Food for Thought

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Communication and the transformation of work experience in web-based in-service training

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Abstract

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The background of the present study is an interest in the use of digital technologies for in-service training activities in industry. Globalization, international competition and transnational production are elements that currently transform work practices and work organizations. In the food industry, which is the empirical context of this study, globalization has resulted in a number of changes including new forms of production, new international regulations and an increase in quality control of food and food production. These food quality initiatives and the new regulations, in turn, have resulted in a need for in-service training of staff. By analyzing how people actually engage in and use web-based environments as part of in-service training efforts, the overall aim of the research is to contribute to our understanding of the kind of communication and agency that emerges in web-based environments, and how such environments constitute contexts for communicative socialisation and learning for people employed in industry. The focus of the present study is on the nature of activities that unfolds when using digital media and learning resources in such settings. Analytically, such a focus is pursued employing a sociocultural perspective on communication and learning. Empirical material has been collected from archived chat log files from web-based in-service training courses. The results from this study, as outlined and discussed in four empirical articles, show that the participants accommodated rather smoothly to the affordances of the technology. They also managed to increase their skills and exert agency when engaging in communicative activities mediated by chat technology. Through chat interaction with other participants and experts, the course participants gradually appropriated some of the analytical tools and practices of quality assurance. Put differently, they literally wrote themselves into a different understanding of their current work practices. One of the productive features in these training activities is that they constituted hybrid contexts for learning. For instance, they are hybrid in the sense that practices of instruction, on the one hand, and practices of production work on the other, were salient resources for participation. From a pragmatic point of view, this study indicates that these activities supported by web-based technologies seem to offer feasible models for organizing distance learning in both further and in-service training.

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Göteborg, July 2009

Mona Nilsen

Part One

Food For Thought

Food-for-thought: "anything that provides mental stimulus for thinking"

An idea or issue to ponder, as in: "That interesting suggestion of yours has given us food for thought". This metaphorical phrase, transferring the idea of digestion from the stomach to mulling something over in the mind, dates from the late 1800s, although the idea was also expressed somewhat differently at least three centuries earlier[1].

In the present study, the title alludes to two things. The in-service training activities that I have studied actually concern food in a very literal sense; food safety and quality assurance in particular as these are the contents the course participants are expected to learn. In this manner, the contents they are working with should provide them with new ways of thinking about current work practices, which is the second reason for the title to be suitable for the present study.

[1] Retrieved August 2, 2009, from http://dictionary.reference.com/browse/food+for+thought

1 Introduction

The present study is grounded in a general interest in the encounter between changing conditions for work, further and in-service training practices and the use of digital technologies. This can be related to a more general discussion of what some have quite boldly referred to as an education explosion. A less bold statement would perhaps be to say that it is widely recognized today that we are members of a society where education as a sector has become increasingly important. One aspect of this development is that education is no longer an activity that involves only a few; rather, it is a sector that concerns all people[2]. During the academic year 1999/2000, for instance, almost 2 million, or a quarter, of the Swedish population was engaged in what can be considered regular educational activities[3]. About 2.8 million people participated in study circles and 1.4 million in some kind of staff training (Nilsson, 2006). With regard to staff training in particular, a survey from 2008[4] showed that out of a total of 4.5 million people working in Swedish trade and industry, almost 2.1 million, or 46 percent, took part in some form of further training (SCB, 2008). This means that there are large investments in education in general, and in staff and further training in particular.

What is expected of these large investments in staff and further training is often described as preparing twenty-first century workers for massive changes in the contemporary conditions for work. Some have argued that such changes imply entirely new work relations; workers need to be empowered with flexible competences and a broad range of

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[2] This is at least true for countries such as Sweden. But, as we know, this is far from the case for many people in the world.

[3] This includes compulsory and upper-secondary schools, colleges, folk high schools and municipal adult education.

[4] These statistics, from June 2008, are based on slightly different data and concern all people employed aged between 16 and 64, a total of 4 572,000 people.

working skills (Farrell, 2001a; Fenwick, 2001). The background of the changing conditions for work, and for which further training is expected to prepare the working population, are often expressed in terms such as globalisation, economic restructuring, technological development and fierce competition (Fairclough, 2002; Gee, Hull, & Lankshear, 1996). But instead of assuming the language of global economy and the knowledge-based societies, the background of this study will be narrowed down to some of the changed conditions for work and learning that are relevant to the present study. First, in the food industry, which forms the context for this study, one important transformation concerns new procedures for regulating and controlling markets and organizations. Such procedures imply an increase in quality control of food and food production. This "turn to quality" (Goodman, 2003, p. 1) is explicitly illustrated in the recent emergence of international quality standards and the introduction of quality assurance procedures in the food industry (Morris & Young, 2000). The introduction of new pan European rules and regulations for the production and handling of food have dramatically transformed the certifying procedures for the food industry. Accordingly, quality assurance procedures and methods regulate an entire industry. Such regulations, and procedures, have implications not only for the industry in general but also for organizations related to the industry and for individual workers. These regulations have resulted in initiatives for re-training of staff, and for further and in-service training. The context of food production, in which in-service training will be explored in the following, thus provides an interesting case of how current demands of European quality assurance standards are manifested as both content and a context for learning, i.e. how such in-service training is organized and made sense of.

Second, as with the industrial sector in general, in-service training has not been very prominent in the food industry. The formal educational requirements have also been relatively low. This serves as part of the background for a competence development initiative taken by the Knowledge Foundation[5] in the late 1990s, referred to as the Expert Competence Programme[6]. The purpose of this initiative was to approach small and medium-sized producers and businesses in a variety of branches of industry, such as the food industry, with the idea of developing and supporting customized in-service training efforts. These branches were selected as they were considered to be of significance for the

[5] In Swedish: KK-stiftelsen, short for Stiftelsen för kunskaps- och kompetensutveckling.

[6] In Swedish: Expertkompetensprogram.

renewal and growth of Swedish trade and industry. They were also perceived to be lacking the resources for organizing further and in-service training for their staff in a systematic way. Approximately SEK 500 million, equivalent to approximately EUR 47 million, were invested in this large-scale, five-year endeavour. From the perspective of a small country such as Sweden, these investments are substantial both in terms of financial input and in terms of the number of people who have been, and still are, involved in efforts that have developed from this initiative.

A third dimension of the transformation of modes of working and learning concerns the development of digital technologies. One interesting dimension of this development concerns the potentials that digital technologies are considered to have for education and educational activities in general. It can also be argued that it is precisely in the areas of further and in-service training that the potential of digital technologies is considered to be especially promising. In research, web-based technologies are claimed, for instance, to provide new opportunities and activities where work and further training are integrated. These are often described in terms of, for instance, flexibility and availability, since they make possible learning activities outside traditional educational institutions (Porter, 1997). For many people, it is simply not possible to leave their regular work to participate in conventional, instructional activities or courses that require extended physical presence. In addition, digital technologies are claimed to have the potential of bringing together professionals[7] who would otherwise not interact (Romano, 2008). In this sense, web-based technologies support the possibility of specialized courses where people working in small and rather narrow professional fields can co-operate. They can thus participate in activities that are arranged regionally, nationally and even internationally. A slightly different perspective on the so-called flexibility and availability of web-based technologies is that people working in different professional fields are more or less expected, or even required, to use such technologies to keep themselves continuously updated and to take part of further training related to their field of expertise. Thus, from a pragmatic point of view, the possibilities that web-based solutions offer are extensive and are, in this respect, relevant for the individual as well as many institutional actors, such as the Knowledge

[7] Romano (2008) uses the term 'professional' in a broad sense for people engaged in work as self-employed, or for which they have been employed as staff (i.e. it is used as the opposite of 'layman'). In the present study, however, I will refrain from using the term 'professionals' as regards the participants taking part in the in-service training activities I have studied. Instead, I generally refer to them as people working in the food industry or related fields, and I refer to them in particular as course participants and course experts.

Foundation, to consider in their efforts to integrate work and further and in-service training.

However, in this study the focus is not on technologies per se. Instead, it is suggested that we postpone our general "judgements or hopes about their meanings and instead examine the details of their use" (Ivarsson, 2004, p. 32). From a perspective where technologies are taken to be potential solutions to a range of problems in different settings, the actual activities and the purposes of such web-based activities are often downplayed. In this study, the interest is in scrutinizing the social role of technologies and how they "take on specific social meanings through their embedding with systems of practice" (Dourish, 2006, p. 546). Such a point of departure is in line with Orlikowski's perspective (2007) that, "materiality is integral to organizing, positing that the social and the material are constitutively entangled in everyday life" (p. 1437)[8]. In the following, the details to which the technologies are put to use will be analysed in a very concrete manner, as the focus is on how people working in the food industry participate in web-based in-service training activities. In this sense, besides taking into consideration how the participants' accommodate to the web-based activities, the interest is also in exploring what the course participants learn with regard to such activities. More specifically, the course participants[9] are expected to learn about the specific quality assurance rules and regulations as well as certain procedures and methods for structuring the work of controlling quality in food and food production. They are supposed to learn how to make sure that foodstuff is prepared according to structured and specific procedures with regard to, for instance, parameters such as time and temperature. In this respect, the in-service training efforts constitute an empirical case of how EU regulations intervene in, and aim to transform, this line of industry.

To sum up, the formal educational requirements in the context of the food industry have traditionally been, and still are, relatively low. A survey conducted by the Swedish Food Federation in 2002, however, showed that approximately 25 percent of the newly employed in this industry had been trained at universities or colleges. This is almost twice

[8] This is not to claim that technology only can be fruitfully understood if it is studied in use.

[9] In what follows, people taking part in the courses are referred to as course participants, while the persons who facilitate the courses are referred to as course experts. In some instances, I also use the term participants both course participants and course experts.

as many compared to the average in the entire food industry. This suggests that the educational level in this industry is about to change. Taken together with the transformation in the regulating and procedural practices of the food industry and the increased use of digital technologies for competence development, the empirical setting of in-service training within the context of food production thus constitutes an interesting case to explore in several respects.

Although further and in-service training supported by web-based technologies appears to be, and in some respects is, a new phenomenon, this is not entirely the case. Similar further training efforts at a distance have been around for approximately 150 years. Online distance education is, in this sense, not a recent phenomenon. Accordingly, similar challenges in implementing and accepting educational innovations are well known in history. In order to understand in-service training at a distance, it is necessary to account for the activities and the educational institutions that have developed outside the regular educational system. In this study, this is particularly important since such alternative institutions have had the role of adult education organizers. It should be noted, however, that although further and in-service training on the one hand and distance education on the other are sometimes treated as equivalents in this study, the two activities are not seen as overlapping.

For almost 150 years, correspondence studies and similar activities have been organized so as to offer education for adults in particular. However, education at a distance was also introduced to meet other societal needs and had, for instance, compensatory functions such as providing people living in rural areas and people with a less privileged social background with schooling and other forms of education. Distance education has, however, played a slightly different role in the context of further and in-service training, as we shall see in the following. It is, thus, relevant as a background for the present study to give an account of the emergence of distance education activities and institutions in terms of how such activities have been organized and carried out. However, before this brief historical account of distance education, the outline of the study will be presented.

Outline of the study

The present study is divided into two parts. Part One consists, besides this Introduction (1) chapter, of the following:

2) A background with a general overview of the research interests
3) A theoretical background framing the research interests
4) A description of the empirical context
5) A discussion of research methods and collection and selection of data
6) Summaries of the empirical studies reported in four articles
7) A concluding discussion
8) A Swedish summary of the study

Part Two includes four empirical studies as reported in the following four articles:

1) Nilsen, M. & Säljö, R. (manuscript). From a trying environment to a familiar tool: mediation and appropriation in the context of using a web-based educational platform. To be published in R. Säljö (Ed.), *Information and communication technologies and the transformation of learning practices*.
2) Nilsen, M. & Mäkitalo, Å. (in press). Towards a conversational culture? How participants establish strategies for co-ordinating chat postings in the context of in-service training. *Discourse Studies*.
3) Nilsen, M. (submitted). Negotiating the context of online in-service training: 'expert' and 'non-expert' footings.
4) Nilsen, M. (in preparation). Learning the discourse of quality assurance: a case of learning through writing in online in-service training.

Appendix A includes an overview of the empirical material. Appendix B includes the original Swedish data from Chapter 5, as well as from Article 3.

2 RESEARCH BACKGROUND

Distance education – a brief historical account

The historical development of distance education is well documented (Moore & Kearsley, 2005; Morabito, 1999; Nipper, 1989). Harper, Chen and Yen (2004), for instance, have described the history of distance education by means of the following table, taking the context of American distance education as their point of departure:

The history of distance learning

Years	Characteristics	Milestone
1700-1900	Use of mail to deliver course material Correspondence education	Establishment of US Postal System Use of correspondence education in higher education
1920-1960	Use of radio and television for correspondence education	States pass laws requiring students to attend school Use of correspondence education in the military
1970-1980	Use of pre-recorded video recordings Use of cassette recordings Use of "collections" Limited number of broadcast channels Mainly used in research and sciences to share information	
1980-1990	Teleconferencing Video conferencing Less expensive video recorders Cable networks start programming for K-12 students	Emergence of Arpanet, which became the World Wide Web

	More televised programs	
1990-Present	Less expensive computers	Dominance of World Wide Web
	Greater access to technology	Emergency of wireless technology
	Internet in classrooms	More financing from private industry and
	More educational institutions and businesses	universities
	utilize distance learning	
	Computer based training (CBTs)	
	Synchronous and asynchronous	
	communication	

Table 1. History of distance learning as described by Harper, Chen and Yen (2004).

As shown in the table above, Harper et al. (2004) have traced distance learning, or education, as far back as to the 1700s. Those early days of distance learning are characterized by the use of mail to deliver course materials. Correspondence education dates back to the early 1800s. Later on, between 1920 and 1960, broadcast technologies such as radio and television were introduced into correspondence education. In the 1970s and 1980s, pre-recorded video and cassette recordings were introduced in distance learning with the purpose of sharing information. These technologies were, thus, not widely used (Harper et al., 2004). The emergence of what was to become the World Wide Web in the late 1980s and early 1990s resulted in the use of teleconferencing in distance education. At present, the World Wide Web dominates distance education characterized, for instance, by computer-based training supported by technologies such as discussion boards and chat rooms. What is interesting in the analysis by Harper et al. (2004), but also with regard to Moore and Kearsley (2005) and others, is their primary focus on the different technologies that were available for use and that, to some extent, were used to support distance education. A slightly different, although in substance quite similar, analysis of the history of distance education has been given by Morabito (1999). She has analysed the history of distance education in terms of five historical developments, as listed below:

1) Print-based instruction
2) Early technology helps to expand distance education
3) 1980s: Online distance education is born
4) Computer-Based Teleconferencing (Virtual Online Classrooms)
5) 1990s: The Internet arrives

Similar to Harper et al. (2004), Morabito (1999) has described the first development of distance education as correspondence studies. Morabito (1999) has thus chosen to date the beginnings of distance education to the 1800s and early 1900s. Harper et al. (2004), on the other hand, dated the early development of distance learning to the 1700s. Morabito's (1999) argument, however, is that although distance education may well be traced back to the days of recorded civilization, "they did not take root on a large level until the 1800s and early 1900s when adult education began to flourish throughout the world" (Morabito, 1999, p. 25). In Morabito's (1999) description of a second development, distance education teaching and learning is characterized by the use of broadcast technologies, i.e. radio, television and video. The third development, which took place in the 1980s, concerns the use of audio and video teleconferencing, as well as email and bulletin boards in distance education activities. It is here that students at a distance have their first experiences of real-time group interaction. Following this, Morabito refers to the fourth development of distance education as computer-based teleconferencing. This development is thus characterized by an idea of a "virtual classroom" with "an integrated use of remote study materials supported by computer-based multimedia teleconferencing" (Morabito, 1999, p. 33). The fifth and most recent development in the history of distance education, according to Morabito, involves more full-fledged capacities of Internet technologies. At the end of the 1990s, the majority of the public had access to teleconferencing, either quite cheaply or for free via the Internet in the form of Internet Relay Chat (IRC). When it comes to online classroom teaching and learning, teleconferencing has expanded to include real-time graphics and sound. In this sense, "online teacher and students are able to draw and type on a computerized blackboard and they are able to hear and send audio messages" (p. 35).

An interesting observation that can be made with regard to these historical accounts, as I have already pointed to, is that they take their point of departure in different technologies that were available and, to some extent, were used for the purpose of distance education at certain points in time. There are, of course, alternative ways to describe and understand the development of distance education such as taking into account educational thoughts and political agendas behind them (Lee, 2008) as well as issues such as economy, access and effectiveness (Holmberg, 1977). What can also be noted, which is contrary to public belief, is that distance education was not only developed to achieve geographical equality. It was actually a system that served a social purpose as it offered education to people as part of everyday life (SOU, 1998: 84). Distance education, thus, emerged as a system parallel to the regular educational system, offering education to those who could not

attend conventional schooling (Moore & Kearsley, 2005; Morabito, 1999). Of course, the role of technology in distance education is important. Technology and distance education have an intimate relationship since the former "mediates the separation between teacher and learner through the use of print, radio, telephone, television, audio and videotapes, and computers" (Sumner, 2000, p. 271). For the purpose of this study, it is thus important that the description of the historical development of distance education is more than merely an issue of technologies.

In the following rather brief historical account, an alternative way of describing distance education will be outlined. This alternative does not take technology and what it affords as its point of departure. In the present study, the focus is, rather, on what concrete activities are established outside the regular educational systems in the encounter between the technologies available and the practical arrangements, organizations and distance education institutions that have emerged over time. What kind of activities, for instance, have students and teachers engaged in when taking part in correspondence studies? What kinds of materials did they work with? How were course contents attended to and worked with? The focus on the concrete activities in this study is grounded in a general interest in, and conceptualization of, learning as situated and embodied in practical activities and as achieved through people's participation in social practices (Säljö, 2000, 2005; Wertsch, 1998). This makes relevant a focus on distance education activities that have been generated throughout history. In this manner, the web-based in-service training activities studied can be discussed in terms of distance education activities that have preceded them. However, as pointed out earlier, although further and in-service training and distance education are sometimes treated as equivalents in what follows, the two activities are not seen as overlapping.

Now, like all historical accounts, mine also has to start somewhere. One relevant starting point for the history of distance education, and therefore for the present study, is correspondence studies. Correspondence studies are often considered to be the first distance education efforts that expanded and served a purpose for larger groups of people (Morabito, 1999). The following account is divided into three sections: One-to-one, One-to-many and Many-to-many. This division is based on the forms of correspondence and communication that have been established between teachers and students, as well as between fellow students, throughout the history of distance education.

One-to-one: Correspondence studies

By the end of the 19th century, distance education was well established in the form of correspondence studies, also known as home studies and independent studies. Correspondence studies usually involved the distribution and use of print-based materials and regular mail correspondence activities between students and teachers. The development of correspondence studies concerned much the same issues that contributed to the development of adult education in general: "adult literacy, the printing press, a publishing industry, mass-produced low cost pens, and need – brought on by the demands of the Industrial Revolution for an educated workforce" (Sumner, 2000, p. 273). Other factors that contributed to correspondence studies were "a cheap and reliable postal service, an efficient transportation system, and in some countries like Canada and Australia, large, sparsely populated areas" (Sumner, 2000, p. 273). Moore and Kearlsey (2005) described a principal motive for early correspondence educators as being "the vision of using technology to reach out to those who were otherwise not provided for" (p. 26). This is an additional element in the purpose of having compensatory systems of education. Gaddén (1973) found that correspondence studies in Sweden, for instance, first and foremost reached out to young people from working-class families. In this sense, the aim of correspondence studies, which was to bring education to the population, was considered to be an important part of achieving social change, an agenda that was grounded in the Swedish political program and progressive ideas in the first half of the twentieth century (Lee, 2008).

In many respects, correspondence studies came to represent a new educational institution with activities that were organized differently to those of regular education. Generally, correspondence studies worked like this: the teacher would send students assignments, books, guided texts to be read and tests by mail (Morabito, 1999). Students completed the self-instructional assignments and returned them. Instructors then sent back their comments and critiques, along with a new assignment. In this manner, correspondence studies were characterized as "a systematic flow of educational materials between the student and one or several teachers" (Lee, 2008, p. 243).

As time went by, correspondence studies grew enormously popular. Consequently, more established educational institutions were inspired to adopt some of the practices of distance education in their regular activities. And also the other way around, correspondence schools were engaged, for instance, in the United States to be able to

manage compulsory school attendance that was introduced in secondary education in the 1890s (Harper et al., 2004; Morabito, 1999). As a result, correspondence studies, as an institution, gradually became more "formalised, individualised and professionalised" (Sumner, 2000, p. 275). What started out as a tailored system for individual students slowly changed into activities where courses and course materials were mass-produced and instruction became highly structured (Lee, 2008). Student activities, thus, were still carried out as one-to-one correspondence with print-based materials as the point of departure. The teachers, on the other hand, were expected to correspond with several students at the same time rather than, as earlier, with one student at a time. In more recent literature, correspondence studies have been characterized as organized according to "a very individualised mode of learning that tends to isolate and insulate students from group learning" (Sumner, 2000, p. 275). In the development of correspondence studies, however, interaction between students, or the lack thereof, is not discussed. The unique and distinguishing feature of correspondence studies is, rather, described as the relationship between a teacher and a student, which meant that one worked according to a model of "teaching of individuals and rarely in groups" (Rumble & Harry, 1982, p. 14).

Eventually, many institutes worldwide came to organize correspondence studies. H.S. Hermods established the first Swedish distance school in 1898. The Hermods Institute of Correspondence Studies provided distance education at the secondary and upper-secondary level. To give an idea of the impressive size of this innovative activity, the institute registered more than 100,000 student applications a year in the 1960s, a considerable volume for a small country such as Sweden. This popularity was also found in other large or sparsely populated countries, such as Norway, Canada and Australia. The Norwegian Correspondence School (NKS) accepted its first student in 1914. It is said that this was a woman who registered for two courses for a fee of NOK 10 (Grepperud, Støkken, & Toska, 2002). The Swedish and Norwegian correspondence institutes met somewhat different fates. In Sweden, Hermods was marginalised when the adult education system was reformed during the 1960s. NKS and other Norwegian correspondence institutes, on the other hand, survived primarily because of two things: governmental support (SOU, 1998:83) and the development of alternative forms of communication to the print-based model. The idea of integrating alternative forms of communication became a strong argument in the development of distance education from the 1960s and onwards. The UK Open University is an example of an initiative, and eventually also an institution, that was established to develop a model for distance

education that provided for other instructional delivery methods than the print-based model.

One-to-many: the UK Open University model

The UK Open University was founded in 1969 and was initially developed solely for adult distance education. By the end of the 1970s, the Open University was offering lessons over "radio and television, supplemented with print-based material, videos, audiocassettes, and access to tutors" (Morabito, 1999, p. 27). In this manner, the UK Open University model was successful as it reached large groups of students and was based on the production and use of mass-produced course materials. The economic efficiency of the model was based on high enrolments and "consequent economies of scale which are possible in course production and delivery" (Evans & Nation, 1992, p. 204). The UK Open University became the first national distance education university. Part of the success of the UK Open University model was also the establishment of a large number of local study centres around the country (SOU, 1998:84). In other words, almost all students enrolled in courses at the UK Open University were able to go to and be supported by a local study centre. This, however, was not possible for many students who attended open universities in countries such as Australia, Canada, Norway and Sweden.

