through such a feature. This chapter will enhance the understanding of the conditions for participation in the e-mailing list.

15.1 Negotiation of the technical infrastructure

Some of the online discussions deal with the technical infrastructure of the e-mailing list. Technical topics are introduced by participants who experience how the functions of the e-mailing list influence the way they participate in the OLC. These technical topics explain some of the aspects of sustainability of the OLC. Conversations about the functionality of the e-mailing list explain something about how the participants reason about how they organise themselves in online participation.

One such online discussion about the technical affordance of the e-mailing list emerged when two participants were having a dispute about a topic that tended to affect the others. One participant suggested that if someone is

annoyed by a topic, this person could delete it. Another participant proposed that they should abandon the e-mailing-list and change to a web based discussion forum instead in order to make it easier to decide what topics they want to read. Based on their different opinions, they ended up in a discussion about the constraints and the contributions of the e-mailing list compared to other kinds of existing online environments. Walter, who is a prominent participant and a spokesman for the web-based environment, presents his plans to start a competing web-based discussion forum, and he also invites all GPs to join the online discussions.

> The thing with the platform we are using for the e-mailing list is that [all postings] go to everybody. A more modern technical solution, which I have recommended that [we] should use is sub-groups of discussions so that those who want to participate choose either actively or passively, whereas others can search for discussions that interest them without the need to participate in everything (Walter).

> Those who want to contribute need to search actively for a particular debate with the theme they find interesting. [Postings in the e-mailing list] go to everybody whether or not you have declared your interest in the specific issue. This requires a degree of restraint including the undersigned (Daniel).

Walter talks in terms of avoiding having all postings ending up in his mailbox. However, the introduction of a web-based discussion forum would result in an online environment competing with the existing e-mailing list, unless they find ways of cooperating. Some of the participants argue that there will only be room for one online environment where they discuss general medicine. Walter argues that a web-based discussion forum would handle a considerably larger numbers of participants who discuss general medicine than is the case at present. The conditions for using a web-based forum would totally re-structure the online discussions because they would have to log into a website in order to post messages in pre-determined themes. Since only some topics interest a few people, they could choose to read and comment on those topics in the themes that concern them without receiving all postings in their mailbox, Walter explains. Some of the participants claim that such an arrangement would result in less participation in the existing debates as most of them only read the online discussions without posting comments in the debates.

> A much greater concern is that there are so few [participants] who write here [to the e-mailing list]. Including me. There are several who would gladly take on the role of being the "man of order" without contributing constructively to the [debate] (Jan) (m).

Jan notes that there are participants who prefer to moderate the online discussions rather than discuss general medicine. The main contribution of an e-mailing list is that all content is delivered directly to each participant, which creates the same conditions for participating for everybody, compared to a web-based discussion forum where they have to visit all the themes to see the content. What brings them together as a collective of GPs is the ability to act together based on what content they initiate and contribute to; otherwise the online discussions would risk being spread over different professional networks if they changed to a web-based forum. Daniel continues to explain:

> One shared [e-mailing] list could perhaps help us to formulate the soul of general medicine – without getting into too much detail – interest groups, networks, special debates tends to alienate enthusiasts from the shared reality? Is it not an advantage that [postings sent to the e-mailing list] go to EVERYBODY? (Daniel).

> I am not sure that [the e-mailing list] should be divided into several sub-groups, because of those few colleagues who are active and I don't think that that crowd would stand being spread over several sub-themes. What do you think the headings would look like in these pre-determined sub-themes? No, I think that we must accept that people want to talk about various things and if it sometimes feels tedious you just quickly delete those postings. Knowing the online conditions for the current need for online discussion creates a framework for how development and sustainability can be achieved.

Peter suggests some kind of collaboration if a web-based forum is introduced in order to keep the online discussion alive.

> Simply there must be quite a few active contributors if it is going to be meaningful/necessary. I also wonder how many online environments for discussing general medicine we can manage (Peter).

Lena explains the idea of using the e-mailing list under the conditions they are discussing general medicine at present:

> Sub-groups mean that you have to foresee what topics will emerge in order to carry out some kind of categorisation. If you look back in time [in the e-mailing list] the topics have changed, some have indeed come up frequent at times, but most of them would probably been unpredictable if you had come up with subdivisions a year ago (Lena) (f).

> There will come a day when the postings sent to the e-mailing list will be too numerous and badly arranged and we will be forced to organise topics into sub-categories. We are not there yet. As long as 2-3 postings are sent every day /…/ the debates are not fully satisfying as they will be forced into groups of topics (Lena).

The reasons for using certain tools need to be discussed collectively in order to negotiate about what they do online, how they view their contributions and what makes them act in support of the OLC. The negotiation of what it means

to switch to another technical platform is based on what they all know about the online conditions that they share when participating online. The e-mailing list is negotiated as being most appropriate for what they do online and how they discuss general medicine. In the remainder of this section concerning negotiation of the technical infrastructure, the continuous participation over several years, based on the e-mailing list is negotiated in the OLC and closely connected to ideas about the professional context and conditions at work. The decision to continue to participate by using the e-mailing list has kept them together for a very long time. The number of topics with technical themes is very valuable for building an OLC based on a technical infrastructure that suits their professional context.

15.2 Headings as a structuring resource

The headings are a question of moderation as they affect how the participants can interact online. Below, one participant explains how they should use headings in order to be able to follow the online discussion in the OLC:

> When you attempt to answer a posting to [the e-mailing list], please check the headline (Subject, Topic or whatever it might be called in your mail application) as it shows when you send a message. If it says [the name of the e-mailing list] more than once, it is possible to delete [that string]. It does not become explicit at all, as I will understand it. [The added string] will be published automatically (William) (m).

This excerpt is used as a vignette of this section. It shows how one of the participants formulates a reason for using headings that make the content more explicit and how it needs to be used properly in the OLC. The proper use of headings is explained by William in his comment about to remove irrelevant text from the subject field. Otherwise, the actual heading of the content is disguised by nonsense text added automatically through a number of replies in the e-mail applications such as:

> [NAME OF PROFESSIONAL ASSOCIATION]: Re: Re: Re: Re: …our speci

The irrelevant information prevents the actual heading from being shown in a satisfactory way. It soon gets placed far to the right because there is not enough space. The heading "our specialist training" does not show at all in the excerpt above, which creates a discrepancy between the content and the heading. This complicates the ability to get an overview of the online discussion. Therefore, William explains the dilemma and how everybody needs to organise the headings. The organisation of the headings is closely connected

to moderation of the OLC and is discussed among the participants now and then.

Another aspect of the headings is that even though the heading content match is good at the beginning of the discussion, the content is not stable. It evolves throughout the social interaction among the participants, gradually making the heading less suitable. The discussions commonly shift from one theme to another in the longer conversations. If the content of the discussion has changed and the initial heading has become obsolete, the participants try to rename the heading in order to fit the actual discussion for the benefit of the newly arrived participants. This does not mean that the online discussion often ends up in something totally different from the initial discussion. Rather, online discussions treat various aspects of the topic once initiated. On one such occasion, a core participant called Oscar's attempts to change the out-of-theme heading to a more suitable one.

> Actually, we ought to change the [heading] because I found it hard to see what this topic is about [the heading of the political theme]. Therefore, the subject heading has now been changed…. (Oscar).

Oscar changes the heading to "Notification of illness" since he feels that the former heading, "More about establishment", is obsolete. Since the e-mailing list allows participants to answer to less recent postings, the string suddenly has the same discussion under two different headings, one old, less appropriate and one new. The participants continue to respond to the former heading even after Oscar had changed it. However, the attempt to rename the heading is neither commented on by the others, nor do they bother to place their postings under the more accurate heading introduced by Oscar. The online discussion continues as usual. The attempt to create a cohesive structure of the thread often fails. However, this does not prevent the participants from interacting. Together they possess skills that enable them discuss topics even if the headings are disguised or imprecise. Headings will be further explored as they are used as tool within the OLC.

This chapter will further explore the ways that headings are used in the OLC. This will explain some conditions in which the participants interact and how they organise themselves. In the following section, the different headings are categorised according to their characteristics that will show what happens in the social interactions. By looking at the construction of the heading, one can observe various ways in which they position their ideas in connection with the heading and the content. The participants use several strategies in order to receive comments from the others, which mean that the heading is an

important tool. Headings were analysed in terms of their structure and the ways they tended to differ were studied. Seven categorises were created that explain various strategies when using headings:

1) One-word headings
2) Several topics in headings
3) Headings as a question
4) Headings as an appeal for support
5) Statements in headings
6) Headings addressing specific participants
7) Recurrent topics stressed in headings

All seven characteristic ways of using headings are described below in detail.

15.2.1 One-word headings

One of the labels frequently used is the one-word heading. The one-word heading is often used by initiators to introduce a clinical or pharmaceutical matter such as "Alcohol", "Diabetes", "Asthma", "Campral" or "Bladderscan" etc. These headings consist of only one word. The subject indicates what kind of topic will be discussed without revealing any specific issues related to the topic. These headings do not specifically explain the clinical matter. The one-word heading make the participants categorise the initial topic in order to decide whether or not to read the message. Some one-word headings such as "Rules" also indicate that the participants do not need to respond. This heading explains that the posting is categorised as an announcement rather than an online discussion.

15.2.2 Several topics in headings

A combination of two topics in one heading is sometimes used. In these cross-subjects messages, the heading combines two topics in one heading. This occurs when initiators add another topic while they participating in an ongoing discussion and when they attempt to moderate the online discussion. For example, the heading "Otitis media and YELLOW CARD" was created by the moderator from the ongoing discussion about the clinical heading "Otitis media". He demands that the participants "cut the tail" of answers. The yellow card indicates that something wrong has been done as the

moderator has assumed the role of referee. This has already been examined in section 10.6. What is remarkable in the topics with two combined headings is the continued focus on the ongoing topic when they discuss two topics in one posting (explored as cross-subjects in the section 12.10.1 on thematic categories).