In this development, we can see a difference or a distinction emerging between two principally different ways of organizing distance education, i.e. between what is referred to as single-mode and dual-mode institutions, respectively. Since the 1980s, the discussion about single and dual-mode institutions has occupied many distance educators. Single-mode refers to an institution in which "teaching, learning, and administrative systems are designed and dedicated to the provisions of distance education" (Abrioux, 2006, p. 11). Initially, the UK Open University model served as an example of a single-mode institution as all activities were managed at a distance. Dual-mode, on the other hand, refers to an institution in which "teaching, learning, and administrative system support both campus-based and distance education" (Abrioux, 2006, p. 11). Accordingly, distance education activities are integrated into regular educational institutions. This was also the case, for instance, in Australia, Canada and Sweden (SOU, 1998:84). The academic advantages and disadvantages of both models have been discussed since the 1980s. Sewart (referred to in Abrioux, 2006, p. 11) has argued, however, that is not entirely obvious that one model is more successful than the other in every respect. Weaknesses can be found in both.

In the 1970s and 1980s, the significant means of communication in the UK Open University model were print-based instruction and one-to-one correspondence activity between instructor and students. Accordingly, the telecommunication technologies available at this time were used only as add-ons and had a limited impact on participants' activities (Garrison, 1997). At this point in time, distance education as represented by the UK Open University model was considered to be a one-way system since "communication amongst learners has been more or less non-existent" (Nipper, 1989, p. 63). As with most distance learning institutions, the UK Open University adopted, although slightly later than many others, "the fullest range of communication technologies to teach a full university curriculum to any adult who wanted such education" (Moore & Kearsley, 2005, p. 34).

Despite the early developments in computer technologies in the 1970s, distance education activities were based on independent student work. An important element of student activities was to retrieve information from large databases and online libraries. However, an interesting Swedish example of an initiative that adopted computer technologies early on was the National State School for Adults[10]. In 1959 and 1962, respectively, two institutes were established with the task of developing courses and offering distance education at the secondary and upper-secondary level. These initiatives were eventually institutionalized in distance education schools. These schools had clear compensatory and social visions for providing education to people who would not otherwise attend educational efforts, such as people from rural districts and sparsely populated areas, parents with small children, people from less privileged backgrounds, often including adults with bad experiences from school.

In the 1980s, personal computers became less expensive (Harper et al., 2004), and, eventually, they became a common feature in peoples' homes and ordinary lives as well as in schools, libraries and offices. Accordingly, the premises for educational practices changed considerably. People were provided with new means of communication, e.g. email, chat tools and bulletin boards (Morabito, 1999). Email was used, for instance, to compensate for the otherwise slow postal correspondence between students and teachers. The local networks at this time, however, required students and teachers to be in geographical proximity to be able to communicate. HomeLink is an example of an

[10] In Swedish: Statens Skola för Vuxna.

American initiative that adopted such technologies early on. HomeLink was established in 1983 and was an online education network that offered computer-based in-service training for businesses, and later on also for the American public in general. HomeLink was an online library with over 450 courses intended for participants of all ages (Morabito, 1999). Generally, HomeLink studies worked like this: students first logged on to the network and selected the lesson they wanted to take. Following this, the student would complete the lesson online without instructions or guidance from an instructor or teacher, and then log out. However, between the online lessons students had the opportunity to post messages to a bulletin board that could be read and responded to by HomeLink staff as well as other students. In this manner, HomeLink represented an educational arena, which was not based on regular forms of instruction. What is interesting to note is that although the technologies that were available in the mid-1980s afforded email or message board communication between students, such technologies were only used as add-ons to independent student work and teacher-student correspondence by regular mail.

Initially, the real-time group interaction technologies such as audio and video conferencing that were available in the 1980s also had minor impact on distance education activities (Moore & Kearsley, 2005). However, for some reason, video teleconferencing appealed to educators and policymakers. One explanation of such an interest could be that video teleconferencing was thought to mimic traditional forms of schooling, which had not, according to educators and policymakers, been the case with previous delivery methods. The use of teleconferencing allowed students to ask the teacher questions and the teachers were given the opportunity to solve problems with students, "in real time and in different locations" (Moore & Kearsley, 2005, p. 38). Generally, teleconferencing studies worked like this: the teacher would prepare pre-recorded video lessons (Harper et al*.,* 2004) for students to watch in their homes. Students and teachers could communicate via bulletin boards between video lessons. The course materials the students worked with were retrieved from online libraries. In this manner, teleconferencing studies meant that the home-based student was no longer "separated from live interaction with the distant teacher and classmates" (Moore & Kearsley, 2005, p. 34). Video teleconferencing was particularly used in further and in-service training courses where the purpose was to initiate discussions between students and have them share knowledge and experiences. Still, the use of video teleconferencing was based on independent student work, and one-to-one correspondence between a teacher and students was the primary means of communication (Sumner, 2000).

Many-to-many: the conferencing paradigm

The use of computer conferencing for distance education expanded with the emergence of the Internet in the 1990s. Since the 1990s, the World Wide Web has dominated the development of distance education. The World Wide Web is described as a system that allows "a document to be accessed by different computers separated by any distance, running different software, operational systems, and different screen resolutions" (Moore & Kearsley, 2005, p. 43). In this manner, computer conferencing is seen as potentially bringing about what correspondence studies had missed out on, which is a learning environment that prepares for collaborative activities (Garrison, 1997; Sumner, 2000). However, in the early development of Internet technologies, distance education activities remained the same as previously: students continued to correspond one-to-one with an instructor and worked with self-instructional and "[m]odular course work, self-paced quizzes, CD-ROM and linked websites" (Sumner, 2000, p. 278). As Internet technologies became more sophisticated, computer conferencing was utilized by an increasing number of educational and training institutions (Harper et al., 2004). Generally, in educational activities supported by computer conferencing, students would for the most part communicate with instructors in discussion forums. Students could also communicate in real-time chat rooms. Although the technological possibilities for communication between fellow students are available, research studies have reported that students spend most of their study time working individually with educational content on a computer (Anderson, 2003). They work with, for instance, computer-assisted learning sequences or web lectures. But they also share references, learning resources, photographs and sound recordings. In other words, computer conferencing is for the most part used as a complement to on-campus activities. Consequently, this has become the dominant method of organizing distance education nowadays.

While computer conferencing may appear to bring about regular classroom discussions, one feature that clearly sets the two apart is that computer conferencing supports asynchronous written communication. It is argued that "the reflective and precise nature of written communication is very different from the spontaneous and less structured nature of oral discourse in either a face-to-face, video, or audio teleconferenced context" (Garrison, 1997, p. 4). In this manner, activities that are supported by computer conferencing rely on a print-based method of instruction, which was also the distinguishing feature of correspondence studies. Accordingly, reading and writing texts (one's own as well as others) are central elements in distance studies supported by computer conferencing. In the present study, computer conferencing is considered to be

equivalent to the so-called virtual learning environment (VLE) that support the in-service training activities that I have investigated. In this study, however, I have chosen to refer to this environment as web-based and in line with this, the activities that I have studied are referred to as web-based in-service training activities.

The present study, thus, concerns the concrete activities that are carried out in the context of web-based in-service training for people working in the food industry. As the brief historical account above has shown, present-day distance education activities have some commonalities with the activities organized earlier. The potential of computer conferencing for education and training is often articulated in terms of, for instance, collaboration, interactivity and two-way communication. The focus of the present study is on what becomes of this potential in the concrete, situated practices of web-based in-service training. In this way, the account of some of the distance education activities that have emerged over time forms a background for the present study.

In the research literature on web-based training and further education for adults, one typically finds a large number of studies dedicated to quantitative or mixed-method research methodologies (Tallent-Ruddels et al., 2006). There are, however, some research studies that are based on in-depth case studies of adult instruction and further training, supported by web-based technologies. This means that the studies discussed in the next section, share interests similar to mine. One difference, however, is the methodological focus in the study of web-based in-service training activities. The argument that will be outlined in the following is that these studies have not to any extent dealt directly with the practical actions and practical reasoning in such activities.

Such a detailed and concrete interest in participants' situated activities involves a research approach in which their concerns and actions are taken into analytical consideration. For the present work, research studies concerned with computer-mediated discourse that draw on the literature and methodology of what is referred to as ethnomethodology and conversation analysis have been used. These analyses are methodologically close to the ones reported in the present study. The empirical contexts, however, are normally not present in regular, distance education settings. In the following, a discussion of such studies, which are all considered relevant to the present study, will be provided.

Studies of web-based adult training and continuing education

In the following section, a selection of research on web-based adult training and further education will be discussed. The research reviewed is selected on the basis of whether it relates to the present study in the following ways. First, the research should concerns in-depth case studies of further and in-service training efforts. Second, it should concern the study of activities that are a combination of work and further training, which is also characteristic of the efforts to be explored in the present study. Third, the research should focus on activities where web-based technologies are the primary means of communication. Six fairly recent research studies have been selected for these purposes. In the following, these studies will be outlined one-by-one and later on discussed.

A study carried out by De Laat and Lally (2004) concerned an online 10-week course in a Master's Programme in 'E-learning' for mid-career professionals with teaching responsibilities and charged with developing e-learning in their organizations. The analytical focus was on investigating the roles and strategies that the participants developed in asynchronous networked learning discussions. This interest was theoretically grounded in the research field of Computer Supported Collaborative Learning (CSCL) and the analytical focus was on learning as a collaborative effort. The empirical material consisted of participant interviews with three out of a total of seven course participants concerning their individual learning and tutoring processes. De Laat and Lally found that the course participants had collaboratively developed three distinct and individual roles in online discussions: "the task-focused completer/finisher", "the group-focused facilitator" and "the task-focused ideas contributor" (p. 170). They concluded that although these roles were distinct, they were also complementary. In that respect, they contributed to the dynamics of the group of course participants who were working on teaching and developing e-learning.

A second study carried out by Kelly, Gale, Wheeler and Tucker (2007) concerned a part-time online module in a university Master of Arts in the Education Programme for teachers from primary and secondary schools and further education colleges. The course was about professional teaching issues in primary education. The research interest was to explore the stances the course participants would like to take, the stances they were expected to take by co-participants and the stances they felt constrained from taking in their online discussions with regard to teaching issues. This interest was theoretically

grounded in a socio-cultural perspective and, conceptually, they used participation in an online community of practice as a way of understanding course participants' exploration of and change in identities-in-practice. The empirical material consisted of discussion forum observations and interviews with six of a total of 15 course participants in which records of discussion forums were considered. Kelly et al. found that the course participants' stances towards different teaching issues were "challenged and changed during their written interaction in an online community of practice" (p. 173). From this, they concluded that the community supported less confident students as the written mode of communication allowed, "thinking and composing time before contributing" (p. 174).

A third study carried out by Brosnan and Burgess (2003) concerned a 12-week course in "Quality Management in the provision of care services". People working in health social care services were enrolled in the course. The course was carried out as part of, and just prior to, a large reorganization and centralization of their registration and inspection roles. The research interest was to explore how the analytical framework of Learning Architecture as offered by Wenger (1998), can be employed to evaluate and guide the design and support of online further professional development. Theoretically, the research was grounded in Wenger's concepts of identity and communities of practice. The empirical data consisted of interviews with 11, out of a total of 16, course participants and transcripts of discussion forums. Brosnan and Burgess found that the three-day face-to-face meeting prior to the online activities was important for the course participants to be able to establish trusting relationships and a sense of mutual endeavour. They also found that the online discussions provided large opportunities for sharing stories and reflecting on work practice.

A fourth study carried out by Stacey, Smith and Barty (2004) concerned a 13-week e-learning unit in a Master of Education program. The unit was about the theory and practice of e-learning and addressed people who regularly worked in various professions and for the most part had training and educational roles in their organizations. The research interest was to identify tensions between participation in a community of learning (i.e. the online course) and participation in a community of practice (i.e. participants' work practices). Theoretically, the concept of community of practice, as introduced by Wenger (1999), was used to understand the process through which people become competent in online learning activities. The empirical data consisted of interviews with all seven course participants. Stacey et al. (2004) found that taking part in online

communities of learning became more relevant for a learner's work practice "when the learning tasks are designed to enable negotiation of tasks and collaboration with learners who have similar workplace issues" (p. 107). One of the conclusions was that the course leader played an important role in structuring the online course as well as in initiating the elements that were necessary to establish a community of practice.

A fifth study carried out by Levy (2006) concerned a 17-week professional development course that was arranged for learning support practitioners in UK higher education institutions. The course concerned the changing educational roles of learning support practitioners in a networked environment and, thus, the development of new technical expertise. The research interest was to explore the course participants' experiences of text-based computer-mediated communication as a means of self-expression, dialogue and debate. Theoretically, this interest was grounded in both a constructivist and an experiential learning perspective. This implied, for instance, that the course leaders were assumed to be resources for individual as well as collaborative learning. In this sense, they were seen to facilitate both with regard to the task that course participants were expected to learn as well as with regard to the process by which they learn. The empirical material consisted of participant observations, online transcript analysis, cycles of online dialogues, questionnaires, interviews, etc. Levy (2006) found that participation in the online course could be described as a process of "acclimatization (or non-acclimatization) to an unfamiliar learning environment and approach" (p. 263). She also noticed that, "those who became active communicators became increasingly aware of, and acclimatized to, the dynamics of conferencing over time" (p. 267). Accordingly, they were comfortable with using the technologies in flexible and innovative ways. In this sense, Levy (2006) concluded that the course participants were "learning a different form of communication" (p. 267). They were, for instance, supposed to produce carefully thought-out and well-crafted written messages. However, many course participants felt that using web-based technologies for more than online socialization and the exchange of information was rather limited. Levy argued that more extensive discussions among the participants were not established.

A sixth study carried out by Ferreday, Hodgson and Jones (2006) concerned a two-year MA online course in "Management Learning and Leadership" at Lancaster University intended for people with leadership and/or management developmental roles. The research interest was to explore the relational and dialogical processes in networked management learning discussions. This interest was theoretically grounded in critical

discourse analysis. The data material consisted of virtual ethnography, mainly interviews with course participants. They found, among other things, that a complex relational process was involved when the course participants engaged in, and became familiar with, a new form of communication. Ferreday et al. (2006) found that in this process, the course participants initially displayed some resistance and/or reticence towards the new learning situation. The authors concluded that resistance was an expected part of "learning new and alien language that represents a different way of being in the world, and one with which the learners would not at first be expected to identify with" (p. 238).

Three interesting main themes emerge from the research summarized. The first theme concerns the roles and stances the course participants developed with regard to certain professional issues as part of further training supported by written online discussions (De Laat & Lally, 2004; Kelly et al., 2007). The second theme concerns the processes that are required to initiate and establish web-based further training as communities of learning (Brosnan & Burgess, 2003; Stacey et al., 2004). The third theme, and perhaps the most relevant to the present study, concerns how course participants familiarize themselves with a new learning situation, and how they learn to participate in web-based environments for the purpose of further and in-service training (Ferreday et al., 2006; Levy, 2006).

An initial observation is that five of the six research studies were performed in UK further training contexts, while the study by Stacey et al. (2004) was conducted in an Australian further training context. Another observation is that the course participants in some of these studies were taking part in online further training for the first time (Levi, 2006; Ferreday et al., 2006; Kelly et al., 2007). Consequently, part of the focus in these studies is on how participants learn to take part in new communicative practices, which is also of interest in the present study. In the research by De Laat and Lally (2004) and Stacey et al. (2004), however, the course participants' daily work is in areas such as e-learning businesses and the education and training sector. Accordingly, they are somewhat familiar with similar web-based technologies as well as with the institutional activity of further training. In the research by Brosnan and Burgess (2003), the participants' prior experiences of web-based further training are not explicitly discussed. However, given that the empirical context was social services, this suggests that the course participants might have less experience of these technologies.

What is also interesting to note is that some of the courses studied were arranged entirely online, which meant that face-to-face meetings were not part of the activities (De Laat & Lally, 2004; Levy, 2006; Stacey et al., 2004). In the research by Brosnan and Burgess (2003), the activities were partially online, which meant that all interaction was web-based "apart from a three-day induction period at the start" (p. 25). In Ferreday et al. (2006) and in Kelly et al. (2007), on the other hand, the further training activities were primarily campus-based but with some of the activities supported by web-based technologies.

As mentioned earlier, this research consists of in-depth case studies of web-based adult training and further education. To summarize some of the features in this research, I have produced a table that describes the research approaches in terms of methods.

Research articles	Online observations	Post studies	Interviews
Brosnan & Burgess, 2003 *Web-based continuing professional development – a learning architecture approach*		Automated tracking & transcript of bulletin board	Telephone interviews
De Laat & Lally, 2004 *It's not so easy: researching the complexity of emergent participants roles and awareness in asynchronous networked learning discussions*		Content analysis	Recall event interviews
Ferreday, Hodgson & Jones, 2006 *Dialogue, language and identity: critical issues for networked management learning*	Virtual ethnography		Interviews
Kelly, Gale, Wheeler & Tucker, 2007 *Taking a stance: promoting deliberate action through online postgraduate professional development*	Observations of threaded discussions		Interviews based on observations

Levy, 2006 *'Learning a different form of communication': experiences of networked learning and reflections on practice*	Participant observations	Online transcript analysis, cycles of online dialogues, personal research journal	Questionnaires and interviews, debriefing with tutors, reflective dialogue with 'critical friend'
Stacey, Smith & Barty, 2004 *Adult learners in the workplace: online learning and communities of practice*			Interviews

Table 2. An overview of methods used in a selection of research related to web-based adult training and continuing education.

As table 2 shows, in general, three main methods have been used in this research: observations of the online interaction, studies of the interaction after the courses are finished, and interviews with course participants. Some of the research also employed a combination of methods.

It is interesting to note that the three most recent studies (those published in 2006 and 2007) have scrutinized further training activities as they take place, i.e. through online observations and not only what is recorded within the systems. In five of the six studies, course participants were interviewed after the courses had ended. In one case the participants were also interviewed midway through the course (Stacey et al., 2004). Although Levy (2006) and De Laat and Lally (2004) collected data from bulletin boards, interview data were used as the primary analytical resource. In some of the research, there were both offline and online activities. It is, however, interesting to note that some of the research that explored solely online activities (De Laat & Lally, 2004; Stacey et al., 2004), empirical material in the form of observations or log files from such activities was not collected. Levy (2006), on the other hand, collected data from, for instance, chat discussions. The data were, however, not explicitly used in the analysis; instead, interviews were.

In the context explored in the present study, the course participants encounter a new learning situation in which the web-based technologies that support the activities are

unfamiliar to most of them. They are also, to some extent, unfamiliar with taking part in institutional activities such as further training. In the research discussed above, on the other hand, the course participants had experiences from higher education (both as students and in their work), which implies that the institutional dimension is more or less taken for granted by the course participants. The research above also seems less interested in the specific content the course participants were expected to learn in these courses. In the present study, on the other hand, one of the central research interests concerns what the course participants learn with regard to the quality assurance content. The course participants encounter a fairly complex learning situation in which they are expected to learn to accommodate to an unfamiliar technological environment, to learn about a specific institutional form of communication and to adopt the regulating practices of quality assurance that will eventually permeate the entire food industry.

In this way, the research interests in the present study are complimentary to the research discussed above and concern course participants' engagement in web-based in-service training activities concerning quality assurance. Some of the issues explored in this study relate to learning and how it is accomplished in web-based systems or environments, while others concern the detailed features of communication in web-based environments. To address these specific issues I have drawn on literature and methodologies from research on Computer Supported Collaborative Learning (CSCL) and Computer-Mediated Discourse (CMD). In the following, research from these two fields will be discussed and I will start by outlining the methodological approaches that permeate the specific empirical studies that have been selected.

Studies of technology-mediated communication

The present study is mainly situated in a sociocultural tradition, which will be elaborated on in Chapter 3, and one of my central questions concerns the participants' achievement of interaction in web-based in-service training. Another central question of interest relates to the strategies the course participants develop when co-ordinating and making sense of the activities they are engaged in. In more specific terms, I want to draw attention to, and analyse, the interactive work carried out by the participants when they establish and maintain web-based in-service training efforts. The research community of Computer Supported Collaborative Learning (CSCL) and the field of Computer-Mediated Discourse (CMD) offer a number of detailed case studies of communication and learning in

technology-mediated settings that are relevant to the present study (for general research summaries, see e.g. Koschmann, 1996; Stahl, Koschmann & Suthers, 2006: Wasson, Ludvigsen, & Hoppe, 2003, and Herring, 1996, 2001 respectively)[11]. Altogether four empirical studies will be discussed in what follows and these have been selected since they have provided methodological and empirical insights to the present study.

Ethnomethodology and Conversation Analysis: methodological approaches to the study of technology-mediated communication

The two CSCL research studies that will be discussed in the following take as their point of departure the ideas, insights and research methodologies of a tradition referred to as ethnomethodology (commonly abbreviated as EM). Ethnomethodological studies are primarily concerned with the study of "the detailed and observable practices which make up the incarnate production of social facts, for example, order of service in a queue, sequential order in conversation and the order of skilfully embodied improvised conduct" (Lynch, Livingston, & Garfinkel, 1983, p. 206). EM is thus dedicated to an interest in the practical reasoning of people, and the methods they use when producing social activities. A fundamental element of this is how they make their own actions and the actions of others comprehensible, recognizable and orderly (Garfinkel, 1967). This concern with the study of practical reasoning and practical actions makes EM, so it is argued, a productive framework for conducting fine-grained studies in classrooms or other sites of instruction (cf. Lindwall, 2008, Macbeth, 2000; Koshik, 2002). In a similar vein, the tradition of EM has also been found particularly promising for CSCL research (Koschmann, 1996; Koschmann, Stahl & Zemel, 2007). Furthermore, the EM tradition has also been salient in an enduring and at times controversial methodological discussion within this community (Stahl et al., 2006). All the same, rather few empirical studies informed by

[11] There are many traditions in this area of research such as Human-Computer-Interaction (HCI), Computer-aided instruction (CAI), Computer-Supported Cooperative Work (CSCW), etc.

such a framework have been published in the in CSCL literature (Stahl, et al., 2006; Stahl & Hesse, 2007)[12].

The CMD research studies that will also be discussed in what follows have been inspired by what is referred to as a conversation analytical approach. Conversation Analysis (commonly abbreviated as CA) emerged from Garfinkel's (1967) programme for ethnomethodology. CA is grounded in a general attempt to empirically study and describe people's methods of producing the orderliness, structure and sequential patterns of ordinary talk-in-interaction (Sacks, Schegloff & Jeffersson, 1974; Schegloff, 2007; Silverman, 2006). It is against the backdrop of such descriptions of so-called ordinary talk, that the specific patterns characteristic of interaction in institutional settings (in schools, in doctors' examination rooms, in courtrooms or elsewhere) has been described. In a similar vein, many scholars conducting CMD research have employed the robust empirical findings of CA in face-to-face encounters to describe the specific patterns of chat interaction as well.

In this sense, CA is often argued to be a productive point of departure when examining the specific character of computer-mediated communication, and to be especially suited for the study of chat interaction. Although the literature and discussions in CA are focused on spoken conversation in particular, Schegloff (2007) argues that "conversation" can be used analytically in an inclusive way. It is, he argues, "a matter of empirical inquiry therefore, how the matters taken up in the text are appropriately described in non-conversational settings of talk-in-interaction" (p. 15). This involves a certain analytical commitment in studies of, for instance, chat interaction that are grounded in EM and CA; "[i]t is the responsibility of the analyst to discover within the recorded materials what the members are actually accomplishing and are making relevant through their interaction" (Koschmann et al., 2007, p. 142). Accordingly, the CSCL and CMD studies to be described in the following have a methodological focus similar to that of the present

[12]A large number of the empirical studies in the research field of CSCL are conducted within an experimental paradigm. This means studies where an intervention in, for instance, a classroom, is compared to a control condition in terms of one or more variables. In addition to this, many studies are also conducted within an iterative design paradigm. Such a paradigm involves empirical studies where the aim is to explore and intervene in "the 'space' of possible designs, pushing [design] into new areas and identifying promising features" (Stahl et al., 2006, p. 14).

study. The two research communities will be attended to separately, starting with the CSCL studies.

Ethnomethodologically informed CSCL studies

Most CSCL studies informed by EM analyse collaborative activities that rely on talk as the primary means of communication. However, in a web-based environment, which is the technological context for the activities I have scrutinized, tools such as shared workspaces and chat are often used. Accordingly, a highly relevant issue for the field of CSCL is to contribute to an understanding of how participants use, for instance, chat tools as part of instructional activities (Zemel & Chakir, 2007). There are two ethnometodologically informed CSCL studies that I have found especially interesting and relevant to the present study. The general research interest in these two studies concerns chat interaction as collaborative accomplishments and sense-making practices. The research was part of a project where an interdisciplinary group of researchers investigated innovative uses of online collaborative environments to support mathematics learning in the context of school. The material they analysed was based on the same data and consisted of time-stamped chat log files of math problem-solving sessions that were advertised, sponsored and conducted by the Math Forum, which is a leading centre for mathematics and mathematics on the Internet. The chat sessions usually involved two or more participants and a facilitator.

In this way, the research can be seen as part of an experimental design, as the problem-solving chat sessions were initiated and organized by the researchers. A problem with experimental or small-scale studies in CSCL in general, is that their ecological validity can be considered to be low. Studies of learning situations that are limited to experimental settings are often conducted during short time periods and they "do not in any strong sense provide insights into how real-life use situations develop over a certain period of time" (Fjuk & Ludvigsen, 2001). The focus in the present study is, instead, on how course participants communicate and learn in regular in-service training situations. This also means that the activities that are carried out under such conditions are organized as part of course participants' daily work and have not been specifically designed for research.

As already mentioned, the empirical material in the two CSCL studies were time-stamped chat log files, which is also the empirical material that is analysed in the present study. In terms of results, Zemel and Chakir (2007) found that chat interaction differs from spoken

conversation, since writing, posting and visual inspection of text and graphical objects by any given participant were not observable by co-participants. This means, for instance, that participants relied on proximity rather than the contiguity of text postings. Accordingly, they used graphical objects as a way of achieving a sense of progression in their interaction. They also found that such constraints on how the chat interaction was organized made the participants develop alternative procedures for regulating their own actions and the actions of others. The participants indicated, for instance, with the use of ellipses and other continuation markers (e.g. short and grammatically incomplete postings) that they were producing a series of postings that were to be read in a sequence, even though the postings might not be contiguous. Accordingly, Zemel (2005) found that the chat participants designed postings to be read, and not heard as in spoken conversation. Since embodied action was not available as a resource in the reading of text messages, the participants used and relied on, for instance, emoticons and other textual devices in addition to shared documentation. One of the implications for the organization of chat interaction was that a coherent reading and organization of posted messages was achieved first when the postings became public in the chat window.

Conversation analytical CMD studies

One difference between the CSCL studies and the CMD[13] studies presented is that the latter focus on the analysis of chat interaction as it unfolds moment by moment in a range of naturalistic settings (Markman, 2006). This means that the situations studied in CMD take place independently of researchers' intervention. Schönfeldt and Golato (2003) have identified four main research interests with regard to the study of chat interaction: 1) a sociological interest in issues such as gender, community and identity (Del-Teso-Craviotto, 2008; Herring, 2003; Panyametheekul & Herring, 2007; Sveningsson, 2001), 2) a linguistic interest in chat interaction as either spoken or written forms of communication, 3) a pragmatic interest in the issue of how chat can be used effectively in education or work (Cerrato & Wärn, 2000; Harasim, 1999), and 4) a conversation analytical interest in the issue of to what extent robust findings from CA and spoken conversation can be used to describe chat interaction (Cherny, 1999; Garcia & Jacobs, 1998, 1999; Herring, 1999; Markman, 2006; Schönfeldt & Golato, 2003).

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[13] Computer-mediated Discourse (CMD) is a specialization within the broader interdisciplinary study of computer-mediated communication (CMC). What sets CMD research apart from the more general CMC is its distinguished focus on language and language use in computer-networked environments, and the use of discourse analytical methods to address such a focus (Herring, 2001, 2004).

As already alluded to, chat research with a conversation analytical interest is relevant to the present study. More specifically, these studies imply a focus on the pragmatic rules and sequential organization of chat interaction in terms of turn-taking (Cherny, 1999; Garcia & Jacobs, 1999; Herring, 1999), turn-allocation (Garcia & Jacobs, 1999; Markman, 2006) and repair (Schönfeldt & Golato, 2003). In the tradition of CA, the notion of turn-taking (Sacks et al., 1974) refers to the fundamental organizational patterns of spoken conversation, i.e. a set of practices by means of which a conversation is carried out. It describes the ways participants take turns in the production of utterances and allocate turns of utterances in interaction with each other. According to Sacks et al. (1974), a basic empirical observation is that in ordinary spoken conversations people take turns at talking, and most commonly, one party talks at a time. In the CA literature, the turn-taking system is described in terms of two central components: the turn constructional component and the turn allocation component. In CA studies, it has been found that turns are allocated among participants by means of one of three ordered options: current speaker selects next speaker, next speaker self-selects as next, or current speaker continues (Sacks et al., 1974). As we can see, CA is concerned with the sequential organization in spoken conversation. One recurrent form of organizing spoken conversation, which has been a robust empirical finding, is that of adjacency pairs. An adjacency pair refers to two turns that are functionally related to each other in such a fashion that a first turn requires a certain kind or different kinds of a second turn, e.g. the preferred response to a greeting is to return a greeting, creating a greeting–greeting pair or similarly a question–answer pair (Sacks et al., 1974; Schegloff, 2000: Schegloff, 2007). Accordingly, in CA repair concerns the sequential organization of how participants in conversation deal with problems with speaking, hearing, or understanding. Repair is classified by who initiates repair (self or other) and by who resolves the problem (self or other) as well as by how it unfolds within a turn or a sequence of turns (Schegloff, 1992).

In the present study one of the research interests relates to the organization of turns and turn allocation in chat interaction, which is an interest explored also by Garcia and Jacobs (1999) and Markman (2006). In these two studies, chat interaction in relatively small groups of participants was analysed. What is interesting to note about this research is that it represents micro analytical approaches where a combination of chat log files and video recordings of the participants' computer screens are used as empirical material. This approach requires a certain methodological approach, which will be discussed in greater detail in the next section. In terms of results, Garcia and Jacobs noted that chat conversation is multi-dimensional; what the producer of a message experienced as real-

time construction of a turn was only perceived as silence by the recipients. This meant that a turn (or a posting) became a turn (or a posting) the moment it was posted in the chat window. Turns, they concluded, did not unfold over time as in spoken conversation, which means that the "one party talks at a time" (Sacks et al., 1974, p. 706) rule of spoken interaction did not apply to chat interaction. One of the reasons for this was that the chat system, which "is designed so that more than one party may compose messages at a time" (Garcia & Jacobs, 1999, p. 347). This implied that there was no competition for the right to post a message. Further, Garcia and Jacobs (1999) found that the turn allocation techniques that were established and maintained in chat interaction were different to those available in spoken conversation. For instance, the chat participants were not able to specify the next poster since they were not able to control when other participants posted to the chat. They noticed, however, that the participants used address terms to specify the next recipient.

Markman (2006), on the other hand, found that the chat participants did not use any explicit address terms. Instead, they employed the rule "self-selection for next speakership" (Sacks et al., 1974, p. 704) by means of which, as CA findings have shown, spoken conversation is achieved. She noticed that in some situations, however, the participants wanted to specify for whom a posting was intended. Markman (2006) found that the participants used fairly implicit allocation techniques to indicate a sequentially next poster, such as using "you" and by posing particular questions. These allocation techniques were found to be productive in, and a consequence of, the relatively small group that she studied.

Garcia and Jacobs (1999) also found that the simultaneity of the chat medium gave rise to a phenomenon they referred to as "phantom adjacency pairs" (p. 354), which occurred when two turns were posted sequentially and looked like an adjacency pair but were not. The so-called misplaced postings were found for the most part to be obvious to chat participants. Furthermore, Markman (2006) found that the primary resource the participants used to organize and maintain coherence in the chat interaction was threading. In chat interaction, it has been noted that messages can be organized based on their relationships to specific topics or so-called threads. Whereas in spoken conversation people are for the most part oriented to one topic at a time, in chat interaction several concurring threads are established and maintained and can be oriented to while chatting (Markman, 2006; Simpson, 2005; Zitzen & Stein, 2004). Accordingly, threading is seen to be the process by which participants discuss one or more topics. Markman (2006) found,

however, that threading was not an intuitive process but something that had to be learned through experience. Markman also noted that the participants oriented quite sensitively to different threads as they made sense of the alteration of turns (or postings). The lack of any explicit markers of confusion or request for clarification from the participants was taken as evidence for this finding.

In more general terms, the CMD research concerns the communicative cultures that are established in chat interaction. What these studies show is a set of communicative practices and strategies that chat participants establish and maintain in computer-mediated settings. However, the activities that are scrutinized in the CMD research are different from the ones explored in this study. The in-service training activities analysed in the following more explicitly concern learning as an institutional activity. Accordingly, the content discussed in the chat sessions has a distinctly different role in the present study compared to the CMD research studies presented. What the CMD studies reveal, however, is the complexity of how turns and turn allocation are accomplished in chat interaction. This complexity implies that one has to study chat interaction as any form of human interaction, that is, on its own terms (Simpson, 2003; Sveningsson, 2001). It also points to some methodological concerns with regard to the study of chat interaction, and these will be addressed next.

Methodological concerns in the study of chat interaction

In more ethnographically oriented studies of chat interaction, the researcher observes online chat in real time by "being there", as Garcia, Standlee and Cui (2009, p. 58) have put it, either as an active participant, an observer or a lurker. In such approaches "the ethnographer should attempt to experience the online site in the same way that actual participants routinely experience it" (p. 60). As Garcia and Jacobs (1999) noted, the ongoing construction of chat interaction from all participants' perspectives cannot be captured in chat logs since "the message production process is private; messages are not visible to the group until posted" (p. 347). This means that unlike spoken conversation, in chat interaction "message production (typing) occurs separately from message transmission (posting)" (p. 346). Moreover, the authors' take into account the fact that messages from other participants are not available until the moment they are posted in the public chat window (i.e. postings do not, as already pointed out, unfold over time as turns of talk in spoken conversation). From this perspective, it is considered necessary to

be able to analytically capture the central organizing principles of chat interaction, to study "computer chat as it happens, rather than after the fact (from chat room logs)" (Markman, 2006, p. 52). According to this rationale, "a printout of chat room conversation is not a substitute for observing the interactional process which produced it" (Garcia et al., 2009, p. 62). This research strategy points to certain scepticism towards invoking archived chat log files as the only source of data. Accordingly, collecting data from all the participants' computer screens is claimed to be important in order to "determine how each party interpreted the conversation as it unfolded" (Garcia et al., 2009, p. 62). Using this line of reasoning, the methodological argument is thus to supplement chat log files with video recordings of all the participants' computer screens. In this way, they strive to collect all the information each individual participant has available as they decide "to write, post, edit, or erase a posting" (Garcia & Jacobs, 1999, p. 337). This strategy, they claim, produces empirical material on "the interactional process through which the sequences appearing on the logs were produced" (p. 340).

Zemel (2005) has discussed this research and came to the conclusion that chat interaction represents text exchange systems rather than speech exchange systems, since the organization of interaction among participants in chat interaction is displayed in the online postings of texts. Methodologically, this is not a trivial conclusion, since it introduces an alternative perspective where the analyst has to take into account the fact that chat postings are not meant to be 'heard' (as in traditional spoken conversation); rather, they "are designed to be read by those who participate in the chats" (p. 753). Such a difference between the systems of traditional spoken conversation and written interaction can be further elaborated and discussed in terms of an analytical distinction between "CONTEXT OF PRODUCTION" and "CONTEXT OF USE", as introduced by Nystrand (1983). In spoken conversation where participants are physically co-present, the two elements are concurrent. More specifically, this means that "co-present participants can monitor another person's speech as it develops" (Zitzen & Stein, 2004, p. 989). Written discourse in its traditional form, on the other hand, can be characterized by a "spatiotemporal separation of CONTEXT OF PRODUCTION and CONTEXT OF USE" (p. 989). With regard to chat interaction, thus, the private input box functions as the "CONTEXT OF PRODUCTION" as it is reserved for typing and editing individual messages, whereas the public chat window in Nystrand's terminology (1983) functions as the "CONTEXT OF USE". Thus, since in chat interaction "the act of typing a message is physically separated from the public and cannot be monitored simultaneously by the

co-participants, "CONTEXT OF USE is logically and interactionally separated from CONTEXT OF PRODUCTION" (p. 989).

My own conclusion from this discussion is that rather than focusing on what might be called the "CONTEXT OF PRODUCTION", the analytical interest in the present study is directed towards how postings are formulated and organized so as to be publicly displayed and intelligible to other participants. This points to an interest in what might be referred to as the "CONTEXT OF USE" and how postings "provide instruction in their design for how they are to be read by recipients of these postings" (Zemel, 2005, p. 753). The analytical interest in chat sessions as part of in-service training efforts is accordingly directed to this communicative activity in its own right, on its own premises. This is not, however, to say that other activities the participants engage in, in a so-called "CONTEXT OF PRODUCTION", are uninteresting or unimportant. On the contrary, a basic assumption is that the participants are probably engaged in many other activities besides the chat sessions (such as writing other kinds of messages, reading articles, chatting with others, drinking coffee, etc.). However, such activities are not focused on in the present study.

What remains is a discussion about how to use archived data, and whether the researcher "being there" during the chat sessions as an observing participant makes any difference to the analysis. On the one hand, there are, as I see it, some advantages in having participated in the real-time chat sessions, such as gaining a sense of rhythm of participation. From the perspective of analysing archived material, on the other hand, "some things could be better traced later on by looking at the text archives, such as the number and nature of interwoven threads at any given time" (Ruhleder, 2000, p. 10). In a similar vein, Ruhleder found archived material to be a useful data source for studying interactional patterns as it provides better access to what it is like to participate in an online chat. In any case, archived material in the form of time-stamped chat log files are used and taken to be relevant with regard to the analytical interests in the present study. The consequences of such a methodological stance will be further elaborated on in Chapter 5.

In the light of this research, a wide array of empirical research studies, which in different ways scrutinise the use of web-based technologies for communication and learning, has been examined. The research discussed above is taken to be complementary to the

interests in the present study. The research on web-based adult training and further education, for instance, offers insights into in-service training activities that are slightly similar to the activities I have studied. The research, as represented in a selection of studies within CMD and CSCL, provides methodological and empirical insights into the detailed study of communication in technology-mediated settings. In the light of this research review, the more precise aims and the specific scope of the present study will be formulated.

Aims and scope of the present study

The overall aim of the present study is to contribute to our understanding of the kind of communication and agency that emerge and develop in web-based environments and how such environments constitute contexts for communicative socialisation and learning for people employed in the food industry. Accordingly, the purpose of the empirical investigation is to scrutinise how people employed in this industry and related fields take part in in-service training activities. In particular, the interest is in the nature of communication and learning that take place when fairly inexperienced participants are introduced to training activities supported by web-based technologies. More specifically, I have studied how chat technologies are used in the training of course participants who are expected to learn about quality assurance measures, methods and procedures.

Accordingly, the research interest in the present study is, on the one hand, in the detailed features of the communicative practices that the participants establish in web-based in-service training activities and on the other, the course participants' learning and appropriation of quality assurance contents, i.e. methods and procedures which will transform their work. This points to the relevance of the broader context, which includes these activities, and to some of the consequences of a so-called global economy in the local context of in-service training activities. This perspective on institutional activities as intermediaries by means of which wider changes in society are dealt with and regulated should be seen as a contribution to the research reviewed in the previous section. Such a broader contextual approach to studying social practice is also prominent in a sociocultural tradition, which is the theoretical framework of the present study.

From a sociocultural perspective, communicative socialisation in the context of web-based in-service training courses may be understood as an induction into new forms of learning (Wertsch, 1998; Säljö, 2005). First, and perhaps most evidently, the

communicative arena in such practices is based on web-based technologies. Such environments are made up of specific infrastructures and a set of cultural tools, which in some ways (but not all) are unfamiliar to the participants in terms of their specific function in the environment. One dimension of entering a web-based course as an inexperienced participant is to be able to orient oneself, to get to know what is possible to do and learn how to exert agency in this complex setting.

Second, the technological solutions for enabling relevant and institutionally well-established course activities (e.g. a discussion) imply some specific conditions for interaction in a web-based environment; conditions that might seem ambiguous in comparison with culturally well-established norms and sequential organization of face-to-face spoken conversation. One dimension of such environments is that the discussions should be carried out by means of text rather than talk, which functions under other conditions and norms than spoken conversation.

Third, in institutional activities the physical setting is usually an important contextual resource that participants regularly use to define the activity at hand and to make sense of what is going on (i.e. the roles of the participants and their respective tasks, entitlements and obligations). In–service training is often, already in its traditional forms, a hybrid activity and concerns the relationship between work practices and educational contents. One dimension of participating in web-based in-service training is that for an inexperienced participant the context of the activity is probably to a large extent ambiguous. Accordingly, the contextualisation practices and the frameworks for participation (Linell, 1998) that the participants establish are crucial for maintaining the activity at hand.

Fourth, in-service training activities are a hybrid form of activity as the participants are expected to use both their work experiences as resources in the training, while at the same time they are expected to examine and evaluate such work experiences in the light of more general principles and norms established in an international community of how work processes should be carried out. One dimension of taking part in web-based in-service training is that the contents of quality assurance systems and control of production the course participants are expected to learn are complex and abstract, and in many respects challenge (and potentially transform) their established knowledge and work experiences.

The following interests are addressed in the empirical studies reported in four articles in Part Two of the present study.

1) The interest in the first study, reported in Article 1, concerns how relatively inexperienced participants come to appropriate (Wertsch, 1998) a web-based environment with regard to the affordances and constraints of the specific technological tools and resources available and how they become participants who can exert agency in such web-based environments for discussing and learning.
2) The interest in the second study reported in Article 2, concerns how the course participants co-ordinate, and struggle to co-ordinate, their chat interaction in order to establish intersubjectivity (Rommetveit, 1974, 1990) in such a manner that the interaction can be maintained. The interest lies in issues such as how instances of discontinuity are dealt with, and the strategies the participants develop to establish and maintain continuity.
3) The interest in the third study reported in Article 3, concerns the course participants' practices of framing (Goffman, 1974) the hybrid web-based in-service training activity they are engaged in. Furthermore, the interest is also in what participation framework they establish in these activities and the entitlements and obligations that are made relevant and maintained by the participants.
4) The interest in the fourth study, reported in Article 4, concerns how the course participants' current understanding of their work practices is challenged by the specific content of quality assurance. Do they adopt a different approach to their daily work? How do they accommodate to writing in these web-based discussions?

These interests imply a focus on learning as appropriation with regard to different dimensions of the web-based in-service training activities. As already established, it is important in a study of communicative and learning practices to attend to the broad as well as the local contexts of such practices. In this sense, the local in-service training activities explored in the present study are seen as having "considerable cultural, historical and metaphorical meanings" (Hjörne, 2004, p. 22). From a sociocultural perspective, it is not enough to analyse talk and interaction per se. Rather, the wider social, cultural and institutional context in which the interaction takes place must be taken into account (Wertsch, 1991; Linell, 1998). A sociocultural perspective provides a theoretical framework that accounts for broader activity systems within the doing of concrete activities. In this sense, a sociocultural perspective serves well as the theoretical backdrop

against which the present study takes its point of departure. What such a perspective means more specifically for this study will be discussed in the following chapter.

3 THEORETICAL FRAMEWORK

Mediated learning from a sociocultural perspective

The in-service training activities explored in the present study are understood as being situated within a wider social, historical and institutional context. In this case, the activities concern a set of changes in pan-European legal regulations that have been imposed on the food industry with regard to food safety and quality assurance issues. In this sense, established norms and regulations are instantiated by representatives of a collective to address common concerns of how to handle the dilemmas and risks involved in dealing with food and food quality. Such interventions transform current work practices, and thereby increase the control of an entire industry. Consequentially, this means that such efforts have implications in a range of areas: societal, organizational as well as on the level of working groups and individual workers. In this manner, learning is seen as being at the intersection of what groups or individuals do and what collectives normatively expect of them and make demands on. In the context of the Swedish food industry, such normative expectations are instantiated, and regulated, on a European level through written documents and texts, methods and procedures. Accordingly, in-service training activities are organized and carried out to meet such expectations.

From a sociocultural perspective, learning is perceived as situated and embodied in practical activities and as achieved through participants' increasing appropriation of mediational means (Säljö, 2005; Wertsch, 1991, 1998). One of the central concepts is thus mediation and the role of psychological as well as technical tools in human practices (Vygotsky, 1986). A cultural tool "mediates our action – it exists between us and the world and transforms our activity upon the world" (Crook, 1994, p. 21). This means that we do not encounter the world in a neutral, objective and direct manner; rather, we learn to interact with objects and people by means of signs and tools such as written and

spoken language and different artifacts, that are relevant to the purposes of specific social practices[14] (Vygotsky, 1986).

In this manner, this mediated quality of cultural tools such as the web-based technologies and the quality assurance practices in the present study, are seen to potentially transform the course participants' understanding of current work practices in terms of specific ways of seeing, talking and writing about production processes. Accordingly, conceptualizing cultural tools, or artefacts, in this manner re-specifies our relation to the world. In a sociocultural perspective, psychological or intellectual tools must be seen as mediating perceptual activity and as such, "[h]uman's very seeing, and understanding of the world, are in a fascinating sense related to the development of symbolic and technological systems" (Ivarsson & Säljö, 2005, p. 204).

In the present study, the course participants are also expected to conduct their discussions in a web-based educational environment. This environment is seen as a technological tool with many mediating features incorporated into its design. In this sense, the web-based environment has features such as discussion fora, chat rooms, web lectures, tutorials, evaluation schemes, etc. Evidently, this makes the web-based environment as a technical tool central to the activities, which means that to be able to participate in such activities, it is crucial and utterly necessary, to accommodate to such a technical tool to be able to engage in the content the course participants are expected to learn.

This is not to say, however, that cultural tools such as a technical environment can constitute activities alone. In a sociocultural perspective, social practices, or activities, are, rather, understood as being established in interaction between people as they encounter a range of "routines, habits, physical tools, conceptions etc." (Lantz-Andersson, 2009, p. 24), which shape their understanding of the activities. The analytical focus in the present study is therefore not on the mediational means per se. Rather, the focus is on what

[14] A social practice, which is also considered to be a crucial concept in a sociocultural perspective, can be a lesson in a school, a business meeting or a career development discussion, or as is the case in the present study, in-service training activities. In other words, social practice is something people achieve within specific "cultural, historical and institutional settings" (Wertsch, 1991, p. 15).

participants learn in specific social practices that are mediated by certain cultural tools and that serve certain institutional purposes.