15.2.3 Headings as a question

Most often, the heading is formulated as a question with or without a question mark. These headings can take various forms of specifically formulated questions. The initiator might be looking for an answer to a specific problem such as "How do you proceed?" The heading is used to question what is happening in the field of general medicine, e.g. "Could [the health care project] be very good?" Questions are used as starting points in debates, e.g. "What do we call ourselves?", which is formulated as an open topic. Another more typical heading involves the use of a question mark as in the heading "Weight reduction?" In this case, the heading is reinforced as a question of weight reduction. These kinds of questions are intended to arouse curiosity about the topic raised in a question, the meaning of which is somewhat diffuse. The heading could also be interpreted in "A question about weight reduction".

In some headings, the initiator offers various alternatives for the others to choose from when they intend to start a new discussion. In one heading, the participants can take a position based on the options "General medicine, family medicine or…?" In this case, the heading provides two main choices, and a third choice open to suggestions. However, the idea is to address the same discussion about what they should call themselves as mentioned above, but with a range of options formulated in giving terms to choose from. These headings occur in various ways as the topic of discussion is set in a dichotomy of either for or against the initiated idea, but not as a final statement. Questions often deal with pharmaceutical concerns. In the heading "Probiotika – How common? Safe? How good?", the initiator not only provides a topic, formulated as one question, but also stresses a number of sub-questions to be discussed. These questions in the heading underline the urgent need to discuss them. In this case, the initiator structures the questions in three different sections where the participants can fill in their answers. The connection between the heading and where participants can respond is pre-determined by the initiator.

Often, the questions used in headings cannot intuitively be understood unless the message is read. For example, one heading was "7 hours?" When reading

the text, it can be see that the heading refers to the delay that sometimes occurs between submitting and publishing a posting in the e-mailing list. In this discussion thread, the initiator wants to know why it sometimes takes seven hours for the message to be published on the e-mailing list. It is noteworthy that by being specific about how long it takes, the heading indicates a genuine interest in the reason for the delay, but it can also be understood as questioning the length of the delay, i.e. if it is reasonable that it takes that long.

In patient cases, the question mark serves as an indicator that the initiator is interested in quick answers in topics such as "Pearl stuck in nose?" Such a heading appeals to the other participants for support since most of them recognise the need for support in patient cases. This kind of question makes the participant solve the problem really quickly. The first answer was sent 1 hour and 40 minutes later, and a total of ten answers were posted within four days, four of them on the very same day.

15.2.4 Headings as an appeal for support

Another kind of rapid response is given when participants appeal for support in headings. For example, "Help me explain mysterious pain" when the participant asks the others to share their knowledge in order to solve a patient matter. The urgent need for support in making a diagnosis requires collective efforts to respond quickly. The heading indicates what is required of the collective as they can relate to the physical context. Another dilemma is addressed in "Drunken-driver patient and neighbour", which implies an appeal for support and indicates that it is a troublesome situation for a GP to solve.

15.2.5 Statements in headings

Statements in headings are also frequently used to initiate a discussion since the participants are allowed to debate as they can take different sides. The statement can be used to allow the participants to either agree or provide a counterargument. One such example is the statement "Wrong to invest all efforts in primary care". When reading through the following statement, it becomes obvious that most of the replies are based on the notion that most GPs have the opposite opinion. The heading establishes a provocative starting point that is used to be able to position alternative views in the discussions that follow. Other examples of similar headings are: "the current advice on diet for diabetics lacks scientific evidence", (how to act on the changes in contemporary guidelines for diabetes),"Nothing is for free – doctors for independence" (questions the attitudes towards GPs who are joining paid

luncheons sponsored by the medical industry), "Listen to the profession!!" (concerning the need for national politicians to listen to the GPs). Headings formulated as statements are also commonly changed throughout discussion as participants attempt to decide what statement represents the most relevant opinion.

15.2.6 Headings addressing specific participants

In some headings, the initiators address specific participants. In some cases, the name of an expert provides information about what topic that will be discussed as he is well known as an expert on special issues in general medicine. Participants often ask these experts specific questions as most of them know about their position in various organisations, etc. For example, in headings such "What does Steven say?" or "A question to Robin", the actual topic is not explicit, but all the regular participants in the OLC know what Robin's area of expertise is, or want to know more about Steven's views on a topic discussed recently in the news media. The heading can also be formulated as a statement that addresses a specific participant. For example, "Lennart is wrong about [the subject]" which actually forces the specific participant to answer and explain what he means in greater detail. Unless Lennart changes the current heading, he has actually agreed that he is wrong. This makes headings a powerful tool in online discussions.

The heading is used in similar ways when it responds to certain ideas stressed by participants in an ongoing discussion. For example, in one such heading called "Plan of action", the heading shifted to "Plan of action – response to Johansson" during the discussion. If Johansson replies to this posting, the discussion evolves into parallel discussions that examine the same topic. Restructuring the current discussion into two threads forces the participants to decide where to place their answers in the ongoing discussion. Even if one of the threads is dedicated to one specific participant, the other participants post to both threads. They are not forbidden to reply as it is the actual aspect of the topic mentioned by Johansson that is being questioned. However, most participants reply to the original heading. This was explored earlier in the first section of this chapter when one participant attempts to adjust the heading in an ongoing discussion to fit the current topic under discussion.

A similar way in which participants modify existing heading is when they highlight certain aspects of a topic. For example, the topic of recruiting GPs is discussed in "Recruitment and the future", which concentrates on what will happen in the future unless they have strategies for recruiting new medical practitioners to general practice. As they share long experience in general

practice, one participant recalls earlier challenges and attempts to recruit GPs, and the heading is changed to "Recruitment and the history" as the thread turns out to discuss how general practice has evolve over the years. They discuss what they already have accomplished in the matter when they discuss former strategies for recruiting GPs. The heading turns into a language game.

15.2.7 Recurrent topics stressed in headings

The construction of headings can indicate that the topics have been discussed earlier in the OLC. The participants are sometimes aware of topics that are repeatedly discussed and the need to notify the participants about this. One example is the heading "Generalist – again". The heading indicates the intention to debate the professional role of GPs and that this has been discussed previously in the OLC. The heading is a topic that attracts the interest of many participants in the OLC and, in fact, professional topics always generate huge responses. For this reason, a heading with a professional theme is often re-introduced when there is low activity in the e-mailing list. In this chapter, several headings, similar to "Generalist – again", concern professional topics such as "What do we call ourselves?", "General medicine, family medicine or…?" or even "Listen to the profession!!" All these headings, has been derived from the professional category, and point at topics that make the participants expect what will be initiated in the OLC as this is a well-known dilemma to discuss in general practice.

15.3 Summary and comments

Discussions about the use of the e-mailing list make the participants fully aware of the contributions and constraints that best suit their professional practice. Since there are several modern online environments for professional associations to implement, a shift to another technical platform makes sure that the idea of increasing the numbers of subscribers when the professional association consider the actual number of contributing participants. By understanding the online conditions in which they participate, the activities in the e-mailing list can be explained in terms of continuous participation rather than as jeopardising existing patterns of participation. Headings do not fully reveal the actual topic initiated in the OLC. Rather, the construction of headings can be short or/and fairly diffuse in meaning as it is intended to arouse the curiosity of the participants. Headings can be provocatively formulated. Both statements and/or questions give the participants an opportunity to state their own opinions or ideas in subject headings that become the tool for how the discussion evolves. The various ways in which

heading are used generate responses. The investigation of headings showed that participants read the whole discussion threads by using the headings, which make threading less important when participating in the e-mailing list. The participants in the OLC have established common ways of using the headings as a tool for social interaction. When they modify the subject heading, the discussion tends to emerged in several ongoing discussion threads that treat the very same topic. This way of participating does not actually constraints their contributions in the discussion. They try to change the heading when it no longer fits the content of the current online discussion. However, the participants master the obsolete headings as they nevertheless understand the essence of the debate. The headings are most important at the beginning of discussions. The use of headings is not only a matter of moderation, they are also used as a tool for getting the participants to categorise what kind of discussion is being introduced, which can be revealed through its heading. Thus, they recognise announcements about topical discussions through their headings. The wording of headings causes the participants to agree or disagree, as they tend to agree to a statement of heading that they do not fully accept. Consequently, changes in headings tend to develop in language games in order to announce certain aspects of the topic discussed. In a sense, the online participation also involves skills to use subject headings in order to promote essential ideas, relevant arguments and statements about general medicine.

16 DISCUSSION

In the beginning of the thesis, participation in OLCs was raised as one trend in professional development and vocational training. The idea of OLC influences professional and occupational associations to organise themselves in order to provide arenas for online learning (Cho, et al., 2007; James Lin, et al., 2009). Organisers of professional development endeavour to maintain these learning arenas over time in order to extend the ordinary network of colleagues at work with professionals who participate online. Building OLCs becomes a tempting offer for members since they all need to share the responsibility for organising the online activities. The effort that is required of them demands for continual facilitation in order to work. This thesis fills this gap with knowledge about GPs who communicate within the general practice using an e-mailing list.

The following discussion explores the five sets of research questions that were formulated in chapter six; the characteristics of the participants, the participation, the activities to sustain participation, moderation aspects, and finally, the technological affordances of the e-mailing list. Subsequently, some thematic issues in the results will be discussed. Finally, some methodological reflections are articulated.

16.1 What characterises the participants of the OLC?

Between the years 2000-2006, totally 295 participants have contributed with postings on one or several occasions. The number of subscribers has developed over the years. In the beginning of 2000, approximately 100 professionals subscribed to the e-mailing list, while there were 500 subscribers at the end of 2006. The proportion of participants who contribute compared to the total number of subscribers has decreased over the years. It was shown that the increased number of subscribers does not automatically result in a higher number of contributing participants, not even when letting other professionals than GPs post to the e-mailing list.

The number of participants in the OLC in the study is low, compared to other OLCs in general medicine. In the e-mailing list of GP-UK, Fox and Roberts (1999) as well as Thomas and James (1999) report a much higher number of GPs who contribute online. However, this must be understood against the background of a much larger population to draw from.