The latter issue touches upon a central interest in this study: What does it mean to learn something in the social practice that is explored in the present study? What is necessary for the participants to appropriate in order to be able to engage in web-based in-service training activities where they are expected to learn about quality assurance? As people enter into, and participate in, social practices, they are expected to familiarize themselves with, and learn how to master discourse, perspectives and skills considered relevant to and valid for the specific practice. In theoretical terms, this is understood as a process of appropriation. The concept of appropriation draws analytical attention to the "relationship of agents to mediational means" (Wertsch, 1998, p. 53), and the process through which tools take on personal meaning and thus become extensions of participants' will and action. Accordingly, a tool is appropriated in an advanced sense (Säljö, 2000, 2005). However, tools of this complexity cannot be appropriated per se by any individual user. Different users will have different needs, and the appropriation is relative to the purpose of the activities in which the user operates. Accordingly, sometimes it is sufficient to appropriate a certain dimension of an activity such as knowing of specific terms but not knowing how to use them in a discussion. According to such theoretical perspective, appropriation is understood as a gradual change in the ways in which we participate in specific activities, and in that sense it is a feature that is always part of human practices.

It is, above all, in interaction with more competent and experienced members that we are guided into valid ways of contributing to a specific setting (Säljö, 2000). Rogoff (1990, 1995) has described this type of process as "guided participation". In line with a sociocultural argumentation, the course experts in the in-service training activities may be seen as more competent participants, who bridge the gap between what is known and what is new in the situation. The course participants, who may be understood as more peripheral to these activities, are, however, not passive in this process of appropriation. They can, on the contrary, be described as contributing to their own socialization.

One of the central concerns in a sociocultural perspective, as argued by Crook (1994), is "to understand how new mediational means enter into human behaviour in order to re-coordinate it" (p. 50). One of the dimensions with regard to learning in the web-based in-

service training activities concerns the participants' accommodation to a technological environment. This involves, more concretely, that the participants need to learn how to orient themselves in the environment, present themselves in relevant ways and participate in written discussions. This may be seen as an instance of re-coordination or re-mediation as the web-based environment transforms the conditions for the activities in comparison to, for instance, a teaching and learning situation in a classroom. In this perspective, re-mediation means "a shift in the way that mediating devices regulate coordination with the environment" (Cole & Griffin, 1983, p. 70). An early instance of re-mediation historically speaking, which Cole and Griffin exemplify, is the shift from syllabaries to an alphabet, which created "a representation of language at a level of analysis which is qualitatively new" (p. 70). In the present study, however, the instances of re-mediation are not of such historical significance. Instead, re-mediation in the in-service training activities concerns instances where the mediational means are seen to more or less transform familiar and well-established activities into slightly new, but still similar forms of activities. A second dimension with regard to the learning that goes on is the appropriation of specific communicative rules and co-ordination in the chat environment. This is an instance of re-mediation in the sense that the chat environment provides conditions for the activities that are different compared to communicative forms that they are more familiar with, such as spoken conversations but also more recent technology-mediated interaction such as e-mail. A third dimension with regard to learning is the appropriation of a method in which to contextualise, or frame the activities they engage in, and consequently learning in terms of the participation framework established. This is an instance of re-mediation in the sense that the context of the chat discussions, to a large extent, has to be established by the participants in terms of the stance they take towards these discussions. A fourth dimension with regard to the learning that goes on in the in-service training activities is the course participants' appropriation of a specific institutional content that they are expected to use competently. This is seen as an instance of re-mediation as the course participants are challenged to discuss their current work processes in a different manner.

These are some of the dimensions that the course participants are expected to accommodate to and learn in the in-service training activities. In the present study, four dimensions in particular are explored and reported on. For practical purposes, the specific analytical resources employed in each of the empirical studies will be attended to in separate sections.

Adapting to and exerting agency in web-based contexts for learning

Theoretically speaking, the in-service training activities I have studied are mediated by a set of cultural tools, technical as well as intellectual, which in many ways are unfamiliar to the participants. Accordingly, one dimension of entering a web-based course as an inexperienced participant is to be able to navigate in the technical environment, get to know what is possible and what is not and learn how to exert agency in such an environment. In theoretical terms, this initial phase of entrance can be conceptualized in terms of "peripheral participation" (Lave & Wenger, 1991). To be a peripheral participant is to be allowed to be included as a legitimate, but not fully competent, member of a community of practice. Eventually, newcomers' ways of taking part in the activities become more informed, and they will begin to contribute to the activities by talking and acting in valid and accountable ways as knowledgeable and central participants (Lave & Wenger, 1991). In theoretical terms, the inexperienced members are "guided" by more competent participants who use specific linguistic expressions, and technological functions, to bridge the familiar and the unknown. What is interesting to specify in relation to the activities studied here is that the forms of "guided participation" (Rogoff, 1990) in which the course participants are involved rely extensively on a written mode of communication.

For instance, sending a document in a web-based setting of the kind explored in the present study means something quite specific. It should not be understood in such familiar terms as sending it by regular mail or e-mail. Instead, send means that they should press the send to all button and upload the document to the public discussion forum. This quite specific meaning of send is not something inexperienced participants intuitively know, but rather something they have to accommodate to and learn in the web-based activities. This is, however, not a process without tensions. As cultural tools are introduced into social practices, they will sometimes appear as hurdles that have to be overcome. This can be interpreted as what Wertsch (1998) refers to as "resistance" in our encounters with cultural tools. It is, however, regarded as being an expected part of learning something that is new to us as it "represents a different way of being in the world, and one with which the learners would not at first be expected to identify with" (Ferreday et al., 2006, p. 238). In this way, "resistance" is seen as being part of what enables and necessitates learning (Wertsch, 1998). Accordingly, the cultural tools, technical as well as intellectual, can be seen as re-mediating participants' activities. This process of re-mediation can be more or less dramatic. To go from, for instance, never

having used chat or e-mail software to actually doing so is a large step, while the shift between different types of chat systems or e-mail programs is, in most cases, not all that difficult (although the process of changing software can be a nuisance for the user accustomed to a particular system). In the activities explored in the present study, the cultural tools are seen as setting up conditions for interaction that differ from forms of communication the participants are more familiar with, for instance, spoken conversation and e-mail.

Establishing a communicative culture

To continue the line of reasoning established so far; when people engage in spoken conversations they do not usually have to figure out how to interact while speaking. From an early age, we have become familiar with the ways in which we conduct spoken face-to-face conversations, which are grounded in the sociocultural environments we grow up in and where we take for granted a set of "common knowledge, assumptions, norms and commitments" (Linell, 1998) that are considered relevant to interacting. In other words, people are attuned to such normative expectations of how everyday, spoken, ordinary conversations should be and are carried out. Such a theoretical understanding of spoken conversations often forms a background for a line of reasoning where chat interaction, in comparison to spoken conversations, is taken to be disrupted, fragmented and confusing (Cerratto & Wärn, 2000; Vaast, 2007). This is, however, not the perspective taken in the present study. The argument is, rather, that the normative expectations of how to communicate in chat environments are ambiguous and something that participants explicitly have to establish during their interaction (Jonsson & Säljö, 2009). This is, however, not to say that participants may not use norms of spoken conversation as resources; rather, such norms are not always sufficient in chat discussions.

In theoretical terms, this can be conceptualized as an issue of how participants establish, and sometimes struggle to establish, a communicative 'contract' sufficient for communication to be co-ordinated and, hence, for them to be able to continue with the web-based in-service training activities at hand. According to Linell (1998), intersubjectivity is "a defining property of communication; there must always be intersubjectivity at some level; some common knowledge, assumptions, norms and commitments" (p. 22). From a dialogical perspective, all communicative events are understood as achieved through participants' interactional work. In other words, intersubjectivity needs to be achieved in order to provide "a common focus of attention

and some shared presuppositions that form the ground for communication" (Rogoff, 1990, p. 71). In the activities that I have studied, such social co-ordination is something the participants have to learn since the ways in which chat interaction is structured and organized differ to that of spoken conversations.

A theoretical assumption in the present study is that spoken face-to-face conversation is a socially and culturally tight form of communication familiar to all of us, and as such "the perspective taking and setting is largely implicit because shared background knowledge may be taken for granted" (Hagtvet & Wold, 2003, p. 193). What is said in spoken conversation is nested within what can be taken for granted in the linguistic, situational and cultural contexts in which the communicative partners are operating. This is not to say that spoken conversations per se build on interlocutors sharing the same perspectives and background knowledge; taken-for-grantedness is oriented to in interaction as well. The point is, rather, that in spoken conversations participants smoothly and implicitly orient to the background knowledge and communicative skills they as members have learned within a conversational culture. Establishing intersubjectivity in spoken conversation may, for this reason, involve fewer struggles than written web-based activities. Such shared assumptions are, thus, not evident to the course participants but something that they have to establish and make explicit in the chat interaction.

However, the issue of how people co-ordinate interaction in spoken conversations such as everyday face-to-face and telephone conversations, has been well documented in research (Sacks et al*.,* 1974; Schegloff, 2000). What we know less about is "how these processes unfold when the medium of communication is the computer" (Markman, 2006, p. 1). Theoretically, thus, the differences between spoken conversation and written computer-mediated communication have been discussed in research (Garcia & Jacobs, 1999; Greenfield & Subrahmanyam, 2003: Herring 1999; Markman, 2006; Simpson, 2005; Panyametheekul & Herring, 2003; Zitzen & Stein, 2004).

Intersubjectivity follows from acting within the frame of a mutually endorsed contract of communication. Such communicative contracts are never completely given, they need to be established in each communicative event, and they are constantly oriented towards and maintained. They involve people managing both attentional and action skills in order to achieve a mutual definition of a situation through their actions. In theoretical terms, the participants can thus be seen to establish intersubjectivity through a process that concerns

"definition of a situation and the direction of an activity" (Rommetveit, 1992, p. 84). In such a perspective, engaging in a joint activity means that the communicative partners have to struggle with coordinating their activities and perspectives in order to establish intersubjective practices. Theoretically speaking, thus, to establish intersubjectivity should not be understood in terms of people having to be in agreement on a topic of discussion. Arguments, for instance, require a high degree of intersubjectivity and co-ordination. Neither does interaction require total overlapping of understanding. On the contrary, this is not possible; understanding is always partial and fragmentary. Paradoxically, "[i]ntersubjectivity has in some very important sense to be taken for granted in order to be achieved" (Rommetveit, 1974, p. 86).

Theoretically, the interactive work the participants engage in to establish continuity in interaction can be understood as: they "endorse explicitly formulated contracts about what may be taken for granted when something is said" (Hagtvet & Wold, 2003, p. 194). Such "contracts" may be seen to become more explicit in chat interaction as it relies on written and persistent modes of communication. The argument is therefore that it is precisely the "contracts" as they are established and operate in chat interaction, that are crucial to analytically account for in order to contribute to an understanding of web-based activities on their own terms without over-emphasizing their exotic qualities (Sveningsson, 2001).

Negotiating the context through participants' shifts in footings

In institutional forms of communication, e.g. lessons in schools, medical consultations or job interviews, the physical setting is an important contextual resource that people regularly draw on to define an activity and make sense of what is going on. An important feature of the activities that I have studied, however, is that the physical setting (of a classroom or alternatively a work setting) is not a contextual resource the participants can use to define the kind of activity they are taking part in. Usually, "the functions of the institutions involved are inscribed, a written environment of regulatory documents, laws, precedent cases, etc., and a professional environment with clear responsibilities, educational prerequisites, ethics etc." (Linell & Thunqvist, 2003, p. 431). The in-service training activities are, even in their traditional form, ambiguous as they may be seen to serve the aims of on the one hand, institutionalised further training and on the other, participants' current work practices. Accordingly, the contextual resources, as Linell and

Thunqvist (2003) have pointed out, may be seen to be modified in the activities explored in the present study, as they take place in a different material environment. In other words, participating in web-based in-service training means that the context of the activity and the roles of the participants are ambiguous, at least in the beginning. The participants may be seen in their interaction to "borrow resources from other neighbouring activity types" (Linell & Thunqvist, 2003, p. 431). An important feature of the hybrid in-service training activities is that they, to a higher degree, depend on the participants' competence when establishing a context and a participation framework with certain tasks, expertise, responsibilities and obligations for the situations. Accordingly, the character and meaning of such activities have to be negotiated by the participants.

In theoretical parlance, this can be understood as the participants' framing of the situation (Goffman, 1974). According to Goffman, all communicative activities are to be analytically understood in terms of their frames. Accordingly, what is said during, for instance, a family dinner or a job interview is understood in reference to how the situation is implicitly framed by the participants according to what is expected to be 'going on'. In this theoretical tradition, attention is also drawn to the many different ways an activity can be framed, and the ways in which people "sometimes entertain more or less competing situation definitions of the interaction in which they are involved" (Linell, 1998, p. 235). It has been shown empirically that frames are seldom pure (Hoyle 1993; Kendall, 2004; Linell & Thunqvist 2003; Tannen & Wallat, 1987). Instead, many of them can be characterised as hybrids or frames-within-frames, so also the in-service training activities that I have studied. Furthermore, different framings "have their behavioural counterparts in parties' different footings" (Linell & Thunqvist, 2003, p. 412). In this respect, a shift in footing is the interactional accomplishment of a framing. Goffman (1981) provides the following definition of footing:

A change in footing implies a change in the alignment we take up to ourselves and the others present as expressed in the way we manage the production or reception of an utterance. A change in footing is another way of talking about a change in our frame for events. This paper [i.e. the essay on "footing"] is largely concerned with pointing out that participants over the course of their speaking constantly change their footing, these changes being a persistent feature of natural talk.

A shift in footing does not, however, imply "switching from one stance or alignment to another" (p. 155). Participants' footings are embedded within one another, which means that a footing can be maintained across several turns of talk (Hoyle, 1993). The routine, however, seems to be that "while firmly standing on two feet, we jump up and down on another" (Goffman, 1981, p. 155). In the present study, the concept of footing is employed to understand participants' shifting alignments to issues they are discussing. In theoretical terms, such alignments set up an expectation structure among participants (Linell, 1998). In medical consultations, for instance, the expectation is that the footing of a medical doctor and the footing of a patient will be enacted. Theoretically speaking, this can be described as a participation framework and is, thus, seen as a crucial resource in how participants frame a situation through the footings they enact. As pointed out by Drew (2002), "there is no necessary relationship between a particular form of interaction and a given physical setting", which indicates that "also settings admit for more than one form or type of interaction" (p. 478). In this study, the concept of participation framework is used to account for the different footings the participants enact in the in-service training activities. An important feature of such participation frameworks is that they may be challenged. Participants' footings should also be understood as being tied to certain claims, tasks, entitlements and obligations, which the participants may use but also are held accountable for in interaction. Accordingly, a footing, or a shift in footing, is considered to be relevant first when it becomes consequential for the interaction that follows. This also means that asymmetries between participants can dynamically develop "in terms of such matters as differential distribution of knowledge, rights to knowledge, access to conversational resources and to participation in the interaction" (Drew & Heritage, 1992, p. 49). This is further explored in the present study.

Textual practices regulating institutional activities

A point of departure in the present study concerns the massive changes in the contemporary conditions for work, and consequently changing conditions for learning and competence development in the context of the food production industry. Such transformations with regard to, for instance, regulating and procedural practices are understood as a set of changes that bring about highly specific documentary practices. In this manner, the in-service training may be seen as examples of activities by which such documentary practices are implemented, as such new textual practices are "learned and often taught in workplaces that seek to participate directly in global economies" (Farrell, 2001b, p. 57). Such documentary practices are, Smith (2005) argues, "key to institutional

coordinating, regulating the concerting of people's work in institutional settings in the ways they impose an accountability to the terms they establish" (p. 118). A main function of such discursive practices is what is referred to as documentary governance (Smith, 2005; Smith & Schryer, 2008). The unique property of texts and written documents is that they "make possible the appeareance of the same set of words, numbers or images in multiple local sites" (D.E. Smith, 2001, p. 160). The very idea of the so-called documentary practices of new pan-European rules, regulations and procedures concerning quality assurance is to provide for standardization, quality control and regulation of different organizations and activities within the food production industry. Consequently, in order for such rules and regulations to be implemented and co-ordinated "across multiple local settings and times" (p. 160) , generic vocabularies hold a remarkable capacity "to achieve objectives that are far-reaching in their consequences" (Wagner, 2005, p. 15).

There is, however, a duality in the implemention and use of such generic vocabularies. Most commonly, as pointed to by Farrell (2001b), such textual practices are described as neutral and benign interventions in people's work practices in order to "expand the linguistic repertoires of employees and, therefore, the opportunities available to them in the workplace" (p. 57). Simultaneously, such documentary practices are used quite effectively by organizations to teach "employees to document their activities, and to engage in specified and regulated work practices that effectively circumscribe their activities and decisions" (p. 57).

Thus, the in-service training activities that are explored in the present study may be seen as attempts to institutionalize specific textual practices that take quality assurance regulations and methods as their point of departure. Such attempts to standardize a new understanding of current work practices can be realized as the course experts represent the authority that regulates the Swedish food production industry. The discursive changes such activities are expected to produce may theoretically be understood as achieved through a "technologization of discourse" and through the local work of what Fairclough (1996, 2002) calls "discourse technologists". The organizational role of "discourse technologists" is to design new discursive practices and procedures in line with institutional aims and strategies and to train people in their use. In this respect, as representatives of the authority, the course experts have an interest in the quality assurance contents the course participants are expected to learn, the course experts may be seen as having the role of "discourse technologists".

A feature of computer-mediated environments as textual practices is that, theoretically speaking, participants "must expose themselves and their ideas through written texts, and they do this with the awareness that their contribution will not only be read but also uploaded and saved by fellow students" (Jonsson & Säljö, 2009, p. 41). This provides the participants with "immediate access to the linguistic products of the discourse process" (Simpson, 2003, p. 131), i.e. they may catch sight of what they already know but also what they do not know and what they might be expected to know. In this sense, the chat as a textual practice may be seen as a way of making workers regulate their own practices (Scheeres, 2003). In theoretical terms, this also concerns how the participants are able to "hold written conversations" (Simpson, 2003, p. 6). Computer-mediated interaction as a written form of communication is often portrayed in terms of being a powerful mediator in the process of knowledge construction (Kelly et al., 2007; Malmberg, 2006). Compared with spoken conversation, many argue that written communication is demanding in the sense that "[t]he reflective and explicit nature of the written word is a disciplined and rigorous form of thinking and communicating" (Garrison, 1997, p. 5).

A point of departure in the present study is that going from talking about current work practices to writing about them in a specific manner, is a demanding task for the participants. An interesting dimension of learning to "hold written conversations" is that the course participants are expected to, on the one hand, use experiences from everyday work as resources in such conversations, and, on the other hand, learn to examine and evaluate such work experiences in the light of a set of normative and general principles concerning quality assurance on the one hand and more concrete procedures on the other (regulations and methods).

This can be related to an extensive discussion concerning the relation (or transfer) between educational practices and other practices, for instance, work practices. Such discussions have been conducted in terms of distinctions such as the technical and the practical, theory and practice, the abstract and the concrete, the general and the specific. One of the arguments in these discussions has been that knowledge and working skills cannot be appropriated in formal education alone. One scholar who has discussed the tension between learning as organized in educational institutions and work practices, respectively, is Schön (1983, 1987). He argues that educational institutions and work practices are grounded in very different epistemologies or views of knowledge. In Schön's perspective, conventional education is committed to a technical rationality with regard to professional knowledge: "that fosters selective inattention to practical competence and

professional artistry" (1983, p. vii). In his empirical observations of architects, therapists and teachers, he found that these practitioners relied less on general formulae learned in conventional education, compared to the kind of improvisation they learned in practice when they were engaged in everyday work challenges. In the light of such observations, Schön concluded that an inquiry into the epistemology of work practices was necessary.

In Schön's discussions about the epistemology of work practices, especially two theoretical concepts are central: "reflection-in-action" and "reflection-on-action". According to Schön, practitioners can be seen to engage in "a continuing dialogue with the permanently changing situation of their practice, and in so doing draw on both their knowledge-in-practice and their knowledge-of-practice; that is, their own and other's reflections on and inquiries into practice" (Kelly et al., 2007, p. 157). In other words, reflection-in-action implies that practitioners reflect on their own practice "at the same time as they effectuate this action" (Erlandsson, 2007, p. 35). Theoretically speaking, reflection-in-action is conceptualised as an activity where practitioners in the midst of working are allowed to see things anew and develop a different understanding of, or perspective on, their own work processes.

Reflection-on-action (Schön, 1983, 1987), on the contrary, is conceptualised as a discussion or a conversation about work practices that practitioners engage in before or after a specific situation. These can be seen to be, for instance, written and oral evaluations, documentary routines, journals and supervision by more experienced colleagues. These are further examples of textual, or documentary practices that were mentioned previously. In the present study, the process of reflection-on-action is seen as particularly relevant as it is understood to provide practitioners with an arena where they can develop a meta-perspective on their work. The work practices of architects, therapists and teachers are all described as unique situations "that demand special professional frame-making in order to create patterns of problems before it is possible to solve them" (Erlandsson, 2007, p. 35). Theoretically speaking, practitioners are not seen as engaging in such complex practices on the basis of a rationale of following established principles or general formulas. Rather, their actions and reflections are grounded in work experiences and a repertoire of "images, ideas, examples and actions that they can draw upon" (M. K. Smith, 2001). In some instances, such work experiences and repertoires established by the practitioners were seen to develop into what Schön (1983, 1987) referred to as various forms of professional judgments.

In the present study, however, I have chosen to pursue a slightly different interest in these notions, which can be seen as closely related to, but not entirely equivalent to, Schön's reflection-in-action and reflection-on-action. The work practices that Schön investigates are clearly different from the ones explored in this study. Schön was interested in understanding learning as it was established in the work practices of architects, therapists and teachers. The in-service training activities may be regarded as blurring the distinction between work and training and, hence, constitute arenas for reflection-nearly-in-action.

Unit of analysis

What the preceding theoretical discussion implies is that the unit of analysis in this study is mediated social action (Wertsch, 1991, 1998). The empirical material necessary for analyses must be such that it allows the analyst to scrutinize how communication and learning unfold through the use of mediational means. In the present study, this unit of analysis is empirically delimited to the written form of communication the participants engage in as part of web-based in-service training activities. More concretely, the form of written communication refers to the chat postings that are posted by the participants in the in-service training activities. In this study, social action is performed through such postings and they, in turn, are viewed as integral to the co-ordination of social interaction and to learning. In this study it is assumed that the course participants write to each other to contribute to an ongoing discussion. They respond to and build on previous contributions in the same manner as they expect others to read and respond to their contributions. In theoretical terms, accordingly, a chat posting is simultaneously a response to what has been written before and a platform from which the interaction can continue. Accordingly, the written postings are contributions to a social activity where the participants, to use ethnomethodological parlance, do the in-service training activities they are involved in. In this way, the doing of courses must be seen as an activity, and more than simply engaging in neutral forms of information exchange. The doing of such courses also involves, for instance, solving common problems, maintaining topical discussions, and maintaining social relationships with colleagues. Processes of learning are embedded in such communicative practices as participants anticipate and respond to situated concerns and demands (Linell, 1998). Accordingly, the interest in the present study is not in the written postings per se but rather the ways they are responded to and discussed in chat sessions as part of in-service training concerning quality assurance. Manning (2008) discusses the analytical focus on responses as follows:

> *A performance is a sequence of gestures, postures, verbalizations or actions seen by others (seen, not talked about) and responded to. The notion of response is an important validating point; it is through the response that the first move is confirmed as existing or having meaning" (p. 680).*

In this sense, mediated action constitutes the smallest unit of analysis in sociocultural studies. In this manner, mediated action as the unit of analysis motivates what is relevant to study and hence, what is relevant empirical material to use for such analysis. This will be discussed in the next chapter. But before attending to the empirical material and the selection of excerpts for the empirical studies reported in four articles, a description of the empirical context will be presented.

4 THE EMPIRICAL CONTEXT

Food industry and web-based in-service training

The in-service training activities in the present study were part of a Knowledge Foundation initiative. The Knowledge Foundation was founded in 1994 by the Swedish Government and was initially provided with a budget of approximately SEK 3.6 billion. Up until now (2009) almost SEK 6 billions has been invested in research and development in slightly more than 2,000 different projects. The projects have been in areas such as: competence development in industry, learning and ICT, and development of new research and postgraduate programmes, etc. One of the overall aims of these projects has been to "operate at the intersection between the business community, the public sector, higher education institutes and research institutions". In this manner, the Knowledge Foundation has formulated its task as actively establishing "conditions to stimulate innovation, creativity and personal contacts between organizations and people with a will to develop and drive Sweden forward through knowledge and competence development" [15].

The project, where the present study was conducted, forms a part of the area of competence development in industry. More specifically, the project is called the Expert Competence Programme[16]. The overall aim of this programme has been to strengthen competitiveness in certain areas of industry. In this respect, the Knowledge Foundation initiative aimed to establish an exchange of knowledge and competence between on the one hand, trade and industry and on the other, universities, university colleges and

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15 Retrieved June 6, 2009, from

http://www.kks.se/templates/StandardPage.aspx?id=84

16 Author's translation, in Swedish: Expertkompetensprogrammet.

research institutes. In the light of some preliminary inventories, the Knowledge Foundation in collaboration with a number of university colleges and industry research institutes established five Expert Competence Programmes in 1999. These were in the fields of strategic business development, food and biotechnology, industrial product development, intelligent products and micro/nano system technology, respectively. In each of the individual programmes, the purpose was to develop customised postgraduate programmes with various master level courses, on campus and at a distance. A general outline for developing such efforts was that the courses should be easily accessed through the Internet and possible to follow at a distance.

In this respect, these efforts were interesting to explore as they could be taken as examples of how distance education in industrial contexts were carried out at the turn of the century. However, in 2005 when the present study was initiated, the Expert Competence Programme in food and biotechnology was the only one of the five programmes that had developed courses using web-based technologies. And given this study's interest in the use of web-based technologies for further and in-service training, I chose to explore web-based courses developed within the food and biotechnology programme. In this way, this study will contribute to an understanding, and an exemplification, of distance education activities as they are organized and carried out at the turn of the 21st century. This interest is substantiated in close and detailed scrutiny of web-based in-service training in the context of the food production industry. Accordingly, a short outline of the food production industry will be given in the next section.

Food production and the 'turn to quality': learning about quality assurance

With a production value of approximately SEK 140 billion and about 56,000 employees (2006), the food industry represents the fourth largest industrial sector in Sweden. The food industry is spread around the entire country with approximately 3,000 companies. In a report from the Swedish Food Federation (2002), the industry is described as diversified at least when it comes to kinds of companies: from small local companies to large international concerns.

The description of the Swedish food industry differs depending on whether it is given prior or after the EU membership in 1995. Before joining the European Union, Swedish food production was, to a large extent, seen as a home market industry. This implied that the industry had been protected from international competition, i.e. by means of customs duty and import fees. EU membership, however, changed the conditions for the food production industry as new markets became available at the same time as competition on the home market increased.

As pointed out in the introduction, competition in food production is claimed to revolve around a worldwide so-called "turn to quality". Notions of quality have become increasingly central to the operation and transformation of the food production industry (Morris & Young, 2000). Whereas notions of quality were previously utilised only in some areas of production, attempts are now being made to implement and utilise the concept in more formalised ways. The increasing focus on developing and expanding the notion of quality assurance in food production is most explicitly illustrated in different quality assurance schemes or methods. This "quality turn" in food production can be seen from different perspectives. On the one hand, there is a growing international and public debate nowadays on the quality of what we eat, in particular whether food is safe or not, as well as issues such as periodic food scares, transportation of animals, opposition to genetically modified foods, etc. (Goodman, 2003). Accordingly, the industry has to deal with consumers, or stakeholders, with an "increased awareness and concerns over food production techniques, and associated demands for quality, safe and nutritious food" (Morris & Young, 2000, p. 113). One important issue debated intensively in recent years in the Swedish media is a range of so-called food "scares", for instance, how expired meat was minced and placed back in the shelves for customers to purchase and how foodstuffs were scooped up from the floor to, in turn, be served to school children. In this manner, the in-service training efforts explored in the present study can be seen to specifically address what can be understood as image problems in the food industry.

On the other hand, the "quality turn" concerns continuing pressure at the European level, first and foremost from the EU, to improve and strengthen the regulating practices of food production. Accordingly, these are regulations that the Swedish food industry, in turn, is responsible for implementing. The National Food Administration[17], abbreviated

[17] In Swedish: Livsmedelsverket.

NFA, has been delegated the task by the Swedish government of supervising the implementation of such regulations, as they are seen to be responsible for protecting "the interests of the consumer by working for safe food of good quality, fair practices in the food trade, and healthy eating habits"[18]. Accordingly, the strict regulations on food safety, quality assurance and customer-orientation are major issues the food production industry is responsible for handling. Another major challenge to this industry, as reported by the NFA, is the rapid internationalisation of markets and products. The demand for higher educational skills and competences among people employed in this industry as well as a substantial increase in the use of digital technologies in production are further dimensions that are included in the descriptions of an industry under transformation.

The increase in the internationalisation and regulation of an entire industry makes the Swedish food production industry an interesting case to study. However, it is now time to be more concrete and describe how such a "turn to quality" has been transformed into actual course contents that the participants are expected to learn in the web-based in-service training courses.

Learning about quality assurance: in-service training courses

The in-service training activities explored in the present study concern courses where the participants are expected to learn about quality assurance. In general, the course participants learn about food safety in terms of, for instance, how food and foodstuff are produced, transported and distributed to customers. Accordingly, a feature of some of the courses concerns learning to guarantee that production processes are carried out in specific ways. But in order to be able to make such guarantees, there are certain rules and regulations, methods and procedures as well as specific norms or "tricks of the trade" that have to be learned. One dimension of such specific ways in which foodstuff should be handled concerns, for instance, how parameters such as time and temperature must be managed. The parameters of time and temperature are discussed, first and foremost, in courses that concern HACCP (Hazard Analysis Critical Control Points). In this way,

[18] Retrieved June 11, 2009, from

http://www.slv.se/en-gb/group3/About-us/

HACCP can be seen as an example of a systematic procedure the course participants are expected to learn in order to be able to identify, and prevent potential food safety risks.

Altogether, I have documented 10 in-service training courses that were held between 2002 and 2004. The courses concerned subject areas such as product development methods, legislation, microbiology, bioactive substances, risk management, food safety procedures (e.g. HACCP), marketing; courses which are all considered to address some aspect of quality assurance. For an overview of the empirical material and all the documented courses, see Appendix A.

One of the features of understanding the systematic procedure of HACCP is to know about risk analysis. In this way, the course participants are also expected to learn about the specific procedures for conducting such a risk analysis. A course that involves risk analysis in a more general sense is Risk Management. Course participants are also expected to learn about risk analysis, although in a slightly different way, in the course Product Development Method. In this course, they are supposed to design a new product and accordingly, analyse the feasibility of such products. They are thus expected to follow a specific procedure in their design process that perhaps can be described as more grounded in work practice norms rather than solely on a rigorous procedure (as in the case of the procedure of HACCP). This is another example of a way of working that the course participants are supposed to learn. There is also a course called Legislation that more directly concerns the rules and legal practices that regulate the food production industry.

Accordingly, the course participants are not only supposed to know what they are currently occupied with in their work, they are also expected to learn the practices and the methods that regulate what they are currently working on. It means that they, to some extent, should develop a meta-perspective on their own work practices. The course participants are also expected to learn about the division of responsibility between authorities, such as the NFA, and branch organizations. This is formulated explicitly in, for instance, the courses that concern HACCP. This is interesting in the light of the fact that the participants represent both sides of the division of responsibility the course participants are supposed to learn. One dimension of learning the different areas of responsibility, and obligations that the authorities and branch organizations, respectively, are accountable for, is being able to decide, for instance, when it is time to call in support

from experts with regard to, for example, a risk analysis. Consequently, the course participants are expected to develop professional judgement (Schön, 1983, 1987), since they are supposed to consider their own work experiences and expertise with regard to the kind of support they would need to bring in from external experts.

To sum up, the course content concerns different regulatory practices and procedures that are complex and which the course participants are supposed to learn in the in-service training activities. By means of the quality assurance content they are, on the one hand, supposed to develop an understanding of the practices regulating the food industry and, on the other, become knowledgeable in terms of organizing and designing food production in specific ways. This relates to the expectation that the courses will provide the course participants with resources so that they eventually can transform the working procedures in their own practices (i.e. become "discourse technologists" (Fairclough, 1996, 2002) within their own work organizations).

Chat sessions as part of in-service training courses

The web-based courses had a similar format, which can be described as follows:

1) The web-based courses started with a one-day face-to-face meeting, which constituted an introduction to the aims and content of the courses. This meeting consisted of lectures by the course experts as well as an introduction to the platform WebCT[19] and some administrative information.
2) The courses continued with the course participants attending web lectures in WebCT. During the web lectures, the course participants were given specific assignments and tasks to work with. The course participants uploaded assignments and documents to the discussion board (or sent them by e-mail to the course experts). The course experts regularly initiated chat sessions. The participants also communicated via e-mail and telephone.
3) The courses ended with a face-to-face meeting, where the course participants reported on course assignments, evaluated the courses and socialized.

[19] WebCT is an Internet-based course portal and will be described more in detail later in this study.

During the five-week courses one to four chat sessions, each lasting approximately two hours, were held. The chat sessions were often conducted according to a regular time schedule, e.g. every Monday morning between 10 and 12. Accordingly, the chat sessions were part of the course schedules. It has been observed earlier that if technologies are incorporated "at the periphery" and "not knitted into" (Crook, 1994, p. 15) the mainstream of educational activities, the tendency is that they become less used. Crook and Light (1999), for instance, showed that university students seldom used e-mail when it was not expected of them as part of the instructional activities. The centrality of the chat sessions in the present study was also salient since the chat sessions were archived and uploaded to the discussion forums. From here, the participants were able to inspect previous discussions by, for instance, returning to specific instances in their discussions.

The course participants were, however, not given any explicit instructions by course experts or others about what they were expected to discuss in the chat sessions. Accordingly, there was no specific tasks defined beforehand that they were supposed to solve, or discuss during the chat sessions. However, they worked with a range of different materials in the courses. They attended web lectures that were organized as follows: first the course participants attended the lectures, then they were assigned to solve a task that concerned a general example, and finally, they were assigned to solve the same task although based on an example from their own work practice. This means that the assignments the course experts were expected to hand in were defined in the web lectures. They were also expected to solve and hand in the specific assignments at specific times. Accordingly, the deadlines for the assignments were seen as, in some sense, structuring the discussions in the chat sessions. In most of the courses, the participants also had a "Fact Case" (Faktalådan). The "Fact Cases" were text compendiums that consisted of general backgrounds of, as well as specific information and facts about, the specific content they were expected to learn. In these compendiums, there were references to legislation as well as links to relevant Internet pages such as the National Food Administration website.

Participants in the in-service training courses

The course participants represent a range of occupational categories: from self-employed entrepreneurs and employees of well-established grocery chains to students of agriculture. They represent a broad range of different companies and organizations in the food

industry. In this way, the course participants take part in the transformations that are being implemented in this industrial sector. These transformations involve entirely new work relations. All food production workers should be transformed into "owners" of the requirements imposed on the industry, which means that they have to be provided with relevant competences and they have to assume a broad range of responsibilities at the local level (Farrell, 2001a). The task for these people is to, in a very concrete sense, implement the rules and engage in quality assurance activities in their work practices. As I have pointed to earlier, an interesting observation is that this should be achieved in an industry characterised by a relatively low level of education (Swedish Food Administration, 2002).

Between three and ten course participants take part in the chat sessions organized in ten courses. Their computer literacy differs somewhat. The empirical observations of the ways in which the course participants act in the web-based environment indicate that they are quite unfamiliar with using chat technologies. None of them have previously attended courses arranged by this specific course provider. Whether or not the course participants have any other experience of web-based courses is unclear. It should also be noted that the course participants attend the courses during working hours as part of in-service training schemes. This could indicate that they were highly motivated.

The courses are facilitated by what the course provider refers to as course experts. The course experts appointed have little or no previous experience of distance education. As the term expert might suggest, the course experts are considered to have expertise in a certain field of knowledge. The courses are organized in such a manner that this expertise is, as far as possible, matched with specific course content. For instance, in courses that concern food safety and quality assurance (e.g. HACCP, Product Development Method), the course experts appointed work at the National Food Administration. In this way, the in-service training activities are seen as affording discussions across institutional borders: between representatives of the authority on the one hand, and branch or industry representatives on the other.

Web-based environments as arenas for in-service training

The in-service training courses documented in this study are, as already mentioned, administered and carried out in the Internet-based course portal, WebCT. WebCT can be seen as an example of what is often referred to as a course platform as it is used "to create an entire online course or to publish materials that supplement courses that use an online component" (Kaiden, 2002, p. 399). WebCT is a well-established, standard tool used for instructional purposes in a variety of educational contexts. Technological infrastructures of this kind are often referred to as Virtual Learning Environments (VLE) or Learning Management Systems (LMS). LMSs are systems designed to facilitate instructors in their planning of courses and teaching courses online. Blackboard and PingPong are further examples of such LMS systems frequently employed in Swedish education. In 1995, the Department of Computer Science at the University of British Colombia started developing WebCT. Prior to being purchased by Blackboard in 2005, WebCT described themselves as the world's leading provider of integrated e-learning systems. By 2005 WebCT was available in 10 major languages and was used by approximately 5.8 million people. WebCT offers a wide range of functionalities such as: tools for communication ("chat", "whiteboard", "discussion forums", "e-mail"), tools for course content and planning ("content module", "syllabus", "glossary", "search", "image database", "course calendar", "course index"), and assessment or self-evaluation tools ("quiz/survey", "self-test", "my grades", "assignments", "my progress", "languages", "student presentations", "student homepages" and "student tips"). The tools available in the WebCT used in the courses explored in the present study are shown in the figure below:

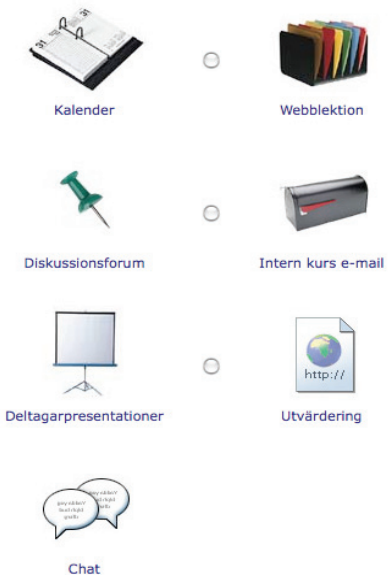

Figure 1. The WebCT tools available for use in the courses in the present study.

Figure 1 illustrates the way the different resources or tools available to the course participants are presented on the screen. These resources, or tools, are symbolically represented by a Calendar (calendar), a Discussion forum (a map pin), Presentations of participants (whiteboard), Web lectures (portfolio), course-internal Email (letterbox), Evaluation (sheet of paper) and a Chat (two speech bubbles). What is especially interesting with these speech bubbles, as well as the term Chat in general, is that they clearly allude to a spoken mode of communication. The chat tool affords the course participants the possibility to engage in "live" text-based communication with other participants. The chat is also the technological tool that supports the discussions in the in-service training activities that I have studied. As such, to enable an understanding of activities that are supported by a chat tool, a description of some of the details of chat functionalities will follow.

A technology for learning: functionalities of chat rooms

Chat rooms are accessed without any restrictions from any computer with an Internet connection. Logging on to this particular application is done via the course portal

WebCT, which means that only participants enrolled in the in-service training courses have access to this chat room. From the course portal, the chat room is one of the applications available for the participants to use. The kind of chat room employed in the activities studied is illustrated below:

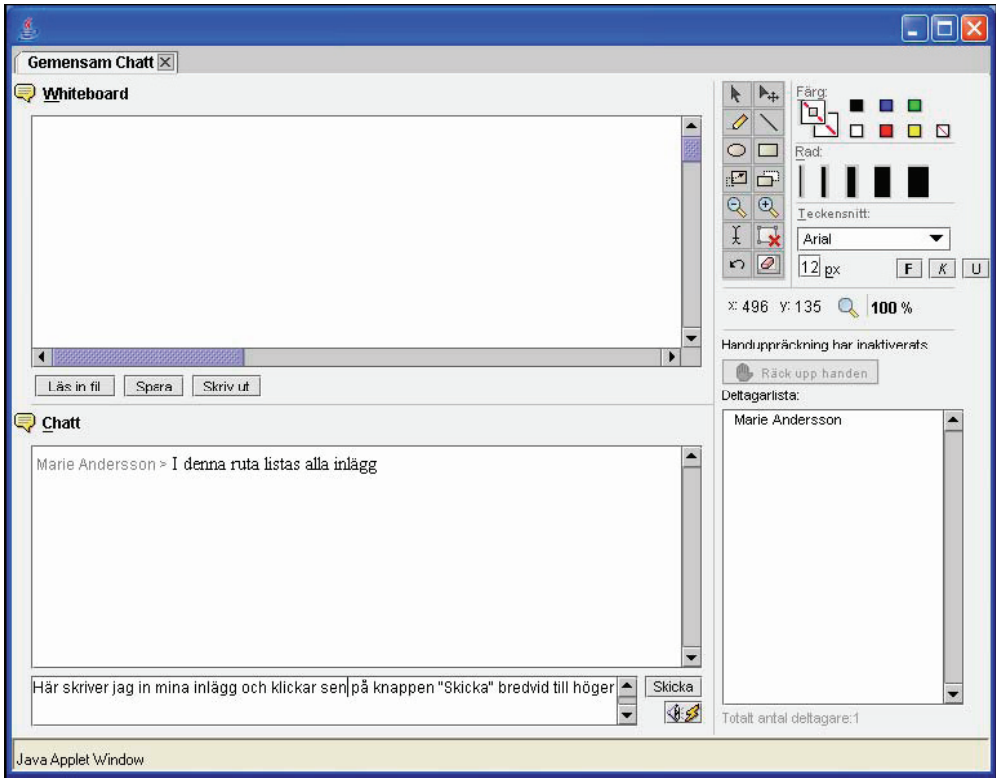

Figure 2. A computer screen display of a chat window in WebCT.

Once logged on to a chat room, the participant is listed in the room and becomes 'visible' to others in a Participant List (in Swedish "Deltagarlista" down on the right in the figure above). This functionality can provide the participants with a feeling of social presence even though not all of them are posting messages to the Chat (in Swedish "Chatt" situated in the larger window down on the left in the figure above). There are several examples in the material in the present study where the participant list is used as a resource by, for instance, the course experts to initiate a discussion. This brings up an interesting reflection with regard to "being there" and what this might mean to chat users. In the chat room, users can send messages to the chat (via the server) at any time. On

their computer screens, the participants have a small "message entry box" (the smaller window below the Chat), in which the posting is typed and a larger "posting box" (the Chat window), where postings from all users appear. The posting box is visible to all logged in, but the message entry box is available only on their individual screens. When clicking the Send button (which is next to the message entry box in the figure above), or Enter on the keyboard, the posting (what is in the message entry box at the time that Send is clicked) is sent off to the server of the chat program. Once sent, the posting cannot be changed. The server reproduces the message as a whole in the posting box in the chat window, which is available to all the participants, without changing the format, with exception of including the names of the contributor. In the chat activities explored in the present study, the participants use their real names, which is common in institutional activities. In this manner, what is referred to as "lurking" (Cherny, 1996) in the literature is not an issue in this setting.

In chat rooms, the postings are displayed in the order in which they arrive at the server. The exact timing and placement of a posting is outside the control of individual users. Rather, the timing depends on the transmission rate of each individual user's computer. In other words, the users can neither control nor determine exactly when their posting will be available for others to read. Chat technologies that work in this manner are often referred to as one-way systems. This means that the process of writing in the message box and reading in the posting box is an individual activity, in the sense that is not visible to others. This means that users have to scan the posting box to determine whether their messages are relevant in the sense that they have been responded to. If not responded to, it is not possible to decide whether they have been read or not.

Chat room interaction takes place by means of text, which means that it is possible for users to scroll up and down in the chat window to "catch up with missed sessions and materials" (Garcia et al., 2009, p. 75). Most chat systems also enable chat interaction to be archived, which means that the log files can be accessed and used after the interaction has finished. This points to some of the differences between chat interaction and its spoken counterparts. Chat interaction also allows participants to engage in activities or discussions that are simultaneous as the whole "text", or discussion, is available for use subsequently.

As I have already pointed out, the empirical material collected is in the form of log files of chat sessions from the in-service training activities. In the next chapter, I will discuss chat log files as empirical data as well as the selection and representation of such data.

5 RESEARCH METHOD

Collecting and analysing chat material

In the previous chapter, the broader context of the empirical study was presented as well as the course content, the participants, the web-based environment and the chat tool. In this chapter, the choices with regard to the methods used and the empirical data collected will be discussed, focusing especially on selection and representation of chat data in the four empirical studies. The methodological concerns that were discussed in Chapter 2 form a background of this chapter.

Chat log files as empirical data

Access to the chat log files from the in-service training courses was negotiated with the administrative staff in the "Expert Competence Programme" involving food and biotechnology. They also provided information and support with regard to questions that concerned course specifics, course content, technological and administrative issues, details on course participants and course experts, etc. Technically speaking, the chat log files were available through an administrator's login, which also gave the researcher access to discussion fora, web lectures and presentations. The chat log files were downloaded from the discussion fora. Altogether, chat log files from 10 courses had been archived and they comprise the empirical data in the present study. As the overview of the material in Appendix A indicates, the number of chat sessions varied between one and five. One of the courses was a 10-week course, which meant that nine chat sessions were organized. In three of the courses, only one chat session was arranged. Between three and ten course participants took part in each of the chat sessions, and usually there were one, sometimes two, course experts present during these sessions.