A number of members in the OLC has participated for several years. The number of long-term participants, who have participated in the OLC for over three years in a row, increased with 36 % from year 2002 to 2006. A substantial proportion of the long-term participants has been a member from the very beginning of the OLC. This group of participants continues to post as they engage in professional networks together with participants who also have long-term membership. The group of long-term contributors grows during the years. Not all of them are very active in terms of posting. Rather, the group is a mix of active contributors and participants who just post now and then. A large number of participants only makes occasional contributions.

Most of the participants who contribute are specialists in general medicine. Some of them are members of the former listserv that was used before they started the e-mailing list. Online participation mirrors membership of the professional association even if this is not a requirement. That the OLC is built upon an existing professional network is as important "grounding" aspect. Earlier research shows that individuals who knows one another also tends to post (Wasko & Faraj, 2005).

However, even if the OLC has grown out of a professional network, it is in principle open for anyone to participate. This openness is to be regarded as an option or possibility for people outside the profession of GP to become participants. The open access in itself does not seem to trigger non-GPs to participate other than marginally. This finding is similar to the findings by Curran and Abidi (2007) who observed that in their study of an OLC most activities were carried out by the main actors, such as the advanced nurses, even if other professional groups had access to the OLC. The result of this study shows that if non-GPs want to contribute they are welcome to do so. However, reasons for the low participation of non-GPs are probably to be found both in the social origin and dynamics of the community, as well as the professional discursive activities that are at the core of the interaction in the network. This will be dealt with in the subsequent sections.

Most of the participants share long experience as GPs. The majority of the participants is born in the 1940s and 1950s, and was registered as medical practitioners during the 1970s and 1980s. There is a lack of junior GPs. There are more junior GPs who are members in the association, but these GPs are often doctors who are specialising in general medicine and are formally in training to become certified specialised GPs. This age structure may look a bit strange, but one explanation is that there is a competing e-mailing list built specially for the concerns of these ST-doctors. However, they are not

excluded from participating in the OLC under study, and some of them actually do. Another understanding of this structure is that participation in the OLC is connected to membership in the association and that the association is built as a platform for collegial concerns. Put in theoretical terms: participation in the OLC (membership in the association) has the structure of legitimate peripheral participation (LPP) (Lave & Wenger, 1991). Furthermore, the participation structure is reified in the mandate of the association of examining applicants to become general practitioners.

A vast majority of the participants lives in the capital city and larger cities in Sweden. Approximately one third of all participants works close to medical universities. GPs in the OLC interact with participants from the same geographical area. One interpretation is that the OLC is based on membership in an organisation and already existing social networks were people know each other. In this perspective the OLC can be regarded as an extension of an existing network.

Concerning gender, it was noted that a majority of the participants in the OLC is male. This can be related to the higher number of males who work as medical practitioners in Swedish health- and medical practices. In sum, approximately 80 % of the participants was male. The number of females in the OLC has increased over the years. This mirrors the gender structure development in general practice. It can also be noted that the percentage of women participating in the current OLC is higher than in the e-mailing list of GP-UK as they constituted only 11 % in 1998 (Thomas & James, 1999).

16.2 What characterises the participation in the OLC?

The second research question examines participation in terms of the characteristics of the professional context, considering the structures and rules, but also positions and positioning work created by the participants in social interactions.

In this study, participation has been explored in terms of postings sent to the e-mailing list. Postings have been defined as either initial ones that introduce a new topic, or regular postings, which are contributions to an existing topical discussion. More than half of all participants contribute with initial postings, which can be considered rather high since most of them do not post in huge amounts. There is a small group of around 17 % of frequent contributors who posted more than the others. In fact, these frequent participants easily take a position as members of the core, making them recognisable to the others.

Together with the core participants, the sporadic contributors create a continual flow of activities. This becomes important for the dynamics of the OLC. Another observed characteristic of participation is that long-term participants do not engage more frequently than other groups in the OLC.

In the OLC, a set of reified rules has been created by the participants, which contains a small number of important guidelines expressing what they all have agreed upon when enrolling in the online participation. These rules are accessible on the website. A number of rules has been compiled in a posting and is distributed on different intervals by the moderator. The distribution of the rules is triggered by activities that do not conform to the rules.

In OLCs, the negotiation of rules concerns the topics that participants are allowed to initiate. General medicine is stated as the shared interest in the welcome note together with the rules. However, no explicit rule restricts the participants in what can be talked about, even though it must be recognised that it is stated in mission of the professional OLC to discuss matters of general medicine. In case topics are initiated that go beyond the knowledge domain of general medicine, this is pointed out by the moderator and also the core participants.

According to Maricic (2005), participants in online communities used various communicative strategies that compensate the lack of physical context when interacting online. Rules of participation differ depending on whether the OLC is moderated or not. In this study, some of the rules state a standard of communication for how participants are supposed to interact online. The rules conduct an appropriate behaviour in ethics of communication, pushing the importance of having a polite tone of communication. Participants negotiate the appropriate behaviour whenever incidents occur online. Since there are several actors who engage, they do not always share the same agenda for participation as they use the texts differently. For example, journalists are not allowed to quote any text-based communication without the consent of the author of a particular posting.

However, the negotiation of rules does not only occur when the rules are broken. This is a constant process intended to raise the numbers of contributing participants as everybody knows how to participate, no matter if they are long-term participants or newcomers.

All participants need to follow the rules, no matter who they are or what professional rank or degree of prominence they possess. Whenever the rules

are broken, this is an incentive for moderation of the online. The importance to participate on equal accounts is stressed in this rule that strives to hold the professional network together. The participants will not jeopardise the professional networks to let some participants gain advantages just because they are considered to be a prominent person. Being treated as equally as possible is an important grounding premise of the OLC.

Characteristic for the online participation is the continual negotiation on how to participate in the OLC. This means that the participants both formally and through their participation have a kind of contract with the community. Mattsson (2009) showed the importance of such contracts being created by the participants themselves when learning in educational settings. Together participants make rules for how they should support the activities initiated in the OLC. Lave and Wenger (1991) refer to such contracts of participation as structuring resources, meaning that they will structure both the how and the what of the online communication.

Looking at the structure of participation three different main structures were exposed by using social network analysis.

A cohesive line structure is created by the participants who answer upon previous information and add new content. Mercer and Wegerif (1998) describe similar patterns of dialogues of cumulative talk. In dialogues, people add information that complements what has already been said about the topic. A cohesive structure becomes visible in activities like question-answers when the initiator receives support from a group of participants that complement each other's information directing their focus on the addressed problem.

The most frequent structure is the star. A star means one of the participants is positioned in the centre of attention in participation. The star emerges when a group of participants responds to the initiator directly, or when someone else in the thread takes the conversation further and receives more attention than the initiator. Similar pattern of participation is found by

Finally, a dispersed structure emerges more often in longer discussions. This structure shows that participants keep contributing even if they are not sure where to place their posting in the conversational order (Mercer & Wegerif, 1998). This happens when a discussion becomes more complex to follow for the participants, for example when it involves several participants and various issues of the initiated topic. In that case the main thread often splits into a fragmented structure consisting of smaller threads and single posting. All

postings are then placed outside the main threaded structure, which challenges the participants to continue to answer to the variety of issues under discussion. This dynamic and dispersed structure indicates that participants do not just place their postings in a sequential order.

Lave and Wenger (1991) discuss participation in terms of positions of core and periphery during social interaction. In this study a macro approach was taken, examining the whole network over all years. This created an overview of the professional network. On a micro level, social network analysis was carried out on threads in order to expose individual positions when participating. Four positions were identified: hardcore-, core-, and peripheral participants, and isolates. The fact that only a few isolates (i.e. contributions that do not get a response) were found is interesting, since it means that participants tend to respond to one another when someone initiates a topic. It should also be noted that not all core participants maintain their position, although some of them keep their position over the years. The group of hardcore participants is fairly stable over the years. It was also found that participants in the centre of the networks (hardcore and core) engage in several themes rather than just contributing to one special theme only. Being core participants indicates that they act as generalists in online participation. Whereas in other kinds of OLCs, a core position might be maintained by those who know the most about one specific topic only (Wasko & Faraj, 2005) the participation in this OLC mirrors a fundamental characteristic of the profession.

Hardcore- and core participants also initiate most of the topics. Core participants most often have been members for a long period of time. The hardcore- and core participants engage in procedural topics in order to maintain the rules all together, which is not surprising. It is a something that is a part of their position

In the empirical analyses it was shown that positions are dynamic in that sense that outsiders are allowed to occasionally take position in the core, even if they possess the opposite perspective than the generalists. An opposite perspective provides an opportunity to critically examine the ideas for organising health- and medical care in Sweden. In one specific situation (presented in chapter 10) a non-GP became a participant through the reluctance to expose her professional title. What makes this an extraordinary situation was that the non-GP took full control over the discussion with arguments not rooted in the same perspective as the group of GPs. Actually, her arguments challenged the

foundation of general practice as a profession when she argued for another kind of organisation of the Swedish health- and medical care practice.

Even more noticeable was that she became one of the core participants while not being a GP. In the discussion, she did not reveal her professional title. This could actually have marginalised her arguments totally. When she took position within the discussion, the GPs strove to reveal what kind of domain she belonged to as they intended to attack her arguments. Without the professional cues, the group of GPs struggled to understand her agenda. As long as the professional title was not exposed, she had complete control in the discussion.

This "incident" shows the dynamics of the OLC. Participants of an OLC accept the variation of ideas that nurture the discussion about their perspectives on what they hold in common. In the presented case, it becomes more important to examine other arguments instead of figuring out if the person was an "insider" or an "outsider" to the profession.

One purpose of an OLCs is to gain from the collective as participants give and take from participating (Hewitt, 2005; Wasko & Faraj, 2000, 2005). This means that participants who do not contribute online are not involved or visualised as they are only viewed in the member list of e-mailing addresses. Although there are a high number of subscribers, only a small part contributes with postings. Actors that only read but do not post are often referred to as lurkers (Herring, 1996; Maricic, 2005). Wenger (1998) points out that mutual engagement needs to be viewed in the membership. There are many ways for participants to engage in professional OLCs. Not all participants contribute. Rather, some of them act upon their individual accounts, which are not forbidden when participating. Some of them become followers of the debates. This group of participants is actually the largest group, but they can be considered presumptive participants. Some participants who finally post their first contribution have been members for a long time. The group of followers also constitutes an audience for those who post and the OLC environment can be considered a theatrical stage (cf. Goffman, 1959).