The participants' activities were followed through a series of chat sessions, which has had implications for the subsequent analyses. Longitudinal data of this kind provided

opportunities for studying participation over time and were a prerequisite of reaching the kind of conclusions that have been drawn in the present study. Instead of analysing isolated chat sessions, which is not at all that uncommon in research on technology-mediated communication, the data on a series of chat sessions have made possible analyses of the way in which the participants accommodate to and eventually learn to communicate and act in web-based in-service training activities. However, learning in this context should not to be understood as a cumulative process by means of which the participants constantly progressed in their development. In the present study, learning should rather be understood as being triggered by resistance, discontinuity and incoherence, and hence, not always a straightforward matter.

The data were, as already mentioned, collected from chat sessions in regular training activities. The researcher did not design or initiate the chat sessions, which imply that the activities were carried out whether or not a researcher was interested in them. This does not mean, however, that the data were naturalistic in the sense that the activities were not influenced at all by the researcher. The argument is, rather, that all empirical research that is interested in so-called naturalistic interaction should "treat appeals to "nature" (as in the term naturally-occurring) with considerable caution" (Silverman, 2006, p. 202). For the present study, the data have been transformed into excerpts and worked on theoretically to produce knowledge in a specific scientific domain. Before discussing the work on selection and representation of data, some ethical issues will be considered.

Ethical considerations

The participants were informed at the beginning of the courses by the administrative staff that a researcher would have access to the environment for the purpose of analysing the activities for a research project. The participants had the opportunity to turn down such a request but to my knowledge no one did. For the purpose of the analysis, however, neither the individuals nor the organizations per se were of interest. The focus is, rather, on the communicative practices and the activities the participants established and engaged in. Thus, for ethical reasons the course participants' names (as senders of the postings) as well as the organizations they worked for were made anonymous. Every effort was made to "maintain the integrity of the texts" (Cook & Ralston, 2003).

Selecting and representing chat data

An initial empirical observation was that there seemed to be a recurrent general pattern across the different courses and chat sessions. The different foci in the four empirical studies have developed from such patterns. In the following section, the approach employed for understanding and analysing chat data as well as for selecting the excerpts for the studies will be discussed. Thus, the chat log files were downloaded from the discussion fora in the format presented below:

Message no. 110
Author: Jonas (Legislationw1004)
Date: Friday, March 12, 2004 11:05
[3/10/2004 12:54:49 PM] [Legislation] [Peter => All] "Hi Emma, Great that you are here"
[3/10/2004 12:55:08 PM] [Legislation] [Anna => All] " and now we all sit here quiet as mice waiting for someone else to start talking or what?"
[3/10/2004 12:55:22 PM] [Legislation] [Emma => All] " Hi! Thanks a lot!
[3/10/2004 12:56:52 PM] [Legislation] [Anna => All] " Don't take it the wrong way… I didn't mean anything by it!! It just felt so silly that there re several of us and no one said anything!"

Table 3. Example of chat log file format.

The information from the chat log files included the sequence in which postings were logged on the system server, the exact timing of each of the postings and the contributor of specific postings. This information from the chat logs was the empirical raw material available at the beginning of the analysis. When analysing, paper and pen were used as the main resources. By means of the analytical procedures I have also presented excerpts in seminars and at conferences, etc. Experiences from such events have made me realize that representing and communicating the data in comprehensible ways is an important issue to consider. The specific procedures for representing and translating chat data into intelligible excerpts will be discussed below. This discussion will also provide a backdrop against which the selection of excerpts for the four empirical studies will be justified. In

the present study, a general analytical idea has been to keep as close as possible to the resources the participants had available when they engaged in web-based in-service training discussions. The importance of keeping chat postings close to way they were written, or exactly the same, is also stressed by Markman (2009):

> *We literally reconfigure these people when we edit their sentences, because for many of them, these messages are a deliberate presentation of self. Even when they are not deliberate, texts construct the essence and meaning of the participant, as perceived and responded to by others. (p. 153)*

In the present study, grammatical and other kinds of errors in the excerpts have, to a large extent, been preserved with the intention of keeping them compatible with the participants' discussion. Thus, the excerpts that appear in the four articles should not to be regarded as transcriptions of the chat log files, at least not in the sense that transcription is taken to be a conversion between different forms of modalities. In the latter sense, transcription is taken to be, on the one hand, the conversion of a spoken-language source into written, typewritten printed form. An example of this is when video data is transcribed into conventional text-based excerpts. On the other hand, transcription can also mean the conversion of a written source into another medium such as a digital version. In the present study, data refers to the chat log files in the mode they were downloaded from the discussion fora. Accordingly, excerpts refer to the slightly different ways data have been presented in the four articles. In other words, data have been transformed into excerpts in order to make them comprehensible and readable so that the analytical points and the results are easier to communicate. This could suggest that the excerpts in the present study come close to capturing all the possible features of the chat interaction that may be observable (Hutchby & Wooffitt, 1998). However, the data analysed were not identical to the participants' real-time chat sessions. On the contrary, there were some features that differed between chat log files and the real-time sessions. Chat log files are thus not neutral representations of the chat sessions. Instead, the time-stamped chat logs, may be seen as traces of the real-time chat sessions. A feature that is important to note with regard to this matter is time and this will be discussed next.

A note on the analytical use of time

In the participants' real-time chat sessions, time is not explicitly displayed (as illustrated in Chapter 4, figure 2). However, the exact timing when a posting is received at the server is

logged in the chat log files and, thus, part of the empirical data in the present study. In this way, time was also included in the excerpts. Analytically, time was used in two ways. It was invoked as an analytical resource when the participants made time relevant in their chat discussions. But time was also used as an analytical tool to understand, for instance, the sequential order of specific postings.

A note on translating chat data

An important point to be made with regard to the excerpts that appear in the articles is that of translation. The data were originally in Swedish and have been translated into English. In articles 1, 2 and 4, the excerpts appear both in Swedish and English. In the case of Article 3, only the English translations were included. However, the work of translating has been a difficult task for at least two reasons. First, the chat discussions studied concerned vocabularies, modes of expressions and, generally, content that was quite context-specific, i.e. related to the food industry. Second, it was difficult to capture, when this was necessary, some of the distinctions in the interaction such as the blending of speech and writing. This is, however, a general problem with regard to translating excerpts in many empirical contexts (Aarsand, 2007; Lantz-Andersson, 2009). The aim was, thus, to keep as close as possible to the meaning the participants established in their discussions. In other words, the analytical work was performed based on the original Swedish data. In addition, a translator who is a native speaker of English has reviewed the translation of the excerpts.

Selection of excerpts appearing in Article 1[20]

An initial observation in the empirical material was that the course participants seemed to discuss certain issues more than others in the chat sessions. At the beginning of the courses, the participants discussed how to move around in the web-based environment. Eventually, such concerns seemed to be less frequently discussed (although they did not entirely disappear), and issues concerning the course content as well as more

[20] In the present study, the empirical data were worked on in the following manner in the case of all four studies. First, chat log files from all ten courses were read. Second, material from one or sometimes two of the courses was chosen for more detailed analysis. Third, excerpts from this course/these courses were selected to appear in the four articles as discussed in this chapter.

administrative issues became more salient. The ways in which the participants accommodated to and learned to use the web-based environment with regard to the premises of the specific technology became the analytical focus of the study reported in Article 1. The excerpts appearing in this article, represented three phases in one and the same course; the beginning, the middle and the end. The reason for selecting excerpts from only one course concerned the analytical interest of this study, which was to follow the same course participants through a series of chat sessions and in that sense be able to analyse changes in the ways in which they accommodated to, and acted in, the web-based environment. Accordingly, the excerpts that appear in Article 1 were similar to the example below:

29 [Mary => All] [2003-04-14 13:19:59]	OK då förstår jag varför jag inte fick någon kommentar för den här datorn verkar inte ha något ljudkort	Ok then I understand why I can't get any comments, a soundcard seems to be missing in this computer
30 [Peter => All] [2003-04-14 13:20:34]	Mary är det ok om jag lägger mina kommentarer på diskussionforum eller vill du ha dem via e-mail?	Mary is it okay with you if I put my comments in the discussion forum or would you like to have them by e-mail?
31 [Mary=> All] [2003-04-14 13:21:27]	Lägg dem på forum så går jag in där och kollar.	Put them in the forum and I will go there and check them.
32 [Peter=> All] [2003-04-14 13:23:43]	Har ni haft någon nytta av faktalådan vid riskbedömningen?	Have you had any use of the fact case in the risk assessments?
33 [Mary => All] [2003-04-14 13:23:53]	Tom kan du slå Susan en signal och kolla om hon hinner komma in?	Tom can you give Susan a call and see if she can make it here?

Table 4. Example of excerpts from Article 1.

As an example of the kind of excerpts that appear in Article 1, material from a course in Risk Management (in Swedish: Riskhantering) is used. The excerpts in this specific study were relatively similar to the format of chat log files. Note, however, that in excerpts that appear in all four articles, line numbers were added to facilitate the reading of the analyses with regard to, in particular, references to specific postings and threads. In Article 1, the excerpts also appear in tables to make them even more intelligible. Evidently, all successive postings were included in the excerpts.

Selection of excerpts appearing in Article 2

The point of departure in Article 2 was the research literature on computer-mediated communication, which was discussed in Chapter 2. An empirical observation was that, contrary to what previous research studies had shown, the chat discussions in my empirical material were to a large extent went quite smoothly. This observation was based on there being few if any explicit marks of confusion or requests for clarification in the chat interactions. However, there were instances where the participants evidently struggled to maintain the discussions. The data that were selected for this specific study were instances where the participants, on the one hand, smoothly co-ordinated their discussions and, on the other, had problems understanding each other's postings. These latter instances are worth noting as they represent gaps that can be seen as displaying "the breach practices that otherwise go unnoticed, taken for granted in their smooth execution" (Stahl, 2005, p. 7). Thus, for the analytical purpose of the empirical study reported in Article 2, the excerpts were similar to the example that follows below:

29 Pedro (2:40:10)	What is the reason for those who need a lot of energy not to eat a lot of roughage?
30 Gina (2:40:11)	If you don't have any questions then we can close this chat.
31 Gina (2:40:46)	It is perfectly fine to send in the assignment today.
32 Helen (2:41:11)	Would you like to have it as an attachment, as a word document?
33 Eve (2:41:13)	Yeah a quick question. I can't quite get the slide presentation/lecture going. Is this necessary or can I read all the information in the book?
34 Gina (2:42:05)	Roughage is satisfying and as such maybe one stops eating before one has absorbed enough energy

Table 5. Example of excerpts from Article 2.

The data above are from a chat session during the course Bioactive substances in food products (in Swedish: Bioaktiva substanser i livsmedel). As is evident, the excerpts were not in tables but in running text. In this way, the excerpts were intended to represent the more detailed focus on the participants' communication in the chat discussion in this study. Furthermore, online data, as pointed out by Garcia et al. (2009), "requires a different set of skills for understanding and analyzing it" (p. 57). In this way, the excerpt above will be used to illustrate some of what is implied in such an approach. In the

excerpt above, posting [34] is a response to the question asked in [29]. For illustrative purposes, however, I will ask you to assume that the posting in [30] is read as a response to [29] instead, as follows:

29 Pedro (2:40:10) What is the reason for those who need a lot of energy not to eat a lot of roughage?

30 Gina (2:40:11) If you don't have any questions then we can close this chat.

If this was the case, Gina, who wants to close the session if there are no further questions, can be seen to cut off, or even disregard, Pedro's question. Thus, the short time span between the two postings, i.e. one second, implies that [30] cannot be an answer to [29]. It is more likely that the two postings were sent off to the chat system more or less at the same time, which means that Pedro and Gina were not aware of each other's postings until they were displayed in the chat. However, if the two postings were read in the sequence suggested above, it is easy to imagine the discontinuity that could arise. What this shows us is that it is crucial for the analyst to have sufficient contextual information to be able to understand which previous posting a message refers to. Such an analytical approach also requires taking the altered sequential order of chat interaction into consideration. Accordingly, one has to be aware that two postings that are adjacent do not necessarily have anything in common. This is an important analytical point in the study of chat interaction, since many separate topics of discussions or threads are "mixed up and entangled with each other" (Sveningsson, 2001, p. 64). This clearly increases the complexity as well as the number of simultaneously ongoing threads, or multiple "conversational floors" (Simpson, 2003) the analyst must keep track of. In the excerpt above, for instance, at least three threads are maintained simultaneously: postings [29] and [34], as already mentioned, belong to one thread, postings [31] and [32] to a second topic of discussion, and [30] and [33] to a third thread. Empirical observations also show that it is not uncommon that postings were contributions to several threads.

Selection of excerpts appearing in articles 3 and 4

A more specific focus on discussion threads in the chat interaction was applied in the studies reported in articles 3 and 4. The research interests in the two studies concerned how the participants discussed the content they were expected to learn in the in-service

training efforts. It was, among other things, empirically noted that these discussions were established as discussions between experts and non-experts. In this way, how such different participant roles were accomplished became the analytical focus of the study reported in Article 3. Another empirical observation was that the participants discussed specific examples from their own work settings as well as more general quality assurance issues and procedures, seemingly at the same time. This became the analytical focus of the specific study reported in Article 4. Such a focus on the content-related discussions meant that it was necessary to follow more closely the specific topics of discussions or threads in the chat sessions. Consequently, the excerpts that appear in articles 3 and 4 were similar to the example as follows:

7 Kate (14:02:04)	we can just slowly start - do you have any questions on assignment 2?
---	
12 Kate (14:06:25)	Should we wait until 10 minutes past to structure assignment 2 so that more people get the chance to log in?
---	
16 Eve (14:07:32)	I suggest that we start now. I haven't got the time to just sit around and wait…
---	
28 Bonnie (14:16:36)	concerning assignment 2 – Okay if one works on starting a study that highlights problems in the diet and on the basis of this works with healthy ingredients?
29 Kate (14:17:14)	The purpose of this exercise is that we are to read again about how to base a subject in a scientific perspective; in the same manner as we in the first assignment actually read through the VDN nutrition on the packages. That is, not just skimming through…
30 Kate (14:18:47)	An answer to Bonnie's question: in principle it is okay – what is additionally in an already published article in a well-reputed journal is that the work is "peer-reviewed", that is examined on the basis of experience and reliable knowledge.

Table 6. Example of excerpts from Article 3 & 4.

The data above are from the first of three chat sessions in the course Consumer and Marketing (in Swedish: Konsument och Marknad). Following specific discussion threads, which was in line with the analytical focus in articles 3 and 4, meant that only postings that belonged to specific threads were included in the excerpts. In other words, some

postings were left out. In the excerpt above, for instance, postings [8], [9], and [10] were removed, which was marked by dotted lines in the excerpts. Isolating interactional dyads in this manner is a common analytical procedure in research on computer-mediated communication (Sveningsson, 2001). For this study, however, the isolation of specific threads served, first and foremost, the purpose of keeping the excerpts at a reasonable length and in that sense, making them more readable. This follows from the empirical observation that the participants in the activities explored in the present study posted rather extended messages, which meant that if all the postings that belonged to one discussion thread were to be included in an excerpt, the excerpt would have been several pages long.

In this chapter, some of the methodological and theoretical issues I have worked on, and sometimes struggled with, in the present study has been discussed. In some sense, the kind of empirical material I have collected has brought many analytical questions and dilemmas to the fore that had to be dealt with in the present study.

6 SUMMARY OF THE EMPIRICAL STUDIES

The overall aim of the empirical studies reported has been to scrutinize how people working in the food production industry and related fields participate in web-based activities for further and in-service training. The empirical data analysed are log files from chat sessions that are part of web-based in-service training courses. Four empirical studies have been carried out and these have been reported in four separate articles. The empirical studies have been conducted and organized in such a way as to point to different dimensions of what the course participants had to appropriate and learn in order to take part in chat discussions concerning quality assurance. As already alluded to, the ways in which the participants accommodated to the technology, and learned about quality assurance, were more complex than has been possible to account for in the separate articles. However, findings from all four studies taken together provide some insights into the complexity of participating in chat discussions as part of web-based in-service training. In the following, the aims and main findings of these studies will be summarized.

Study 1

In the first study reported in Article 1[21], the issue of how to theoretically and analytically account for "the irreducible tensions" (Wertsch, 1998) between cultural tools and how people come to use them, is addressed. A theoretical assumption in this study is that as people encounter technological tools, which are new to them, they have to familiarize

[21] Nilsen, M. & Säljö, R. (manuscript). From a trying environment to a familiar tool: mediation and appropriation in the context of using a web-based educational platform. To be published in R. Säljö (Ed.), *Information and communication technologies and the transformation of learning practices*.

themselves with how the technologies function both as physical tools and as intellectual/communicative environments. People will use previous experiences of computers, of literacy practices and of institutionalized ways of communicating as resources when doing this. These experiences are seen as important elements when appropriating mediational means (Wertsch, 1998). The concept of mediated action is the analytical category employed in this study. The research question addressed is:

- How do relatively inexperienced users familiarize themselves with and accommodate to a web-based environment for discussing and learning?

The first empirical observation after reading the material as a whole was that the participants produced utterances that related to issues that had to do with either a) course content, b) the web-technology and/or c) course organization/administration. It was also observed that utterances or postings that concerned the web-based technology seemed to be more frequent at the beginning of the courses. Over time, and as the participants worked in the web-based environment, such topics became less frequent in their discussions. This general empirical observation of changes that took place during the chat sessions paved the way for a more detailed study of the discussions in order to illuminate transformations in the ways in which the participants accommodated to the technology. The results show that the participants gradually appropriated the technological tool; going from relative unfamiliarity and more or less systematic testing, to using the tool in informed ways and, eventually, exerting agency in the web-based environment. In other words, the participants initially focused on learning about the tool itself, on trying out various features and testing productive ways of working. At this stage, the participants made low-level mistakes and uncertainty about how to proceed were frequently commented upon.

As the users became more familiar with the environment, the findings show that their discussions about the technology changed in nature. Eventually, the participants were able to test the affordances of the tool, and they actively employed it in accordance with the needs they perceived they had. This was not only evident in how they handled the technological tool; it was also visible with regard to the more assertive ways in which they asked questions about various functionalities. In this way, they came to exert agency with regard to the environment when they commented on the nature of functions that they would like to see in the tool, and which might or might not be there. Eventually, the tool

seemed to become more or less transparent to the participants; i.e. understood "from within", as it were. This emergent "invisibility" of the tool is an interesting observation since it shows how a very complex tool, which is the product of an extended evolutionary process, can become "naturalized" relatively quickly. The transparency of the technological tool also allowed the participants to "go on" with their in-service training activities. What became salient in their subsequent activities was how smoothly the participants co-ordinated their chat interaction. The interest in how the chat interaction was co-ordinated became the analytical theme in the second empirical study.

Study 2

The analytical issue in the study reported in Article 2[22] is to theoretically and analytically account for the specific conditions of chat interaction, which in earlier research have been claimed to challenge the culturally well-established norms that characterize face-to-face interaction. A theoretical assumption in this study is that in all forms of communication, i.e. everyday face-to-face conversations, institutional interaction, or web-based activities, people always, although more or less explicitly, have to actively engage in co-ordinating their interaction and establishing some kind of intersubjectivity (Rommetveit, 1974, 1992). In face-to-face conversations, such communicative contracts can be more or less taken for granted, as we are so familiar with them. However, in more unfamiliar arenas for communication and learning, e.g. chat rooms, participants face the challenge of communicating through text (rather than talk). This means that they, to a lesser extent, can rely on the normative assumptions for communicating characteristics of spoken conversation. The following analytical questions are addressed in this study:

- How do the participants deal with continuity and discontinuity when co-ordinating online activities?
- What communicative strategies emerge when dealing with discontinuity?
- Are there signs of emerging norms, i.e. local 'conversational' cultures?

[22] Nilsen, M. & Mäkitalo, Å. (in press). Towards a conversational culture? How participants establish strategies for co-ordinating chat postings in the context of in-service training. *Discourse Studies*.

Even though discontinuities were not very frequent, the results show that instances of discontinuity in the chat interaction occurred when, for instance, a course participant read and understood the chat postings in the way they were sequentially presented in the chat window. In other words, postings were read as if they were sequentially produced as responses to the preceding posting, while such continuities cannot be taken for granted in chats. This was but one example of a discontinuity that temporarily interrupted the flow of ongoing discussions, and was evidently something the participants needed to address explicitly to be able to continue their activities. Accordingly, in such instances a meta-discussion took place about how to read the chat in a relevant way.

The results show that the participants developed two communicative strategies that enabled them to continue their discussions. They directed a posting to a specific participant by, for instance, using personal names in the postings (e.g. "*Yes to Per; Anna: 12.20 the earliest*"). In the literature on computer-mediated discourse, this is interpreted as a strategy for maintaining intersubjectivity and is referred to as cross turn reference (Herring, 1999), or addressivity (Werry, 1996). One of the features of chat systems is that they are "designed so that more than one party may compose messages at a time" (Garcia & Jacobs, 1999, p. 347). Consequently, the postings are distributed in the chat window on the basis of when they were received on the system server. This also means that there can be more than one topic of discussion, or thread, running in parallel. The findings show that such specific conditions of chat interaction were accommodated to by means of a communicative strategy that displayed addressivity. The participants also co-ordinated and directed their turns by reformulating or repeating parts of the specific postings that they were addressing. This second communicative strategy was productive when it came to co-ordinating whose postings were meant for whom. Last but not least, addressing the analytical question of emerging communicative norms, or a conversational culture, the results of this study demonstrate that the participants established the following norm: if not otherwise designated, postings were meant for the course experts. This involves a conversational culture in which the course participants waited for their turn, and course experts dealt with one posting at a time and in chronological order. This kind of locally established social order resembles, in many respects, findings from more traditional instructional settings.

In the study reported in Article 1, it was shown that the participants were soon able to handle the technological obstacles. The details of the environment were made transparent and the course participants also exerted agency in the chat sessions. It is reported in

Article 2 that the participants established specific communicative strategies and norms that were used productively to co-ordinate their chat interaction and keep their discussions going. A question that was raised in the light of such empirical findings was how the course participants accommodated to, and learned about quality assurance in their online discussions. Learning about such matters was the expected outcome of the in-service training activities. The analytical focus of the third study, accordingly, was to scrutinize how these online discussions were carried out as part of in-service training that could be regarded as hybrid activities in the sense that they were situated between the practices of instruction on the one hand, and the practices of production work on the other.

Study 3

In the empirical study reported in Article 3[23], the issue of how to theoretically and analytically account for the institutional complexity, or hybridity, of in-service training activities was addressed. The focus is on the kind of contextualisation practices or participatory frameworks that were established, and the ways in which such frameworks were constitutive of the activity. To be more specific, the analytical questions are the following:

- How do participants frame the activity at hand? As one or several communicative activities?
- What participation frameworks are established in this activity?
- Do participants maintain the interaction in longer sequences (i.e. between shifts in footing), or is the interaction enacted as a hybrid activity?

The participants' framing of the situations is analysed by means of what Goffman (1974) refers to as shifts in footings. By means of such shifts, activities are established and maintained by participants as a particular kind of activity (Goffman, 1974). Findings from this study show that the participants accommodated to these hybrid, in-service training efforts, sometimes by framing the activities as instruction, and sometimes by framing

[23]Nilsen, M. (submitted). Negotiating the context of online in-service training: 'expert' and 'non-expert' footings.

them as relevant to the daily work practices. These shifts were thus found to also have consequences for how the discussions were carried out. The participants balanced such shifts in footing in a rather delicate and integrated manner in their discussions. In some instances, it was more evident that they discussed assignments in a manner that seemed to anticipate evaluation. Accordingly, in their discussions the participants acted more in accordance within a framing of an instructional setting. They used the resources and assumed the entitlements and obligations of teachers and students, respectively. The resources the course expert used in his role as a teacher in the discussion became salient in relation to the institutional obligations to act as a teacher, i.e. he aimed to induce students to argue within the institutionally relevant discourses that concern quality assurance discourse and terminology. However, the participants fairly quickly shifted footings and discussed, for instance, the division of responsibility between different authorities and branch organizations on the basis of their roles as representatives of the authority and branch organizations, respectively. In this way, the activities can also be described as being hybrid in nature in the sense that the participants make constant shifts in roles or footings in the discussions. In this respect, such shifts in footings were also analytically difficult to distinguish. On some occasions, such shifts were, for instance, negotiated in one and the same posting.

A robust finding reported in Article 3 is that the discussions were conducted on the basis of a participation framework that was constituted by, on the one hand, more knowledgeable participants and, on the other, less knowledgeable participants. The results show that course experts were positioned as being more knowledgeable in at least two ways. Acting as teachers in the discussion, they were expected to know the correct answers to the tasks discussed and to comment on the relevance of students' questions. Acting as representatives of the state authority in the discussion, they were expected to know the food production industry in a more general sense as well as being familiar with the legislation that regulates the industry. The course participants, on the other hand, accepted their position as less knowledgeable actors, and non-experts. In this respect, the hybrid activities were seen as being maintained by "role-structured, institutionalized, and omnirelevant asymmetries between participants in terms of such matters as differential distribution of knowledge, rights to knowledge, access to conversational resources and to participation in the interaction" (Drew & Heritage, 1992, p. 49).

Such a distribution of rights and knowledge was found to be a productive element in the activities, as it seemed necessary to establish and maintain a thematic continuity in the

discussion. Furthermore, a premise for activities with the overall aim of learning something is that a differential distribution of knowledge must be present; otherwise such kinds of activities would be unnecessary. The results show that the course experts quite productively balanced their obligations and entitlements in their shifting roles as teachers and as representatives of the state authority. This balancing act can be seen as a necessary element to be able to establish and maintain content-related discussions with the course participants (Maynard, 1991).

In a few instances, participants attempted to challenge the established participant framework of acting as "expert" versus "non-expert". One of the participants, for instance, introduced both external expertise and other participants' competences (e.g. food technician consultants, textbooks authors, chefs) as resources to initiate a discussion between what can be seen as several potential "experts". However, such initiatives were not responded to, either by other course participants or by the course expert. Rather, they continued their discussions on the basis of a participant framework where the roles of "expert" and "non-expert" were maintained. In this manner, the constant shifts in footings in some sense anticipated the specific content they were expected to understand. Thus, the division of responsibility between different authorities and branch organizations became visible through the commentaries and postings of the course experts. In this sense, the results clearly illustrate some features of what the course participants have to learn in this setting; how to make shifts in roles so that the division of responsibility in the food industry becomes salient. In other words, the course participants learned to assume different roles, or perspectives, in the discussions about quality assurance, which is part of what makes these activities hybrid contexts. What they learned with regard to more content-related issues involving quality assurance is the analytical focus of the fourth, and last, empirical study.

Study 4

The focus of the empirical study reported in Article 4[24] is to theoretically and analytically account for if and, in that case, how the course participants learned the specific contents and vocabulary of quality assurance in the in-service training courses. The analytical

[24] Nilsen, M. (in preparation). Learning the discourse of quality assurance: a case of learning through writing in online in-service training.

interest concerns how the participants discussed and related their current work experiences to quality assurance as formulated in specific course contents. These issues concern the connection between a) general discursive practices and principles of quality assurance methods, legal institutions and so on, b) the problems and principles for how the concrete work in the industry should be conducted, and c) the participants' daily experiences of being involved in such production processes. The expected learning outcomes of these arranged activities concern the understanding of, and the skills in deploying, a set of general methods and procedures, which the participants should take over, implement and eventually be held accountable for in their regular work in production. Accordingly, they were supposed to learn to document in specific ways and, eventually, be able to initiate and hold discussions on quality assurance in their own organizations. Thus, the in-service training can be regarded as a set of hybrid activities where the course participants were expected to learn and connect theory and practice. The following analytical questions are addressed in this study:

- Are there signs that the discussions conducted involve considerations of how to organize the daily work?
- Do the participants take part in discussions about general quality assurance principles? How is this done? Are concrete examples from their daily work practices brought into such discussions?
- Do they adopt a different approach to their daily work in these discussions on quality assurance? And how is such an approach met? Do they formulate a critical examination of their own daily work? In what ways?

The results from this specific study show that the course participants appropriated the regulating practices and procedures of quality assurance. This became evident when the course participants wrote about their own examples and ideas in a different way. Findings demonstrate that they, in their written discussions, oscillated between, on the one hand, specific examples and ideas from their own production settings and, on the other, general vocabularies and discussions concerning systematic quality assurance procedures. The course experts were found to be crucial resources for guiding the course participants from their understanding of specific cases to developing a different and more general quality assurance approach to production work. The results show that course experts often took the course participants' specific examples as a starting point in the discussions, but that they eventually introduced a quality assurance vocabulary and procedures in terms of

which the participants were expected to discuss their own concrete work as well as the production processes in their organizations.

The results show that some of the written discussions (e.g. in the Product Development Method course) that took their point of departure in the course participants' specific ideas for products to develop, were gradually transformed into discussions that concerned criteria for product development in terms of, for instance, how to produce a relevant list of criteria. In other words, the course expert soon introduced the concept "criterion" in one of his postings as part of a general vocabulary the participants were expected to use in their discussions about product ideas and product development. As the results show, the course participants eventually began using the concept of "criterion" themselves when they initiated a discussion about the criteria lists they were expected to produce as part of the course. Based on such documentation, the course expert pointed out the relevant criteria for them to include in their criteria lists. This indicates that learning about quality assurance concerned both the appropriation of a general vocabulary and how to use such general concepts in relevant ways in a discussion of specific issues. In other words, we are dealing here with the "what" of learning in this setting, i.e., for instance, the concept of criterion as formulated within the quality assurance discourse and as a concrete tool used for organizing and engaging in production practices. A conclusion that can be drawn here is that the course participants accommodated to the in-service training efforts as hybrid contexts in the sense that they actually "closed the gap" (Lave, 1988) between two different activities, i.e. general discursive patterns and principles of quality assurance on the one hand, and daily production work in the context of their own organizations on the other.

In line with this, the analyses of the excerpts from the course HACCP (which is a quality assurance method), demonstrated how a discussion that concerned difficulties in finding relevant information about risks with regard to specific products, eventually changed in nature. For instance, the course expert introduced a more appropriate, i.e. general, vocabulary for the discussion on product development by reformulating "relevant information" into "relevant risks". Some of the course participants instantly picked up on generic concepts such as "relevant risk" and other similar productive terms and started to use them as resources when discussing their specific product ideas. However, the premises for this very specific discussion eventually changed as the course expert refined the vocabulary for discussing risk analysis. Instead of letting the course participants get too deeply involved in a discussion about the specifics or details of all relevant risks, the

advantages of knowing the more general procedures of risk analysis in the context of product development were emphasized.

Findings from the fourth study, in this sense, point to a specific learning situation in which general principles were substantiated in specific cases from different production settings while, at the same time, such examples had to be reformulated into general problems for productive discussions to be established. These examples, however, did not, as is often the case in, for instance, higher education, have the status of merely being illustrations. Rather the opposite, the course participants were accountable for their cases or examples in the sense that they are expected co-ordinate the regulating and documentary practices of quality assurance with their own and their organization's concrete production systems. This means that the course participants were expected to eventually "own" the issues they discussed, which made necessary a different relation to the content at hand. This means that the approach they gradually adopted cannot, as is more often the case in higher education, be found in the course content per se. Rather, the course participants were expected to adopt this approach to quality assurance for the specific purpose of implementing such an approach in their own production practices. Although the results show that the course experts initially "owned" the quality issue, the branch representatives were expected to subsequently take over part of such responsibilities.

What is also interesting is that the quality assurance systems, or methods the participants discussed, are a way to prepare or attune people to what they must check, pay attention to and identify as problems. In this way, such systems or methods constitute an interesting output of training as they provide the course participants with a way of working, which is structured and which points to specific features and parameters in work that are relevant to pay attention to. This kind of learning thus concerns a form of disciplining that involves appropriating a generic vocabulary and its accompanying discursive practices that regulate the participants' own work procedures. The results show that the course participants gradually took over the vocabulary of quality assurance as they more frequently began to use concepts such as "criterion", "relevance", "estimation" and "risks". There was also another important condition of their learning environment; it was found that the participants not only talked about quality assurance issues, they literally wrote themselves into a new operational understanding of their everyday work practices. In this sense, the in-service training activities can also be understood as a preparation for

how to work as "discourse technologists" (Farrell, 2001a) in their own work settings with regard to the issue of quality assurance.

7 DISCUSSION

Some observations on the how and what of learning in hybrid in-service training

In the present study, the nestedness of a research interest in the broader changes in food industry in general and in the practical activities that follow from such transformations in particular, have been emphasized. This means that this study concerns concrete examples of activities that have been implemented and carried out in local practices as a consequence of larger transformations of conditions for production in society. The broader background concerns issues such as globalization, increasingly complex production and production systems and other changes in the food industry, including the increasingly important so-called image problems. Globalization is linked to a "quality turn" (Goodman, 2003) in the food industry and is illustrated in the recent emergence of international quality assurance standards and methods (Morris & Young, 2000). In this sense, the in-service training activities studied were organized, and carried out so as to address this "turn" to quality. In this respect, these activities illustrate the way in which previously local industrial production becomes part of larger systems of production, which are regulated and controlled by international rules and regulations, agreements and new directions for quality work. Accordingly, it is assumed that people working in the food industry, and in related fields, have to acquire knowledge, skills and work experiences that can transform this area of production, taking them beyond their current understanding of their production practices by becoming aware of quality assurance systems, the rationale of such systems, and risk analysis. In other words, the quality assurance contents the course participants were expected to learn in the in-service training activities are a consequence of, and a "technology", that draws their attention to, broader changes in society and in conditions of production. What has been empirically scrutinized in this study are the concrete, regular web-based in-service training activities that people employed in the food production industry and in related fields engaged in, and where they learned about quality assurance.

One of the interests of the present study has been to document some observations of the kind of activities adult distance education has resulted in at the beginning of the new millennium. In this sense, I have emphasized how current distance education practices grew out of previous ways of organizing and institutionalizing distance education. Some of the similarities with and differences from recent technologies have also been pointed to. A robust finding from the empirical studies reported in the four articles is that it is likely that web-based activities offer a feasible model for organizing both further and in-service training. This is concluded from the findings, which show that the course participants, despite their inexperience when it came to the web-based technology as well as in-service training in general, engaged in the activities and carried them out in quite productive ways. What is it, then, that makes these activities or discussions so productive? This question will primarily be discussed with regard to the following three themes: In-service training as hybrid contexts for learning, the how and what of learning in web-based training, and the role of writing in such training.

In-service training activities as hybrid contexts for learning

What is productive in the in-service training activities is that they are hybrid contexts. In fact, hybridity is an interesting dimension of this entire mode of organizing instruction. This argument will be further substantiated in the discussion to follow. The results show that in these activities we come close to the quality assurance content the course participants were expected to learn on the one hand, and to the participant's competence as actors in the food production industry on the other. This element of hybridity, in the sense that they were situated between instruction practices, on the one hand, and practices of production work, on the other, is difficult to achieve in many educational activities. One of the productive elements, is precisely that the participants had experiences of production work and production processes; work experiences they were able to use as resources in these hybrid activities. Such conditions for instruction and learning are generally not possible to achieve in conventional educational activities. In other words, people cannot be placed in these kinds of hybrid situations and maintain the same kind of productive discussions if they do not have relevant work experience to introduce and rely on. The results demonstrate that the course experts also used their experiences as institutional representatives as resources in the discussions about, for instance, the division of responsibility between authorities and branch organizations. Furthermore, the discussions about quality assurance are productive in the sense that the course participants were subsequently to be made accountable for implementing and

maintaining such discursive practices in their own organizations. This element, that there is something at stake in the discussions for the course participants, also strengthens the productive dimension of these in-service training activities. An interesting observation with regard to this is that none of the course participants dropped out. It is documented in research literature, however, that students attending web-based courses "drop out at substantially higher rates than their counterparts in on-campus courses" (Levy, 2007, p. 185). Some of what contributes to the low rate of drop outs in the in-service training activities is perhaps precisely that the activities were hybrid contexts for learning in the sense that something was actually at stake for the course participants.

Another interesting dimension of the in-service training activities is that the course participants were not only learning about their work, they were also learning for life in a broader sense. The technology they used and its various affordances, including the necessity to communicate in writing, must be seen as a significant learning experience in a complex technological society. It was possible for the course participants to use their respective cases in a substantial and consequential way in the discussions. The material and the assignments the course participants worked with in these hybrid activities were, however, formulated in such a general manner that they also had a wider applicability. The skills they learned in terms of a vocabulary for, and procedures of, quality assurance as well as principles for this kind of documentation, were generic in the sense that they can be applied in most food production contexts. The findings reported in Article 4 show that it is likely that the course participants learned to discuss, for instance, relevant criteria with regard to their own work practices but also with regard to those of other participants from completely different production settings.

Accordingly, taking part in such discussions has a clear potential in various respects: for developing the skills of the participants further, for understanding the general idea of specific concepts, for using such understandings to share experiences of production work with colleagues in the industry and, eventually, for implementing and operationalizing such understandings in their own organizations. In other words, the course participants learned to discuss their concrete work processes at a level that these new international systems and procedures require. What is interesting here is that these are hybrid activities in the sense that the course participants find themselves situated between their concrete work practices on the one hand, and the practices of instruction on the other, and in this setting they should learn to act (i.e. learn to divide, categorize, organize and work procedurally) in accordance with new quality assurance technologies. A conclusion that

can be drawn from this is that the course participants were able to use a quality assurance vocabulary that enabled them to transcend their work experiences from their own production settings. In this way, they learned to co-ordinate, or "close the gap" (Lave, 1988) between the regulating practices of the industry and their own as well as their organizations' concrete production processes. The participants established an arena where they learned to discuss, for instance, criteria lists not only in terms of their own line of products but also in terms of any kind of product that can potentially be developed. Catherine, for instance, discussed criteria in the following way: "*The criteria are of course product dependent, but it is not necessary to fill in everything every time. Leave some empty, but include criteria that can be of immediate interest for other products.*" However, one of the prerequisites for establishing such an arena is that the course participants were able to interpret their personal work processes in the context of such a general understanding of production work.

One conclusion is, thus, that the ways in which these web-based in-service training activities were organized and carried out were quite different to what we have seen previously in the history of distance education. Evidently, these are "in-service" and hybrid activities in the sense that they are grounded both in the participants' own experiences of production work and in the quality assurance contents they are supposed to learn. In addition, the course participants were also physically situated in their work contexts and the course experts were actually working at the National Food Administration. In this respect, these activities can be regarded as blurring the distinction between learning in the context of education on the one hand, and learning at work on the other.

The "how" and "what" of learning in web-based training

Another interesting dimension of these efforts, and a central focus of the present study, is that they concern both how the participants learned to interact in the web-based setting and what they learned while participating in the in-service training activities. This is a concern that contrasts with the interest of most of the research studies discussed in Chapter 2. Accordingly, for this reason, some of the findings that demonstrate both how and what the course participants learned in these activities will be recapitulated in the following. A robust finding is that the participants, over time, accommodated to this communicative arena and learned to use the tools provided via the web-based

technologies for the sake of doing in-service training. The findings concerning how the participants learned to act in informed and productive ways in the web-based training are reported in articles 1 and 2. The results show that the ways in which the participants acted in the training activities gradually changed over time. In the present study, this is theoretically accounted for in terms of appropriation (Säljö, 2005; Wertsch, 1998). The findings demonstrate that the course participants eventually took charge of the web-based activities by discussing the technical complexity of the situation. More specifically, they discussed and acted creatively, with some guidance from more experienced participants, issues such as where to find specific documents, how to distribute assignments, how to avoid problems when logging in, etc. The results also show that such creativity was taken a step further as the course participants explicitly formulated expectations of what the technology should afford and, hence, they displayed agency in the web-based environment.

The results further show that the participants learned to overcome certain discontinuities and handle problems in co-ordinating the chat interaction. Through the interaction in the chat, the participants established a set of communicative rules and norms that set the standards for subsequent interaction. The course participants learned to co-ordinate turns in the chat by using, for instance, personal names to direct a posting to a specific recipient. In the research literature, Herring (1999) has noted that a common strategy for creating cross-turn coherence is addressivity, i.e. the vocative use of the intended addressee's name (Werry, 1996). The emergence of this strategy in the present study had as its point of departure meta-level discussions where course participants handled the problems of understanding which postings were meant for whom in the chat interaction. This indicates that the course participants learned to use a strategy, which is generic in the sense that it is frequently used to co-ordinate chat interaction also in other contexts.

As became evident from the empirical analyses reported in articles 3 and 4, learning is always also in part a matter of what. The ways in which the participants took part in these activities were also an issue of appropriation of institutionally specific responsibilities and quality assurance practices, which were the focus of the course content. The findings reported in Article 3 show that the course participants learned to assume different roles, or footings, in the discussions. By adopting different roles in the discussions, the course participants also learned to discuss quality assurance issues from the position of representing a particular perspective on, or interest in, food production. In this sense, a shift in footing is also a change in the knowledge base by means of which their

contributions to the discussions were made. Further, the results reported in Article 4 show that the course participants also learned about quality assurance practices, which was also an expected outcome of these activities. What they learned in these in-service training activities will be consequential for how they will eventually go about their work as "discourse technologists" (Fairclough, 1996) in their own work settings.

Accordingly, the ways in which the course participants came to act in the web-based environment, and learned to employ specific communicative strategies, norms and roles in the chat discussions (articles 1 and 2) may be seen as steps towards being able to learn about quality assurance regulations and procedures (articles 3 and 4). Although the issue of how people learn is not explicitly a goal of the present courses, there is, in this case, a dimension of lifewide learning. In other words, by taking part in web-based in-service training, the course participants learned a set of technological skills and communicative practices that are generic in the sense that they are grounded in the emergence of relative recent forms of communication, and part of what is commonly referred to as digital literacy.

The findings demonstrate that the skills the course participants learned with regard to the course content also have a generic nature. In other words, they learned to co-ordinate a set of general discursive practices that will regulate the daily production work in their own organizations in such a way that they were able to discuss cases from completely different production settings. In a similar vein, they also learned a quality assurance vocabulary by means of which they can communicate in more informed ways with different parties e.g. authorities, branch organizations, colleagues and competitors. For example, Carina, one of the course participants, was eventually able to discuss meatballs, not in a general sense, but in procedural terms where time and temperature were important parameters to consider: "*Then it is also important to keep an eye on the size of the meatballs isn't it? So that the temperature and the time is right in order for the core temperature to be good*". Consequently, and as an extension of such learning, it is likely that they can address various general issues that concern food quality and food quality assurance methods, for instance, in the context of discussing so-called food scares in the mass media. These are further examples of the generic skills that the course participants learned in these in-service training activities, and which, in a sense, also form dimensions of lifewide learning. It is likely that the course participants were well equipped to eventually assume their new identities as "discourse technologists" (Fairclough, 1996).

As was introduced early on in this study, the course participants had relatively little experience of education or training in general. Based on the experiences they have gained in these in-service training activities, it seems likely that they can keep updated as regards their duties in production in a different way in the future. Judging from the results, the course participants may possibly become less tied to their own work contexts as a result of learning a different way of looking at their own line of business. Thus, this indicates that the quality assurance discourse the course participants learned in these hybrid activities concerned quite specifically their roles as professional actors; and in that case, there is also a dimension of lifelong learning.

An interesting paradox in these hybrid activities is that *how* the course participants learned to a large extent became *what* they learned, i.e. how and what became, in a way, complementary elements. In other words, the same learning process can be considered in terms of both its how and what. For instance, the generic skills they learned with regard to the quality assurance content were, to a large extent, procedural practices, which is typical of course content that is method-oriented. In other words, learning such procedures, for instance, how to produce a risk analysis, becomes what they learn in this specific setting, but also what they eventually become accountable for in their own production work and in their organizations. The how and what of learning are also intimately intertwined with the participants' shifts in roles, or footings, in the discussions. These shifts in roles concern, on the one hand, how the course participants learned in this setting and, on the other hand, how these shifts anticipate some of the content the course participants were expected to learn in terms of their future roles in the food production industry. In a similar vein, how they learned to accommodate to, and act in the technological environment also became part of what they learned in this specific setting, i.e. they appropriated a set of communicative and technological skills that are part of participating in web-based learning environments.

In contrast to many other research studies that have had an interest in learning in technology-mediated settings, the present study is grounded in empirical studies of routine activities. The activities scrutinized have not been set up for purposes of research but are training courses for the participants. In this way, the present study contributes "insights into how real-life use situations develop over a certain period of time" (Fjuk & Ludvigsen, 2001, p. 238).

The results show that the course participants encountered different kinds of "resistance" throughout their web-based in-service training. Accordingly, the learning process was not straightforward. Instead, the course participants worked in an iterative way when they accommodated to the technology, as well as when they learned about the regulating practices and procedures of quality assurance. In a sociocultural perspective, thus, such resistance is taken to be what enables and necessitates learning (Wertsch, 1991, 1998). Resistance or hurdles are prerequisites for appropriating, for instance, unfamiliar technologies as a result of which new ways of talking, acting and writing about new principles or methods are expected outcomes.

Writing in web-based further training

Another dimension of the in-service training activities, which requires further attention, is, as already mentioned, that the course participants were literally writing themselves into a new understanding of their current work practices. The results demonstrate that they were in a sense socialized into a documentary practice of quality assurance regulations and procedures, systematic measures and so on. These documentary practices enter into the lives of people working in food production "via extended sequences of texts and activity" making their work "ordered and organized through ruling relations" (Wagner, 2005, p.19). Today, it is impossible to co-ordinate a complex activity that includes a European (and worldwide) industrial sector without using written documentation. Smith and Schryer (2008), commenting on these developments, go as far as to say that it is, "indeed hard to realize the extent to which our activities are coordinated textually" (p. 117). Such documentary practices are "key to institutional coordinating, regulating the concerting of people's work in institutional settings in the ways they impose an accountability to the terms they establish" (Smith, 2005, p. 118). A main function of such discursive practices is what is referred to as documentary governance (Smith, 2005; Smith & Schryer, 2008). Accordingly, it becomes highly relevant, even necessary, for people working in the food industry and related fields to be able to develop an in-depth and functional understanding of such documentary practices given their own work and their position within their organization. Accordingly, they were expected to be familiar with reading such written documentation concerning, for instance, rules and regulations, production procedures and methods in such a way that they can implement the institutional requirements in their work.

Another interesting aspect of these activities is that writing is also the mode of communication for the discussions. It is often argued that web-based activities bring us back to "the written fold" (Baron, 1998, p. 2). Thus, the text-based in-service training activities are likely to serve some of the purposes of the course contents the course participants are expected to learn. However, the result reported in articles 1 and 2 demonstrate that this text-based reality is also a crucial resource for the course participants as they accommodated to, and learned to understand the technological environment as well as the communicative rules and norms in the chat interaction. In other words, writing is an important dimension of web-based in-service training activities in several respects. It might be that web-based technologies are particularly suitable for training activities where the course contents are, to such a large extent, carried out in writing, i.e. the course participants were expected to incorporate a documentary practice by means of which they should produce certain kinds of documents and, eventually, invoke such documentary activities in their daily work practices.