Beaudoin (2002) showed that even when participants tend to be invisible online, they spend a significant amount of time on the OLC and benefit from their low-profile approach. Based on the professional context, this group of followers cannot be called lurkers in its negative meaning. The voluntary conditions for participation mean that it is up to the participants to decide the extent of their contributions. Using the terms active or passive in order to

distinguish between groups of participants becomes useless for explaining ways of engagement in the OLC.

This study provides knowledge on how professional identities are negotiated and displayed in the professional context in the online environment. Wenger (1998) claims that identities are formed in participation and reification. This means that participants engage in general practice which gives them experiences of participation. What they do in the OLC reifies them as participants. Therefore, some topics become more valid than others whereas other topics are not relevant to post. The suggestion by the moderator and core members to let participants share both personal and professional cues in member presentations in separate posting was introduced as a strategy to increase the number of participants who post. This was not responded to by the participants as a group. According to other research studies on moderated professional OLCs, the content of discussion concentrates exclusively on the subject (Wasko & Faraj, 2000). This is not to say that professionals do not socialise just because they do not get to know one other privately, that is, personally outside the professional context. Rather, socialising takes a form of continual positioning work among the participants in the OLC which is anchored in the professional context.

This study captured what makes participants view one another in terms of GPs or not, and foremost, how those who post belong to general practice. Since participation is grounded in the professional association, the reduction of personal cues opens for more equal conditions when participating in the OLC. Also, excluding personal matters make participants focus on shared professional topics and subjects. This focus partly explains why non-GPs can obtain a core position in the OLC, even though they do not share the generalist perspective.

When participants do not know each other personally, the OLC functions as an arena for anyone to raise professional topics about general medicine. The shared subject constitutes the joint enterprise rather than who you are in general practice. Some participants reveal their status by adding professional titles or qualifications of being specialists or not. In some signatures in postings, the participants expose the name of their work place and its geographical location. As mentioned by Hara and Hew (2007), distant and informal contact between professionals from different organisations is an important mechanism for knowledge sharing. In a sense, the effort to detect the positions of participants becomes everyone's work in order to know who is who in the professional network (Malin & Carley, 2007).

The presentation of prominent participants, foremost carried out by the moderator, has the purpose to attract participants, including the readers, to contribute in debates, knowing that they all constitute the group of expertise. The prominent participants contribute with a certain expertise as some issues are automatically addressed through their appearance. The notion of prominent participants results in comments from sporadic participants who ask questions about content that they know they can obtain from these participants. According to Jones, Ferreday and Hodgson (2008) participants present themselves based on what topics they contribute to. This will expose them to one another as they will notice to what extent the participants are GPs.

16.3 What characterises the activities in the OLC?

The OLC is used in order to accomplish certain tasks. In chapter 13, four types of activities were revealed in announcements, discussions, questions-answers and stories. Announcements inform about important information of potentially shared interests. Discussions are carried out in social interactions that treat topics of general medicine. Question-answers are initiated by individuals who ask for support. Finally, stories about experiences from their work in general practice are shared. More than half of all threads were categorised as announcements, whereas discussion threads constitute a fourth of the activities. This leaves only a minor percentage to question-answers and stories. All types of activities reveal how the e-mailing list functions, that is, both what participants accomplish online as well as what they say that they do at work.

The moderator is a frequent contributor of announcements. It can be considered a service for the participants in the OLC. In the e-mailing list of GP-UK, the number of announcements is small (compared to all the other themes in that OLC). In the current study, the announcement is stressed as an activity that informs about topics that can be derived from all themes. This is in contrast with Thomas and James (1999) who only consider conference invitations, courses programmes or seminars to be announcements.

Types of threads like discussions, question-answers and stories are all carried out by several participants whereas pairs often perform announcements. This means that participants usually respond to announcements in order to notify its topic or to receive more information. In the other activity types, participants add one or just a pair of postings in these threads. This generates a

higher number of participants engaging online. One characteristic of the activity showed that threads are structured as one activity only.

When examining the single postings in chapter 12, the result showed that those who initiate patient cases, that is question-answers activities, were not likely to continue posting in the OLC compared to those who posted in activities like discussions, usually being first-time contributors.

Participants who posted in others discussion threads before initiating a discussion themselves were more likely to receive responses from the others. In case they were not recognised by the other participants they tended to remain without response. In order to become a participant, they first had to engage in collective matters rather than ask for individual recognition. This is a way to present oneself in front of the others as becoming one of the participants. This phenomenon can be understood as a conservative force in the OLC. It also reflects a kind of periphery-centre philosophy (cf. Lave & Wenger, 1991), where participants have to earn their position by first recognising the collective rules of the game. The participants have to understand (i.e. learn) what topics are attractive to discuss collectively, since the OLC is not organised around individual concerns.

Hara and Hew (2007) showed that in the OLC for nurses, knowledge sharing and recruiting were frequent activity types whereas announcements and discussions were most often accomplished in this OLC. This is in contrast to the OLC under study which focuses on activities valuable to the collective, and therefore does not include so many questions-answers.

The length of threads does not necessarily indicate the quality of the content (Mazzolini & Maddison, 2007). In a professional OLC, most activities are short matters as participants intend to provide as correct information as possible. In this perspective a short and precise investigation of a topic can be considered an indication of high quality. Both announcements and discussions were observed to fulfil the purpose of accomplishing common goals. The cohesive structure of threads shows that participants add information in a cumulative way (Mercer & Wegerif, 1998), especially in question-answers activities.

16.3.1 Moderation

How the OLC will develop over time is closely connected to the organisation of moderation (Vavasseur & MacGregor, 2008). An important characteristic of the current OLC is that the moderation was performed by the same moderator

for over seven years. Moderation is an activity that is primarily the responsibility of the moderator, but in practice it is a shared responsibility within the community. Approximately 1/3 of all procedural postings was sent by the moderator. This leaves 2/3 to the other participants. The moderator sent approximately 12 % of all postings ever sent to the OLC.

When measuring the moderator's contributions separately, 14 % of all his postings treated moderation, which shows that his participation in the OLC is more than acting as the moderator. It was revealed that the moderator initiates and contributes in all thematic categories, being the gatekeeper of the activities. Stuckey and Smith (2004) conclude that sustainability depends on the efforts of the moderator. Wise et al. (2006) showed that participants in moderated online communities elicited greater intent to participate than in un-moderated online communities.

When examining moderation in activities, rather than just assigning moderation to the moderator only, patterns of moderation are revealed. The participants moderate the activities together when they find it necessary to support and relieve the moderator. One reason for a collective engagement in moderation is the continual need to moderate in situations when rules are broken unintentionally or intentionally. The collective engagement in moderation prevents the OLC from becoming just an arena for information exchange rather than knowledge sharing (Brace-Govan & Gabbott, 2004).

Moderation is about the work to maintain equal accounts for anyone who decides to post. The moderator in this OLC managed this strategy by carrying out reprimands, making no exceptions to prominent participants breaking the rules. They are all treated as equally as possible. Whenever one of the prominent participants complains about getting a reprimand the moderator does not go into discussion. Maricic (2005) found that ignoring offensive postings is the most convenient strategy when handling presumptive conflicts. Most of those who break the rules just forgot them but this does not generate conflicts since most of them apologise for not being careful enough. Mistakes by newcomers who still learn how to participate in the OLC are accepted.

The moderator obtains the mission to initiate topics that make the participants engage upon what is raised for discussion (Kienle & Ritterskamp, 2007). Therefore, moderators often obtain the broadest picture of the online activities and the professional context (Stuckey & Smith, 2004). However, the relevance of topics is negotiated within the OLC in order to determine whether they deserve further examination.

Kienle and Ritterskamp (2007) argue that the moderator needs to have a clear assignment which is anchored among the participants. This became explicit when participants defined the various roles of the moderator. In professional OLCs, the role of the moderator is that of a "contributor among contributors" rather than just "sage on the stage" or "guide on the side" as was mentioned by Mazzolini and Maddison (2007).

Moderation needs to be understood in terms of activities or even certain positions in the professional networks. The moderator can use several techniques for moderation (Kienle & Ritterskamp, 2007). One such technique is the moderator's use of various signatures when posting to the OLC. This makes the participants aware of the moderator's role.

Another technique is based on metaphors that are being used in order to lighten up the reprimands delivered to specific participants. Metaphors capture the scene to reprimand participants in front of the others without condemning their behaviour totally. Most reprimands are given in situations when participants occasionally forgot the rules. Only a minor number of conflicts in the OLC can be explained by the presence of inaccurate rules. The major number of conflicts can be explained by the participants' care for their reputation as professional actors. Even if participants sometimes experience confrontations, they avoid these by explaining the inappropriateness of conflicts in the OLC. In case a conflict occurs, the antagonists are advised to solve this outside the e-mailing list, in one-to-one conversation through e-mail, as was shown in chapter 14. However, some conversations are not considered conflicts since most of them are used in argumentative discussions representing diverse perspectives in medicine. Maricic (2005) showed the dynamic in conflict managing styles carried out in online environments.

16.4 How is the OLC developing over time?

Researchers explain that there is a need for continual efforts by the organisers of OLCs once the technical platform has been implemented (Renninger & Shumar, 2002; Wasko & Faraj, 2005) in order to sustain online activities. These are not self-propelled, meaning that participants do not naturally contribute just because they have an online environment to use. It is a continual work that needs to be shared between members in the professional networks that the activities are emanating from. In the discussion of moderation above it was argued that a hallmark of the OLC studied is that these effort is shared between the moderator and a group of participants. But

there are also other aspects of sustainability that is important to the development of the OLC over time.

Roberts and Fox (1998) present a model for sustaining medical e-mailing lists in clear aims and objectives, a collection of information resources, facilitation, a sufficient membership, and infrastructure to support the discussions group (such as archive of messages). All these aspects are observed in the OLC under study.

Another aspect important for sustainability is what participants talk about (professional discourse). One aspect of this is how the discussion in the OLC reflects a discussion of medicine and general practice in the society. In the analyses it was revealed that initial topics reflects upon what happens in the general practice at the present time, which has a concern for the participants. Also, participants must to be capable to continually initiate new topics, not the least since these indicate the existence of the e-mailing list. What happens within general practice outside the online environment is important for the online activities. In case there is nothing new added into the discussion, activities tend to decrease. Thus, the record of the online activities within the OLC does not only show the development of the OLC, but it also reflects the development of general practice over the years.

Examining participation during the first year showed important patterns that revealed that the OLC started as a cohesive group of professionals in an existing network, whereas they later on chooses to contribute to specific topics of their individual interests. Further on, small professional networks gather around specific topics to discuss as individuals organise themselves into networks of different sizes (Grabowski, 2007). Put in other terms, the OLC is developing as a community by a differentiation as a social network.

However, in terms of the themes and activities the OLC are rather consistent over the years. The emergence of activities during the first year showed a consistent number of themes initiated from the very beginning, and later, refined over the years. This I found surprising since I expected to view the progress over the years in new themes and activities introduced over a longer period than over the initial year. What I observed was that the themes and activities have been refined over the years, but the basic agenda – the themes and activities - set at the start was kept over the years. This is probably a reflection of the adherence to a strict collective and professional discourse and that the OLC is a part of the professional organisation of general practitioners.

The analyses presented in chapter 8 showed that postings were more frequently posted during autumn and winter, compared to spring and summer seasons. Even in relatively calm periods, such as (summer) holidays, participants continue to post once they are back at work. This shows that participation in the OLC is tied to their work practice, which is not surprising given the professional discourse of the community.

It was also shown that postings were sent on all weekdays, which stress the idea of organising continual professional development. Participation is carried out on office time as well as outside working hours. During office time, participants post more actively in the morning than in the afternoon. This can be explained by the pattern that explains that most postings around the clock is sent in the evening, then, they seem to answers these topics during the morning hours the following day.

The empirical material shows a consistent form of activity for over seven years. Postings continue to be published to the e-mailing list long after finish the data collection of this study. In this study, sustainability has been raised as one aspect of the OLC that go beyond the simplistic view of keeping the technological platform running.

In this section, sustainability has been stressed in terms of time aspects in online participation. What create sustainability in online activities are the continual discussions about how to participate online and what conditions they interact at work. The continual development of OLCs needs to be understood as a balance between stability and change (Stuckey & Smith, 2004). They explain sustainability of OLCs in terms of the responsibility for the organisational staff to supply their members with knowledge. This study shows the importance that this also becomes a shared responsibility among all participants.

16.5 What is the content of discussion?

The content of postings was categorised in eight main themes. Ordered from most discussed to least discussed those are: *organisational*, *clinical*, *political*, *procedural*, *technical*, *professional*, *other*, and *financial* topics.

The three most discussed themes in the e-mailing list of GP-UK were humour, technical and clinical (Thomas & James, 1999). In this study organisational, clinical and political themes were most frequently discussed. These themes are typically matters for a professional organisation. In the OLC

under study, the professional themes prevailed whereas the un-moderated GP-UK seemed to be more of an arena for socialising international GPs by exchanging humoristic accounts. The total number of clinical and organisational topics in the OLC is far higher than any other themes.

The investigation of the sub-categories within the clinical and organisational themes exposes what GPs find important to discuss online as it also is close knitted to what they do at work. The investigation of the sub-categories scrutinised the shared repertoire on what they know and do together (Wenger, 1998). The most highly represented topic was about health insurance, which indicates the practical and supportive debates that are of concern for GPs at work. The topic of health insurance is included in several of the themes mentioned above. This shows how the discussion about general medicine can stretch over themes.

There might be several reasons for the differences between this study and the GP-UK study. First, the professional association steers the focus to certain themes that are important for the organisation. Second, this is carried out by moderating the online activities. The moderator assures that the initiated topics have collective value for the OLC. Three, all subscribers receive every message directly to their inboxes. This supports a structure of an equal distribution of the postings. Since the participants take part without anonymity they only post content that really matters for the shared subject as their reputation may otherwise become questioned.

The distribution of thematic categories can also be explained by the work of the moderator. The moderator reduces the number of postings sent in themes like procedural, other and technical, which were highly represented in the un-moderated GP-UK. In a sense, the moderator acts upon the interests of the professional association as the topics are evaluated in terms of their collective interests or, in terms of Wenger (1998), what they are there for. Therefore, topics like job recruitment are forbidden, since the professional association acts for collective interest rather than individual concerns.

The priorities of the professional association are revealed through what is discussed. As both clinical and organisational themes are highly represented, the OLC is an arena for communication about general medicine, in topics about medicine and how to organise general practice. Such topics include for example, issues on practical concerns, education and enrolment, making the professional association an influential organisation in Swedish health and medical care. Although the number of postings in the other thematic

categories is low compared to the large number of clinical and organisational themes, they should not be considered unimportant.

Participants do not talk as much about procedural-, other- and technical themes, which indicates that they actually agree on how to use the e-mailing list for discussions about specific topics only. The e-mailing list does not generate as much technical discussions since it is a rather uncomplicated technological platform.

The professional theme is a special theme that differs from other studies in health care practices (see Fox & Roberts, 1999; Hara & Hew, 2007; Roberts & Fox, 1998). There are topics within the professional theme that are in common with the international community of general medicine.

A considerably small number of patient cases (5.6 % of all postings) indicates that the e-mailing list is used for collective matters rather than to receive individual support for solving intricate issues at work. This conclusion is based on several observations, not only of what participants talk about, but also of the activities types, and the analysis of the professional networks. However, it does not prevent the participants from using the e-mailing list for individual dilemmas whenever they need expert advice to solve patient cases or dilemmas at work. But the OLC reflects a collective discourse rather than a forum for individual matters. Most e-mailing lists intend to inform a group of participants as they collectively support one another with valuable information.

When exploring the small number of postings in the 'Other' category (4 % only), it was discovered that participants avoid to post topics that go outside the domain of general medicine. As they strive to restrict themselves from initiating just any topic, they also enhance the quality and relevance of what is viewed as important in general medicine. A lower number of relevant postings sent to the OLC is preferred over a higher number of topics that no one cares for.

The single postings consisted of 6.3 % of all postings (as shown in chapter 12). These postings, without any response, treated mostly clinical issues in medicine abstracts, but also rules for participation, invitations (to course, symposium, conference), suggested readings (of literature, articles and URL), poems, and new e-mail addresses. Those postings do not primarily require responses from the participants.

Perotta (2006) mentioned three interpretative repertoires – boundaries; disempowered practice; and objectives and ultimate aims – that enhance the understanding of formation of professional identities in the OLC.

Boundaries are visible in a rhetorical dilemma. In the OLC under study the participants share specialised knowledge in general medicine. The term *general* emerged into a diffuse meaning of their specialty as the specialised knowledge is positioned and defined in a generalist domain. The term general refers to a qualification, which they do not fully share and which becomes diffuse, even to them. It also misleads actors, such as patients and politicians to think they are not fully qualified. The OLC is the platform for coordinating contacts with external media and political instances as acting outside to make themselves explicit as a specialty in medicine. It is argued that they lose their authority when outsiders do not know about their competence. However, the formation of the medicine profession is a continual work in which the participants produce and maintain a discursive practice among themselves (Freidson, 1970; Goodwin, 1994). The participants discuss these boundaries of the knowledge domain in order to gain power and to influence what they do in the medicine profession.

Being engaged in a *disempowered practice*, they struggle to overcome the dilemma of diffuse boundaries by using the terms *family medicine* for the domain of knowledge and *family physicians* for the professional role. In that way they concentrate more on the patients than themselves. Still, they use the metaphor of being gatekeepers in order to position themselves as central actors that will strengthen the professional networks of general practice (Hunskår & Hovelius, 2007).

The issue of defining general medicine is an internationally shared dilemma among GPs (Beaulieu, et al., 2008). This study reveals how the formation of professional identities is carried out on national conditions that complement the formation of professional identities' international agendas. GPs explore their position in society and investigate continually what characterises the professional context.

Another unsolved dilemma identified on a national account is the inconsistent terminology of what they call themselves. The various ideas on what it means to be a part of general practice make it problematic to agree on one common title only. Having a common terminology and a professional title will show outsiders that general practice constitutes a consistent practice built by specialists.

Objectives and ultimate aim of general practice are negotiated in a set of discursive elements. These discursive elements indicate what constitutes the general practice, such as for example expressed in *continuity*, *patients*, and *the generalist perspective*. This becomes the characteristic of building the joint enterprise (Wenger, 1998). Even if discussions on professional identities are sparse, that is, only initiated on a few occasions each year, these are highly important for the continual work to maintain the OLC over time.

The professional topics are introduced in times when the frequency of postings is low. Professional themes work as a trigger of participation as participants know that these kinds of topics engage most participants, even those who might never have posted before. Since these topics are introduced in times when no, or just a few, topics are on the agenda, they tend to create a mutual engagement as they receive lots of attention among the participants.

16.6 What is the affordance of the e-mailing list?

The fifth and final research question concerns affordances of the e-mailing list as a technology, especially in the perspective of the OLC as an arena for professional development.

First of all, it can be noted that in the OLC studied there were not very many demands for technical assistance or discussions of technical problems. According to Thomas and James (1999), there was much discussion on technical matters in GP-UK. However, the participants in GP-UK are globally distributed and therefore, there should be a larger variation in technological premises. As pointed out in the introduction, Sweden is a country with a comparatively advanced IT-infrastructure and a widespread use of IT (even during the time period studied). The participants in the GP-UK list therefore require more technical assistance than Swedish GPs. It is also interesting to note that the Swedish GPs are more inclined to discuss more general issues of IT in general medicine than technical problems in dealing with the tools and technologies used in the OLC. For example, they discuss how to use the e-mailing list in their own professional context. Put in more general terms, the participants in the GP OLC seem to be comparatively "mature" concerning their use of the basic technological tools at hand, even to the degree that there is a meta-discussion of how to use the tools.

There are two more interesting technological features: subject headings and threading, since they constitute the main technical functions. The analyses showed that subject headings were used to steer the discussion whereas the

threading structure had a subordinate role when participating in the e-mailing list.

Holt and Graves (2007) argued that subject headings should have a content that makes people interact. By reading the subject heading they know what kind of responses are required. However, in the present study, subject headings were not always clear in content. Rather, they contained a diffuse title in order to make the participants curious to read the topic. Gains (1999) claimed that the subject headings of academic e-mails showed that headings were close to the content of the discussion, a result that differs from this study.

Initiating topics in subject headings in order to trigger interest is one strategy to enhance participation. This strategy is not only used by the moderator, but also by core participants. These topics do not only engage ordinary contributors, but also invite participants who normally do not post. Some topics address a professional's opinions about a certain topic which makes some reading participants come forward to exchange their ideas and experiences, such as topics derived from the professional theme. First-time contributors explain that they become provoked when reading texts that go against their perspective and knowledge about topics.

Subject headings were strategically used in order to receive answers from individuals in the OLC while still not excluding the others from participating. In threads, participants modify the subject heading to fit the statement of their ideas. In case they disagree, they sometimes add their contributions under a heading that reflects their own idea of the topic discussed. The re-formulating of subject headings, which occurs fairly frequently, could be seen as a means to gain power in a debate.

Participants in a discussion use the heading as a reference for what thread they are following in times when debates become more intensive. Even if the heading did not fit the topic of discussion, the participants overcome this challenge by placing the postings in sequential order rather than not contributing at all just because they do not know where in the thread they should place their posting. However, this makes it complicated for participants who arrive late in the discussion, since in order to answer they need to capture the history of the current topic under debate before the topic is completed in discussion (Wise, et al., 2006).

As repeatedly pointed out in this thesis it is important to recognise that the tools used are integrated in a technological infrastructure as well as in an infrastructure for learning (cf. Dirckinck-Holmfeld, et al., 2009; Guribye, 2005). In this interpretation of infrastructure the technological aspects are tightly coupled to organisational and social aspects.

The participants use a rather convenient and, for some people, mundane tool like an e-mailing list, which makes us rethink *community* in terms of what they do in existing professional contexts. Since more and more people engage online, the introduction and implementation of technical platforms by professional and occupational associations seems to be less of a problem. This study shows that the simple technical structure of an e-mailing list functions as a way to carry out a variety of activities and discuss advanced subjects.

This study departs from studies based on definitions of OLCs concerning the kind of technological tools that are used. As the results clearly shows, an e-mailing list should be considered as one of several tools that can be used in online environments, not the least for communication about specialist matters. It is not the complexity of the subject that requires advanced tools. For example Heide (2002) pointed out that the higher competence a group of participants obtains, the less complicated tools they prefer. These tools exist side by side in a contemporary networked society (Slevin, 2000). According to Kimball and Ladd (2004), the more distributed a professional association tends to be, the more it needs communication tools that maintain relationships in order to carry out collective activities and common interests. This is precisely what a simple e-mailing list accomplishes.

What makes the e-mailing list function as a basic tool for an OLC is the participants' capability to fit their activities in the OLC with their daily routines at work. Since e-mail already exists as an essential tool for communication at work, the participants extend its use by organising online activities for continual professional development. It seems to be a solution for interacting online, but at the same time it holds essential features for building an OLC. Thus, understanding OLCs cannot be reduced to understanding the technological platforms that are used within the collective.

16.7 Learning and knowledge sharing in the OLC

In the analyses of an online learning community it is reasonable to ask what the participants learn from participating in the OLC. From a sociocultural perspective on learning – the perspective this study is taking – the basic tenet

is that people always learn something (Säljö, 1999) by living in the world as human beings (Wenger, 1998). The question is not *if* people learn, but rather *what* they learn (Linderoth, Lindström, & Alexandersson, 2004). Learning then means appropriating the tools, ways of thinking, discourses that constitute the practices people take part in. Participating in certain activities – for example in the conversations in an OLC – means that the participants will appropriate both what is talked about, how things are talked about, as well as why things are talked about. It also means appropriating or learning the tools – not least the technological tools – used in the OLC. Given the nature of the discussion in the OLC under scrutiny it is not unreasonable to argue that an important aspect of what is learned by participating in the OLC is what general practice is about. A dimension of this is that participation affords identity building. Etienne Wenger has stressed this in his later work Learning for the small planet (cf. Wenger, 2004). Another aspect of learning is *how* to take part in the OLC. Given the degree of practical acceptance of the rules for participating on a collective level, it is not unreasonable to argue that participants learn to participate (to make it short). However, this conclusion is analytical and must not be interpreted in empirical terms. It is not an argument about what individual participants de facto are learning or have learnt.

Participants are not equally engaged in the activities. Some are very active as contributors, even to the degree that they belong to a core group. Others are merely readers. Depending on what position they hold in the community they obviously learn different things. In the perspective of the theory of community of practice (cf. Lave & Wenger, 1991; Wenger, 1998) (social) learning essentially is a matter of shifting position of participation, moving from the periphery to the centre of a community. In professional settings this aspect is essential and the thematic discussions in the present OLC shows how general practice as a profession and the identity of being a general practitioner is not something that is transmitted in a simple way. Instead, it is something that is discussed and negotiated in participation. Taking part in these discussions obviously affords something of an expertise.

Another aspect of the theory of communities of practice, which is important for understanding the present OLC, is the reification. Wenger (1998) stressed that participants give form to what they experience by producing objects that reify what they do, such as documents, terms, stories, concepts or events. More generally, contributions in the email list are a form of reification. In the OLC, participants create threads that deal with the content of general medicine. Those threads are incorporated in daily routines even outside the OLC.

What becomes crucial for learning in the OLC is the understanding of the topics that contribute to the whole OLC. Sharing knowledge and experiences about general medicine stretches far outside the clinical topics only. Knowledge sharing is organised as a way of continual professional development.

As has been shown, the OLC studied here is characterised by a collective attempt to restrict the knowledge sharing to what matters in the profession of general medicine. This makes participant refrain from initiating topics outside the field. Knowledge sharing in the professional OLC becomes a matter of reducing unrelated topics to be initiated in favour of what they hold in common. Therefore, no humoristic topics are introduced. In some OLCs such topics are promoted because they show a less pretentious tone in communication. Instead, knowledge sharing in the OLC became a matter of quality of the discussions.

16.8 The OLC as a part of the professional association

This study has taken the approach to investigate the e-mailing list as if it functions as an OLC. The legitimacy of this premise can of course be questioned but it cannot be answered with a simple yes or no. The analyses aimed at giving a multifaceted description of what goes on online. It is also very reasonable to argue that the online activities are characteristic for the constitution of an OLC. One reason for this is that it is built on top of an existing professional organisation. However, it is then crucially important that the participants themselves carry out the development and maintenance of the activities, even though it is "staged" and monitored by the organisation. This can be observed from the possibility for any participant to step in and moderate the activities, even if this task formally is assigned to the moderator. This make the activities different from moderation in educational contexts, in which Mazzolini and Maddison (2007) ask: when does the moderator need to step in, when does the moderator have to participate, and how become the various roles explicit for the others.

The lack of socialising events, personal cues or member presentations challenges our conception of how an OLC is organised in a professional context. This offers a new perspective on what might be an OLC. In this study, the activities enhance the understanding of OLCs as something more than reduced social values, the technological platform being used, or most essentially, how the OLC is rhetorically described in terms of social values.

According to Brint (2001) the participants in communities participate in joint activities or share common beliefs that bind them together by relations of affect, loyalty, and common values and/or personal concern. In this OLC, the participants share professional matters dependent on what they consider to be of interest, based on what knowledge and experiences they have from being a participant in the knowledge domain. They are more bounded by expertise than affect and loyalty and they are more inclined to challenge common views and values as they tend to represent various ideas of how they pursue their professional practice. Professional relationships emerged through engagement in certain topics of shared interests. What makes an OLC a type of community is fundamentally based on a joint enterprise, to use Etienne Wenger's terminology. This joint enterprise can be seen as a continuous negotiation of what it means to be a general practitioner, not on an individual, but on a collective level. This in turn, is fundamental to build a professional identity on an individual level.

16.9 Methodological reflections

In this study, the empirical data of the online activities covers a larger time-span than most Internet studies found in the research literature. Most longitudinal research studies on OLCs tend to explore data for about a year. The data this study builds on offers possibilities to empirically scrutinise sustainability issues in a potentially interesting way. However, the findings were not very different between the years. Rather, the longitudinal material shows iteratively patterns, structure and content that have similarities with international OLCs in the field of general medicine. This is interesting since the general practice as a specialisation stretches far outside the national general practice.

Another aspect of many Internet studies is that researchers often include themselves as potential actors in the empirical material. This means that their participation and appearance might affect the social interactions in the OLC. In this study, data was collected that excluded the researcher's influences on the social interactions since postings were derived from the web archive before any interest to study the online activities was expressed.

Another issue is that only the recorded communication of the email list was used as data. This was done out of a primary interest in analysing the online communicative activities. Also, Hammersley and Atkins (1995) point out that the aggregation of data from different sources will not automatically provide a more complete picture, even if such complementary data collection should not

be avoided. In case semi-structured interviews would have been carried out, it would probably have resulted in information explaining the professional context even more. With an interest in the long term functioning of the OLC, it is questionable what an interview would have added without the bias of being retrospectively looked at. Earlier experiences from interviewing organisers of OLCs showed that they take a quite defensive role when relating to what has happened online in order to avoid bad reputations.

One alternative strategy could have been to gather the involved participants to remember and discuss several selected critical situations. I actually had the opportunity to carry out such interviews since I knew most participants by names and email addresses. Another complimentary strategy could have been to spend more time participating in present time activities of the OLC with the objective of letting the participants become informants about their online participation. A problem with this approach is that the participants discuss a specialised subject that only qualified medical professionals are competent to understand completely. This raises questions on my role as being an outsider. My lack of clinical knowledge made it sometimes intricate to interpret the meaning and consequences of the topics discussed. As an outsider I obviously interpreted the texts (postings) differently than a qualified GP from time to time. A final potential source of information was formed by the GPs not primarily involved in the activities. However, I chose to restrict myself to the data of the email conversations since my primary goal was to analyse the online activities.

My analyses concerned online participation and not primarily the clinical content in itself. The analytical work of constructing the thematic categories concerning the topics treated online also enhanced the understanding of what happens online. In times when I found topics diffuse, I returned to earlier categorisations to look at similarities and differences. In order to replicate the current thematic categories one has to ask if the construction of the thematic categories is reliable. The replication of an ethnography study performed under the same settings is not always possible in qualitative research (Silverman, 2001). Rather, it is the analytical methods that produce the validity. The construction of the thematic categories is one of many analyses that are performed on the empirical material. This thesis offers one description of the empirical data but there would certainly be several others. A valid interpretation of the content demands for iterative readings and various analyses of the content carried out in steps. Any co-reviewers have not replicated the categorisation work; rather this study has been the subject in academic seminars and supervision. Also, due to the extensive empirical

material, it would have been difficult to find co-reviewers able to spend enough time to grasp the empirical material in the same way as was done in this longitudinal study.

The similarities in my labels and the inclusion of prior research on other e-mailing list of general medicine show a productive way to interpret the empirical material. I argue that the circular analyses of bottom-up and top-down approaches create some validity to the thematic categories, which is desirable in research. Furthermore, I also argue that capturing the content of discussion in the thematic categories is useful for understanding online participation in this study. I recognise that some other researchers might come to another conclusion, as there are many ways to capture the essence in labels that describe what participants discuss, and even how they carry out activities online. In a final chapter I will further discuss this study's implications and potential significance to the development and maintenance of a broader range of online learning communities, especially in professional settings.

17 IMPLICATIONS

In times when so called *social media* are adopted by more and more people these media become important tools for communication and community building, even in professional contexts. As social media are incorporated in daily routines at work, online environments need to be considered by professional and occupational organisations in order to build new communicative arenas for e.g. knowledge building, learning, information exchange and professional discussions. Apart from researchers, developers, technicians, educational practitioners, professional organisations, policy makers, organisers of continual professional development, and not the least, the professionals themselves are all stakeholders in these ongoing transformations. Hopefully, this thesis has shed a light on essential structures for participation that could be considered when building OLCs in professional practices.

The present study of an OLC in general medicine – even though it merely represents one case built on a technology which is considered "old" and not very sophisticated – offers some analytical insights that contribute to the ongoing work of creating OLCs. Important design guidelines derived from this study can be applied to other OLCs as well. However, such design implications are very much dependent on a professional context created collectively by a professional association. Building OLCs is also considered a collective project of continual efforts managed by a group of participants and not a business of the single organiser of professional development. Design implications can be considered influential principles for building infrastructures for participation.

Below, some contributions are given to the research community of CSCL as well as to the practical fields. Suggestions for further research on online professional communities are presented at the end of this chapter.

17.1 Contributions to the CSCL-community

The OLC functions as a learning arena in the knowledge domain of general medicine. The study provides knowledge concerning online participation in a professional OLC which stresses knowledge and experience sharing, sustainability, moderation and formation of professional identities. The online

activities mirror what happens in general practice outside the Internet as a consequence of formation of professional identities.

This study broadens the existing knowledge on what happens in professional OLCs as a complement to those CSCL-studies that to a large extent examine online participation in educational settings. This study uses several different analytical methods that focus on the online activities. The analyses generate a rather complete picture of how the OLC functions and under what conditions it is maintained over the years. One feasible limitation to this approach might be that each separate analytical focus does not penetrate each online activity to its limits. However, together the analyses grasp the essence of online participation in this empirical case.

A merit of the OLC studied in this thesis is that it has been in operation for many years. The study might therefore make some methodological contributions concerning the collection of longitudinal material in databases for Internet Research. This kind of data can evidently extend the investigation of what happens online due to the participants' engagement as professionals over several years. In addition, computer programmes like SPSS, Pajek, UCINET/Netdraw, and IP-location tools offer ways to scrutinise the empirical material in order to continue the examination of postings. Notes have been taken on features that specify how social network analysis (SNA) tools can be developed in order to support social relations over time. This includes the visualisation of less defined groups of participants who may join or leave the OLC and perform undirected communication. In contrast, most other studies related to this work provide results on a well-defined group of distance students in direct communication over a limited period of time.

17.2 Implications for design of professional OLCs

This section presents ten implications that need to be considered when building professional OLCs, either from scratch or by developing ongoing online activities. The implications stress the *infrastructure* rather than an array of tools to choose from; it deals with the *organisation of activities* rather than just an exchange of information; and most of all, the implications posit online participation rather than the manoeuvring of tools:

1. Build an infrastructure for participation
2. Allow variation when participating
3. Make the activities and content of discussion explicit
4. Make an inventory of the information sources

5. Negotiate the rules together
6. Maintain the professional voice
7. Acknowledge the participants and their contributions
8. Participate anytime and incorporate online participation at work
9. Distinguish the professional community from non-related networks
10. Create an open arena for learning

These implications for building professional OLCs will be further explained below.

17.2.1 Build an infrastructure for participation

Creating OLCs tends to imply huge efforts for organisers on deciding what kind of online environment needs to be implemented rather than evaluating the activities to be performed collectively. The variety of online activities, presented in the empirical study, shows a multifaceted use of the e-mailing list. This supposedly simple technical structure provides a powerful tool for sharing knowledge and experiences in a professional context. An infrastructure both shapes and is shaped by the conventions of the participants in the OLC (Star & Ruhleder, 1996). Since e-mail is already embedded in the technological communication infrastructure for professionals, the use of e-mailing lists is an easy way to improve their infrastructure. E-mail becomes transparent in its use and does not have to be reinvented each time they go online (Star & Ruhleder, 1996) and does not hinder new adopters used to one-to-one communication in coordinating their activities (Renninger & Shumar, 2002). One major point is that it becomes vitally important to not just consider the communication tools per se, but to stretch the community creation into a professional context that captures how things are carried out in the professional association. When the number of postings increases along with the numbers of participants, other kinds of tools can be selected that contain technical structures more suitable than e-mailing list. Furthermore, it was found that talk about online participation enhances the participants' capabilities to make these decisions since the content of discussion is also a continual evaluation that helps to develop the OLC. In line with Guribye (2005) this is much more important, I argue, than picking *state-of-the-art* technology.

17.2.2 Allow variation when participating

Participation in OLCs can be considered a complementary form of learning that is organised in a range of voluntary accounts. One has to accept the variety in participation as an advantage for both collective and individual learning. As we know, contributing to OLCs fits some participants better than

others. The voluntary aspect of online participation becomes a challenge to consider in design as it allows participants to merely read what others write. Still, the main idea of the OLC is that participants contribute based on what they find valuable to share and discuss. When creating an OLC one must be prepared for a variation of participation structures that also includes lurker behaviour. Anyhow, those who contribute to the professional conversation have an audience that in a sense become characteristic for the professional OLC. Furthermore, OLCs are not always a nurturing exchange of essential ideas as there are periods with few contributions. Periods in which no relevant topics are discussed are not necessarily critical since the analysis of the participation structure indicates that participants are having a break, and will soon be back in discussions. Surprisingly, those who notice and point out the lack of posting are mostly sporadic contributors. In summary, variations in activity between participants and over time should be considered natural and do not have to be prevented.

17.2.3 Make the activities and content of discussion explicit

Compared to other kinds of online environments, a limitation of the e-mailing list is the lack of explicitness about the activities and the content of discussion. Participating in an e-mailing list requires that participants engage continually if they do not want to miss the debate. Arriving late in a discussion jeopardises their contributions since participants might already have moved on to other topics. Therefore, the visibility of what happens online becomes a critical concern for the design of OLCs. Nonetheless, participation is always based on a shared interest in general medicine, but additional categories of activities and themes make explicit what participants do online. As could be seen in the empirical material, subject headings do not always have explicit topics. Participants are curious to open postings that challenge them to interpret what might be initiated. Still, by using categories of activities and content, it is possible to extend what happens in specific threads without jeopardising the characteristics for how participants usually create an interesting topic. Participants might build their own additional categories that indicate what is expected of those who are interested in contributing.

17.2.4 Make an inventory of the information sources

All participants need to make an inventory of the sources from which they provide new material to discuss. This will enhance the conditions to maintain the online activities. It will increase the ability for the professional community to maintain the OLC when all participants know how to initiate a relevant

topic. Characteristic for general practice is the continual production of clinical knowledge relevant for general medicine. GPs use medical abstracts to create postings which bridge critical periods where no activities are undertaken. This explains that an activity fulfils several purposes rather than just informing about clinical news. This means that a shared enterprise in undertaken to list where information is derived from, how often, and by whom. Participants need to share the responsibility to add new material. Otherwise, the same frequent contributors continue to post, whereas those who merely post sporadically, or not at all, stay aside in debates. Knowing the sources from which all participants can derive topics to discuss allows them to share the responsibility for engaging online. Still, the moderator fulfils an important function to add new topics and run the activities.

17.2.5 Negotiate the rules together

Constructing rules for participation is a collective negotiation that emerges from critical incidents in the OLC. Even if some of these themes, for example the procedural theme, merely constitute a small number of postings, compared to some other matters like organisational and clinical topics, they are equally important. In fact, participation in OLCs is conducted in the continual discussions about how to participate. For example, more influential GPs are not allowed to dominate the OLC since this is considered unacceptable behaviour.

The moderator has an important function of responding to, taking up and developing or refining issues initiated by participants. It is not sufficient to leave this to the community as a whole without having the managing moderator. The moderator's function is also to make certain themes more visible and legitimate (see also the discussion of how the professional integrity of the OLC is maintained). Building the OLC is a matter of moderating the online activities. This study proves that even if the task of moderation is assigned to one moderator, the participants act in mutual engagement to conduct what they have all agreed to when participating. This study also showed that the participants are aware of the various roles of the moderator such as being the initiator, the presenter of members, and a contributor. However, the moderator is not without critics when publishing diffuse information and missing facts. Maintaining the rules is about showing consistent behaviour. The moderator is expected to continually provide services that facilitate the activities. When necessary, the collective of core participants shares the responsibility to moderate. This might become intricate in more unstable professional contexts where the moderator might not be as

consistent as the one in this study. In case of absence of the moderator, which happens more or less regularly, core participants must take the role to moderate in order to not jeopardise the continual activities.

17.2.6 Maintain the professional voice

Although organisers of professional OLCs tend to focus on how to create a continual flow of postings (i.e. sometimes initiating topics of any kind), they should rather create conditions for the introduction of selective topics. The extent to which off-topics tend to increase the number of activities is hard to answer. What can be observed in this study is that only topics within general medicine generate sustainability of the activities. The reduction of topics becomes an important aspect for the creation of meaning of online participation. Just having any postings published to the OLC is not good, since it jeopardises the serious tone among those who actual contribute. The opposite approach, that a less serious tone will generate more postings is probably true, but at the same time, it will also ruin the goal and meaning for intensive contributors of general medicine. In a sense, by limiting the range of topics to discuss (which affects the total number of postings and continual initiation of topics), it is possible to generate more qualitative discussions that sustain the OLC as a professional network since those topics are relevant for participators.

17.2.7 Acknowledge the participants and their contributions

This thesis provides knowledge on the necessary requirements to prevent that the online activities cease and are left without further notion. Not only do the prominent participants have to be presented and recognised for their contributions, all participants need to be captured as valuable for what is being discussed. For the development of existing OLCs, one can address the issue of numerous reading participants who only follow the debate without contributing online. While strategies to recruit new participants are necessary it is also vital to engage those inactive members. As the participants contribute a little each, the continual flow of online discussions generates sustainability of the online activities.

17.2.8 Participate anytime and incorporate online participation at work

Participation in the OLC is carried out during both office and spare time. This indicates that, in a professional context, participants engage not only at work, but also after finished work, including weekends. Because of the asynchronous mode, the OLC becomes a learning arena for the participants when it suits

them. The OLC is an extension of the participants work practice (even though in a limited way). Looking closer at the online activities, different functions and content meet working demands. Participation in the OLC does not only or even primarily give answers to immediate problems in the work place, but provides a context for putting the work practice into perspective. This is important to consider, especially in the perspective of the discussion about banning social media in workplaces due to their supposed conflict with ordinary work tasks.

17.2.9 Distinguish the professional community from non-related networks

In a networked society, the identity of being a professional is expanding, inadvertently blurring the boundaries between work and personal time. Thompson et al. (2008) report that medical students, who use social networking websites such as Facebook, not fully know that they jeopardise the medical professionalism ethics when they publish content taken from medical training sequences for the exchange of experiences. Ethical issues of sharing information need to be stressed in online participation of any professional network. In the OLC, it is not possible to identify any single communicative exchange that may jeopardise patient security, integrity, or secrecy because the exposure and discussions of patient cases is minimal. Since, opposite to Facebook, the e-mailing list of general medicine excludes personal information, the participants do not experience the clash of various social networks consisting of both professional and/or private actors. The lack of socialising events does not jeopardise online participation since it changes the understanding of participating as professional actors rather than private individuals. In case participants become private they might marginalise those who do not know anyone. It is highly understandable if this is the case between the core and the more sporadic participants. Due to the visibility of the technology, using social networking websites in professional contexts requires that participants separate themselves from outsiders since the visibility is different from what is achieved by using an e-mailing list in a professional context.

17.2.10 Create an open arena for learning

The primary function of the OLC as a professional community justifies a discussion on the participation of non-GPs. Even if anyone is allowed to participate, the participation structures, specialist contents, and professional conditions discourage non-GPs from contributing to the OLC. The specialist discourse and contextual matters keep the profession closed. Unfortunately,

this tends to make some GPs refrain from participating as well. Since most of the participants taken the role as sporadic initiators, they leave the discussion of general medicine to the core participants instead of becoming more regular contributors. Therefore, discussions need to make participants' former contributions on topics explicit in order to convince them to more regularly share their knowledge. Then, the OLC can become an arena for knowledge sharing and exchange of experience that encourage the sporadic contributors to post again. The web archive might be a useful tool to gain knowledge on what triggers participants based on their former messages which are stored and accessible.

17.3 Contributions to the professional association

The last implication is directed to the professional association in general medicine. Hopefully, this thesis can provide not only a historical background, but also some analytical insights in what happens when participating in the e-mailing list. The thesis sheds a light on some of the work carried out by the professional association. In addition, the thematic categories might become useful in case the professional association decides to further develop the activities or even plans to transfer existing activities to another kind of technical infrastructure.

17.4 Further research

The OLC I have studied builds on an established professional community formally organised as a professional association. The OLC can be regarded as an extension of this community (or even a part of it). We need to deepen our understanding of how such communities are transformed when they are going online; how an OLC tends to change the practices and operations of the association.

Several issues can be further investigated to complement what has already been investigated in this thesis which will be discussed below.

17.4.1 Studying different user groups

Besides the OLC under study the professional association manages another e-mailing list specifically aimed at participants in specialist training (who endeavour to become GPs). These participants tend to ask other questions than the ones currently being asked in the OLC. This was an argument for

starting the e-mailing list in the first place. Therefore, participants become segregated into groups. However, no differences were found before and after starting the OLC for specialist training concerning the participation of younger and older GPs. It might be speculated that younger GPs also take part in online discussion forums that go outside the professional association. This could be further investigated in an infrastructure for GPs examining engagement in several OLCs in network-to-network analysis approach. Furthermore, it could be interesting to study generation differences within other OLCs.

17.4.2 Use of OLCs for formal education

What participants learn from participating is distributed within the professional networks built on relationships and engagement in the online activities. Participation in OLCs makes us rethink learning in terms of activities which are not only organised in educational settings. In fact, this study provides knowledge about how the e-mailing list would include educational elements in online activities. How the OLC can be organised in formal and informal educational settings are an interesting topic for further research. Below, some considerations are presented for how to approach this kind of research.

In the OLC, participants report from educational activities that they have attended in general practice. What they learned from these activities could also educate the collective of the OLC by using scaffolding. Structures for scaffolding can include *a further definition of the content* in postings, *using the subject heading* in order to organise educational events, which can be facilitated in existing moderator structures. As participants already are aware of the content, the subject headings could also reflect whether a posting should be seen as an argument, evidence, question, and reflection etcetera. To indicate the formal intention of learning, subject headings could stress what is expected from the participants in the social interactions, just like the announcements or question-answer services. To design for an educational approach in online participation, the participants need to rethink how to use the e-mailing list. Since there are participants in the OLC who are experts in specific knowledge domains in medicine, they need to be consulted in topics that have relevance for developing the knowledge domain of general medicine. In an educational approach, the agenda is different since the initiator, that is, the expert, is not looking for support. Rather, the expert introduces a topic that in a way needs to be considered among the collective of GPs. In fact, educational elements can be visible in question-answer activities (this was revealed in cohesive line

structure presented earlier in chapter 9) but again the agenda of the initiators in question-answer activities is different since they ask for support. By inviting these experts to initiate topics for educational means, they all would gain new knowledge that complements what is already known. In a way, this could also generate contributions made by younger GPs since the educational activities could be a way to bring them together. Since the OLC already has a moderating function working satisfyingly, this could be used to extend ways of participating in the e-mailing list.

17.4.3 Studying the use of OLCs for professional communication

Most studies on the use of IT by professionals in medicine contribute with knowledge on how to serve the patients rather than knowledge about professionals who discuss matters together within the medicine profession. Even though the primary task of doctors is to cure patients, I was still surprised because professionals in the medicine domain use several communication tools, not just e-mail lists or e-mail one-to-one (see chapter 5 on Professional context of general medicine). In order to design for OLCs in a professional context, researchers need to continue exploring professional knowledge sharing between groups of professionals who stretch the work-related relationships far outside the work place.

Generally, it is of great importance to deepen the knowledge on how professional learning and knowledge building related to professional practices is transformed and mediated by modern information technologies. We need to investigate OLCs that are developed from scratch or are built on less established professional communities or networks than the one presented here.

Another important question is the relation between professional communities and the outside world. In a contemporary networked society, participation in OLCs concerns most work-related practices, not only associations in medicine profession. To what extent do people who use social media and online environments influence existing work practice through sharing knowledge and experiences by using these tools? In design for participation, future research should investigate the design processes of developing learning activities based on existing social media. All professional and occupational associations need to discuss what communication tools they already use or intend to introduce for coordinating learning activities.

One challenge for building OLCs is to support existing professional networks in case participants intend to transfer their continual activities to another

technological platform. One has to ask how changing conditions of existing OLCs can be re-constructed in order to grow when moving the learning activities to another technological platform.

Design-based research studies could be performed in order to understand how new OLCs can be created, how they can make use of existing social media, and how safe transferring of existing professional networks to new platforms can be carried out without jeopardising existing activities and/or relations. In such a design-based approach, the development is close-knitted to the theoretical foundation which allows the participants to become co-designers (Barab & Squire, 2004).

EPILOGUE

During the process to become a full participant in the research community, I have learnt many things about the craftsmanship through the apprenticeship of being a Ph.D student. Only some of all knowledge that I learned has been compiled in this thesis. Some issues fall outside the frame of this work which in a way makes me aware of what might be explored in my future research on Applied IT. One personal experience is that answering questions only raises new ones. In the future, I intend to learn more about continual professional development managed through participation in OLCs. One challenge would be to become more involved in design-based research projects that aim to combine both the development of communication tools with the design for learning and collaboration through theoretical claims. Finally, I hope to learn more about applied IT in terms of behavioural science as the intertwined process of humans and technology is a fascinating arena to learn about the development of western network society.

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