Beside the three main points that have been discussed so far, the roles of the course participants and course experts in the web-based in-service training activities will also be discussed in some detail. Finally, some observations are made concerning how this study should be understood.

The roles and responsibilities of course participants and experts

What the discussion so far has made evident is that the course participants and the course experts made important interactive efforts to contribute to the productive discussions in the in-service training activities. Although the course participants encountered a complex learning situation with regard to the technological environment mediating the activities as well as with regard to the course contents, they were able to use the affordances of such complex situations for the purposes of engaging in the in-service training. In the following, some features of what it takes for such discussions to be productive will be pointed to.

As has already been mentioned, the course participants learned the discursive practices of quality assurance with regard to food production. One important function of such documentary practices is that they can be used to bring about "rationally organized and

legitimated governance" (Smith & Schryer, 2008, p. 116). Such documentary governance is seen to regulate "the concerting of people's work in institutional settings in the ways they impose an accountability to the terms they establish" (Smith, 2005, p. 118). The findings in the present study show that documentary governance was in a sense implemented by the course experts when they took on the role of "discourse technologists" in the in-service training activities. According to Fairclough (1996), the organizational roles of discourse technologists are to design new discursive practices and procedures in line with institutional aims and strategies and to train people in their use. In this specific case, however, the course experts did not design the new discursive practices; these were international, agreed-upon standardizations. The course experts' role was, rather, to train the course participants in using specific quality assurance vocabulary and procedures. The results show that the course experts acted as interventionists in the sense that they challenged the course participants' current understanding of their production processes by introducing them to the regulating practices of quality assurance and food safety; issues that are considered necessary elements in modern food production work.

To be more specific, the course experts provided the course participants with definitions and productive answers to their questions about quality assurance, like any teacher attending to a particular content in any regular educational setting. The course experts directed, for instance, the course participants' attention to different documents in the discussion. One of the elements of this training was that the course experts made use of the course participants' assignments (uploaded to the discussion forums) as resources in, and contributions to, the discussions. The findings demonstrate that this served a specific function in the training; by pointing to the assignments either as good examples or as poor examples of, for instance, risk analysis, they were able to train the course participants in "the documentary possibilities of standardizations" (Smith & Schryer, 2008, p. 117).

In this way, the course experts, in their role as discourse technologists trained the course participants in adapting to the standardized documentary practices of quality assurance in the context of food production. The findings also demonstrate that part of the training was that the course experts evaluated such assignments and in that sense introduced the course participants to the idea of sharing and discussing quality assurance texts and documents with colleagues from the same industry. Such training can be seen as crucial in the sense that the course participants were expected to eventually act as discourse technologists in their own organizations.

An interesting dimension of this kind of training is the public nature of the ways in which the participants' comments and questions are visible in the in the web-based environment. This so-called "publicness" afforded by the written form of communication in chat was used productively by the course experts to initiate discussions among the course participants. In this sense, the course participants learned to "expose themselves and their ideas through written texts, and they do this with the awareness that their contribution will not only be read but also uploaded and saved by fellow students" (Jonsson & Säljö, 2009, p. 41). The in-service training was public in the sense that the activities explicitly built on the idea of making the course participants' experiences of production work and processes available to other participants to inspect and discuss. In other words, the public nature of the web-based activities built up expectations, implicit as well as explicit (often expressed by the course expert) that the course participants will both write about their work experiences and share them with colleagues. This differs considerably from most distance education activities that have been organized previously as well as from regular educational activities.

The results show, however, that the course participants were, for the most part, oriented towards the course experts in their discussions. This was particularly evident in the findings reported in Article 2, where it was demonstrated that the course participants established the conversational norm that if postings were not otherwise designated, the course experts should respond to them. In this respect, the activities were somewhat similar to the one-to-one interaction between a teacher and a student in the 150-year old tradition of correspondence studies. It could easily be assumed that the ways in which the in-service training activities were conducted mimic what is traditionally referred to as a dyadic form of interaction between a teacher and a pupil/student. This finding is perhaps not surprising given that the in-service training activities, like all instructional efforts, have an evaluative dimension to them, i.e. a teacher or an instructor has to eventually to decide whether the students have passed the course or not. However, findings suggest that the role of teacher in the web-based in-service training activities was performed in quite specific ways, which differed in many respects from traditional teaching.

A robust finding reported in Article 3 demonstrates that the participants quite productively used their roles as, for instance, teachers and students as well as representatives of the authorities and branch organizations respectively, in the discussions. The analyses also indicate that the course experts' were able to establish specific discussions through their shifts in roles or footings. This suggests that some of

the productiveness of the in-service training activities was due to the work experiences the participants had with regard to production work and producing food and foodstuffs. The course experts skilfully used their work experience as representatives of the state authority that regulates the food production industry in the training of the course participants. For example, one of the course experts, Lenny, used his experience in a discussion about the division of responsibility in the food production industry: "*On the other hand, the authority has to take measures if you find the products to be a health hazard. It is, however… They have to take that responsibility. But it is not the same as bringing the solutions to the problems*". This also suggests that the course experts were not likely to be neutral or indifferent towards the quality assurance content they were training the course participants in. As representatives of a state authority, they were accountable for the implementation of certain quality assurance measures and methods. Accordingly, the ways in which the course experts balanced their shifts in footings were productive in the sense that the course participants, eventually, learned the specific vocabulary and content of quality assurance. For example, Anne, one of the course participants, was eventually able to discuss the procedure of risk analysis and critical hazards in more general terms: "*We have brainstormed hazards really hard and then we will see later on if they are critical hazards or not. It has been useful to go through the process; we have found a lot of things that have to be taken care of*". A conclusion that can be drawn from this is that the course experts' constant shift in footings, based on their broad experience of the food industry, contributed to the productive ways in which the hybrid in-service training activities were carried out. These hybrid contexts of learning, where different participant roles are enacted, are not automatically generated, nor can they be incorporated into the web-based technology per se. This dimension of hybridity is, rather, the result of the participants' creativity and involvement in these activities, as well as their competence and experiences of working in production; the latter which was continuously brought into the in-service training activities.

Consequently, it was found that these constant shifts in footings were based on a participation framework of experts and non-experts, or more knowledgeable and less knowledgeable actors. A premise for instructional activities in general is that such a distribution of knowledge is necessary in order for someone to be able to learn, or, for that matter, when intending to train people in a specific content or procedure. The results imply that such distribution of entitlements and knowledge is a productive element in the in-service training situations and vital, for instance, for maintaining a thematic continuity in the discussions. And, as the results in Article 3 show, the course participants took

advantage of these opportunities to discuss "real problems" with regard to the authorities institutionally represented by the course experts. In this way, these activities are very different from regular instructional activities where the challenge is to formulate assignments, documents and establish discussions that mimic regular or authentic situations (Petraglia, 1998).

Some remarks on how to read the present study

Finally, some remarks concerning the ways in which this study should be read (and how it preferably should not be read) will be discussed. A conclusion drawn in the present study is that the hybrid, in-service training activities were productive contexts for learning, as the expected outcome of the learning activities seems to have been achieved. The discussion so far has revolved around the conditions that are found to be necessary for bringing about these productive discussions. The fruitfulness of these activities should not be taken to be a consequence of the web-based technology per se. In other words, the results should not be interpreted as indicating that if only the most recent technologies are adopted, such activities will automatically be productive and successful. Rather, the results show that there are many components that need to be in place in order for these hybrid activities to be produced: components that for the most part concern aspects other than technology. In addition, this study should not be read as a contribution to the debate on web-based educational activities being better than or inferior to traditional ways of organizing instruction in general and in further training and in-service training in particular. Rather, the study has attempted to map out some of the components of this way of organizing in-service training, which are regarded as contributing to the productive discussions that emerged.

The results demonstrate that some basic technical and communicative skills or knowledge (Simpson, 2005) were crucial for the course participants to be able to engage in and contribute to discussions in web-based settings. Pragmatically speaking, for people organizing activities of this kind, it is probably important to transform such steps, or requirements, into explicit goals at the very beginning of course activities. Another of these components concerns the close professional community that is the basis of, and in a sense was established in, these activities. These activities were carried out through elaborated discussions among course participants and between, for instance, colleagues and potential competitors, between people working in different occupational groups and

in different positions, and with representatives of the authorities and the branch organizations. In other words, the discussions that were made possible among course participants in these web-based in-service training activities can in a sense be seen to close the gap in the ways (i.e. one-to-one and one-to-many) in which distance education has historically been organized and carried out. The productive element in these discussions was that the course participants and the course experts worked in the food production industry or neighbouring fields. The group of participants, at least in this sense, was quite homogeneous, which means that it seems likely that the problem of deciding the relevant issues to be discussed is less difficult.

The results also show that the ways in which the course participants accommodated to the chat technology relied heavily on the meta-level discussions they engaged in. Pragmatically speaking, it is important to encourage and stimulate meta-level discussions between course participants, especially in activities where they have less experience of technology. This implies that a central dimension for people organizing web-based training activities to consider concerns how to bring about a conversational environment where it is legitimate to ask questions, and where participants are encouraged to display uncertainty. This is likely to be particularly significant in in-service training where people, who are otherwise considered experts in specific occupational fields, are placed into situations where they are, in some sense, considered to be less knowledgeable. Although such a dimension is not easy for course facilitators and organizers to bring about, or possible to design beforehand, it has an important function for course participants when it comes to encouraging productive discussions in the in-service training activities.

Another component concerns the external pressure placed on the food production industry and, subsequently, the organizations that are part of this industry, to accommodate to the quality assurance discourse and its regulating and documentary practices. This touches upon an additional component that makes these hybrid activities fruitful, learning the quality assurance regulations and procedures was not optional, and it was a prerequisite of subsequent work in their organizations. Other components that were important in these discussions are that the activities were carried out during working hours, which meant that some of the course participants attended the courses from their place of work.

The results show that in order to carry out these kinds of web-based in-service training activities, much is required of participants, of the instructional organization and in terms of leadership and facilitation, of the technical expertise as well as of expertise with regard the quality assurance contents to be discussed. In other words, such activities do not happen automatically; there is no straightforward or linear relation between the mediating tools as they were designed to be used and how people eventually come to use them. It is not the web-based technologies, nor the quality assurance discourse per se, that produced the kind of discussions and collaboration that were established – these should rather be regarded as the result of many components, for instance, the purpose and the consequentiality of these activities as well as how the participants carry them out. A conclusion from the present study is, thus, that when all of these components come together, the situations evidently reach a balance as a result of which productive discussions about quality assurance are established and carried out. And when this happens, the participants seem to learn.

8 SWEDISH SUMMARY

'Food for thought' – kommunikation och förändrade erfarenheter av arbete i webbaserade fortbildningsinsatser

1 Inledning

Bakgrunden till föreliggande avhandling är ett generellt intresse för förändrade villkor i arbetslivet, för fortbildningsinsatser för olika grupper och för användning av digitala teknologier i sådana sammanhang. I detta arbete relateras ett sådant intresse mer specifikt till frågor som rör fortbildning för yrkesverksamma, ett område som fått stor uppmärksamhet i ljuset av de möjligheter som den digitala tekniken ger. Detta intresse kan också ses som en konsekvens av en rad förändringar av de villkor som gäller för arbetslivet generellt och för hur arbete och lärandeinsatser organiseras. Inom industrin, som är i fokus i denna avhandling, handlar många av dessa förändringar om vad man med en samlande beteckning refererar till som ”globalisering” - vilken bland annat har lett till försök att reglera och kontrollera marknader och organisationer. Inom livsmedelsindustrin, som är den konkreta kontexten för avhandlingens empiriska studier, handlar det framförallt om ökade krav på kvalitetskontroll i produktion och hantering av livsmedel. På europeisk nivå har en mängd kvalitetsstandarder tagits fram som livsmedelsindustrin måste förhålla sig till. Detta har i sin tur inneburit ett ökat behov av att fortbilda personalen inom denna industri i sådana frågor.

I utbildningssatsningar generellt och i fortbildningsinsatser mer specifikt ställs det också höga förväntningar på vad digital teknologi kan åstadkomma. Sådana teknologier är speciellt intressanta i fortbildningssammanhang, eftersom satsningarna riktar sig till yrkesverksamma som annars inte har möjlighet eller tid att delta i kompetensutveckling. Avhandlings fokus är dock inte inriktad mot att utvärdera huruvida dessa beskrivningar av

vad teknologin kan åstadkomma stämmer. Forskningsintresset handlar snarare om att studera hur dessa teknologier används i fortbildningssituationer där kursdeltagarna utgörs av yrkesverksamma inom livsmedelsindustrin och där de förväntas lära sig något om kvalitetsarbete och livsmedelssäkerhet. Avhandlingen består av en sammanfattning med 9 kapitel och 4 empiriska artiklar. Artiklarna är som följer:

1) Nilsen, M. & Säljö, R. (manuscript). From a trying environment to a familiar tool: mediation and appropriation in the context of using a web-based educational platform. To be published in R. Säljö (Ed.), *Information and communication technologies and the transformation of learning practices.*
2) Nilsen, M. & Mäkitalo, Å. (in press). Towards a conversational culture? How participants establish strategies for co-ordinating chat postings in the context of in-service training. *Discourse Studies.*
3) Nilsen, M. (submitted). Negotiating the context of online in-service training: 'expert' and 'non-expert' footings.
4) Nilsen, M. (in preparation). Learning the discourse of quality assurance: a case of learning through writing in online in-service training.

2 Bakgrund: distansutbildningens historia och tidigare forskning

Som bakgrund för avhandlingen har det varit viktigt att ge inblick i en mer än 150 år lång tradition (och därmed en rad försök) att organisera distansutbildning för vuxna. Många forskare har beskrivit denna historiska utveckling, såsom Harper m.fl., 2004; Moore och Kearsley, 2005; Morabito, 1999; Nipper, 1989. I den relativt korta historiska beskrivning som ges i avhandlingen har jag valt att lyfta fram den typ av pedagogiska aktiviteter som har organiserats på distans och som kännetecknar olika perioder. I avhandlingen startar den historiska beskrivningen i slutet av 1800-talet med *korrespondensstudier* eller ”en-till-en” som jag valt att karaktärisera de pedagogiska aktiviteterna vid denna tid. Kortfattat kan denna typ av distansstudier beskrivas som brevväxling mellan en lärare och en student där man behandlade textbaserat kursmaterial av olika slag. Vid denna tidpunkt upprättades det en mängd korrespondensskolor runt om i världen, i Sverige i form av Hermods. Allt eftersom tiden gick framkom det önskemål om att utveckla undervisningsmetoder för utbildning på distans som kompletterade korrespondensmodellen. Grundandet av *Open University* i Storbritannien i slutet av 1960-talet kan ses som ett sådant försök av stor

betydelse. Open University modellen stod framförallt för pedagogiska aktiviteter där radio, television, och video i tillägg till textbaserat kursmaterial används i distansundervisningen. Denna modell visade sig också vara framgångsrik när det gällde att nå fler studenter, och därför benämns dessa aktiviteter ”en-till-många”. Under 1970- och 1980-talet började på allvar utvecklingen av olika telekommunikationsteknologier. Till en början användes dessa teknologier dock sällan som inslag i distansutbildning. I och med Internet däremot, förändrades många av förutsättningarna för och sätten att organisera utbildning på distans. I dag organiseras mycket av distansutbildningen genom såkallade plattformar eller virtuella lärmiljöer. De pedagogiska aktiviteterna börjar också få fler inslag av diskussioner mellan kursdeltagare – vilket kan ses som ett nytt inslag i distansutbildningens historia. Avhandlingens fokus är dock inte enbart riktat mot den potential denna typ av miljöer kan ha för fortbildning – intresset riktas mot de aktiviteter kursdeltagarna ägnar sig åt när de fortbildar sig med hjälp av webbaserade teknologier för att lära sig ett specifikt innehåll.

Tidigare forskning

Avhandlingen tar sin utgångspunkt i tidigare forskning inom tre områden. Det första forskningsområdet utgörs av empiriska studier som i likhet med denna studie har ett intresse för webbaserad fortbildning och kompetensutveckling för yrkesverksamma. I många hänseenden är föreliggande avhandling ett komplement till denna typ av studier. Det mer specifika intresset för lärande och hur lärande åstadkoms i dessa miljöer, och ett mer ingående intresse för kommunikationen i chatt, har gjort att jag också inspirerats av andra forskningsområden. Teoretiskt, men framförallt metodologiskt, tar därför avhandlingen sin tydligaste utgångspunkt i den empiriska forskning som bedrivs inom ramen för Computer Supported Collaborative Learning (CSCL) och Computer-Mediated Discourse (CMD). Det är framförallt studier med etnometodologiska och konversationsanalytiska förhållningssätt som har inspirerat de analyser som gjorts av det interaktiva arbete kursdeltagarna ägnar sig åt för att etablera och upprätthålla webbaserade fortbildningsaktiviteter. Några av de studier som jag valt att placera under epitetet CMD riktar däremot en viss kritik mot studier som min där man, som de uttrycker det, endast använder sig av chattloggar som empiriskt material (Garcia & Jacobs, 1999; Markman, 2006). I en kortare metodologisk diskussion försöker jag därför reda ut några skillnader, vilka jag menar handlar om olika forskningsfokus i studiet av chattinteraktion.

Syfte och analytiska intressen

Det övergripande forskningsintresset i avhandlingen är att bidra till en förståelse av den typ av kommunikation och agens som utvecklas i webbaserade miljöer, och hur sådana miljöer utgör arenor för kommunikativ socialisation och lärande för yrkesverksamma inom livsmedelsindustrin. Det jag studerat är hur chatt används i fortbildning där kursdeltagarna förväntas lära sig något om kvalitetssäkringsmetoder och procedurer. De mer specifika analytiska intressena fokuseras i fyra empiriska studier som är representerade i de fyra artiklar jag redan nämnt, och finns redovisade under sammanfattningarna senare i kapitlet. De fyra empiriska studierna rapporterar detaljerade analyser av de kommunikativa mönster och former för deltagande som kursdeltagarna måste etablera i chattdiskussionerna, och hur deltagarna tar till sig och lär sig ett specifikt innehåll som har med livsmedelsproduktion, livsmedelssäkerhet och liknande att göra.

3 Teoretiska utgångspunkter

Avhandlingen tar sin teoretiska utgångspunkt i ett sociokulturellt perspektiv på kommunikation och lärande (Wertsch, 1998; Säljö, 2005). En viktig utgångspunkt i detta perspektiv är att när vi träder in och deltar i sociala praktiker bekantar vi oss med och lär oss att bemästra diskurser, perspektiv, färdigheter och kunskaper som anses relevanta och giltiga i dessa specifika praktiker. I teoretiska termer beskrivs detta som en approprieringsprocess genom vilken deltagarna bekantar sig med medierade redskap (begrepp, procedurer, teknologier) av olika slag för specifika ändamål i sociala situationer. Med appropriering menas en gradvis förändring av vårt sätt att delta i specifika aktiviteter och utgör därigenom en dimension som alltid är närvarande i mänskliga situationer.

De aktiviteter som studerats i denna avhandling handlar om appropriering eller lärande i fyra dimensioner som behandlas i de fyra artiklarna. En första dimension handlar om hur kursdeltagarna approprierar den teknologiska miljön som de agerar i under fortbildningen. Teoretiskt sett diskuteras detta i termer av perifert och centralt deltagande (Lave & Wenger, 1998) och guidat deltagande (Rogoff, 1990). En andra dimension som rör lärande handlar om kursdeltagarnas etablerande och appropriering av de kommunikativa regler och sätt att koordinera sig som utvecklas i chatten. Detta diskuteras teoretiskt i termer av intersubjektivitet (Rommetveit, 1974, 1992) och hur deltagarna etablerar så kallade intersubjektiva kontrakt (Linell, 1998; Rogoff, 1990) som är nödvändiga för att aktiviteterna ska fortgå. En utgångspunkt i avhandlingen är att denna intersubjektivitet etableras på andra sätt i webbaserade miljöer än i vardagliga samtal ansikte mot ansikte.

Detta innebär att de sätt på vilka vi organiserar våra kommunikativa bidrag, hur vi förstår sekventialitet samt hur vi adresserar varandra i en chatt, fungerar på andra sätt än vid muntlig kommunikation ansikte mot ansikte. De grundläggande normer som skall gälla måste därmed etableras av deltagarna själva (Garcia & Jacobs, 1999; Greenfield & Subrahmanyam, 2003: Herring 1999; Markman, 2006; Simpson, 2005; Panyametheekul & Herring, 2003; Zitzen & Stein, 2004).

En tredje dimension som rör lärande i de webbaserade fortbildningskurserna handlar om kursdeltagarnas appropriering av sätt att förhandla om och rama in de aktiviteter de deltar i. Teoretiskt diskuteras detta i termer av *inramning* och *shifts in footing* (Goffman, 1974). En relaterad och viktig teoretisk utgångspunkt i sammanhanget är de *participant frameworks* som deltagarna etablerar i de webbaserade aktiviteterna. En fjärde och sista dimension som rör lärande handlar om deltagarnas appropriering av det specifika innehåll som de förväntas tillgodogöra sig i fortbildningskurserna. Teoretiskt diskuteras detta med stöd bland annat från Schön (1983, 1987) i termer av, för att parafrasera Schön, reflektion-nästan-i-praktiken, eftersom de med hjälp av sina insikter och nyvunna kunskaper ska evaluera nuvarande arbetsprocesser och erfarenheter gentemot normativa och generella principer som rör kvalitetssäkring (regler och metoder). I teoretiska termer kan detta också förstås som deltagarnas appropriering av, eller socialisering in i, en diskursiv praktik där de ska lära sig läsa regler och förordningar men också diskutera dessa i skrift i chatten. Då text utgör medium för både innehåll och form i denna process kan appropriering här förstås som att deltagarna skriver sig till en förändrad syn på livsmedelsproduktion generellt och lär sig analysera och disciplinera sina förhållningssätt i det egna produktionsarbetet.

4 Studiens kontext

Avhandlingen är skriven inom ramen för en av KK-stiftelsens satsningar rörande kompetensutveckling inom industrin. Som del av denna satsning etablerades ett antal expertkompetensprogram inom en rad olika industrigrenar. Givet mitt intresse för distansutbildning, kommunikation och digital teknologi valde jag att studera de kompetensutvecklingsinsatser som ägt rum inom livsmedelsindustrin då dessa var de enda som var webbaserade. Den svenska livsmedelindustrin kan, som redan nämnts, beskrivas som en industri som genomgått och fortfarande genomgår stora förändringar. En av dessa förändringar gäller skärpta krav på kvalitet och kvalitetsgranskning av produktion och hantering av livsmedel. De kurser som jag studerat kan ses som konkreta sätt att

svara upp mot sådana krav på förändringar och det ansvar som livsmedelsindustrin har att införliva nya regler och procedurer i sina organisationer. Detta innebar bland annat en betydande satsning på fortbildning av personal som arbetar inom denna industri. Satsningen är också intressant mot bakgrund av att livsmedelsindustrin traditionellt sett är en av de industrigrenar som har låg utbildningsnivå.

Kurserna som studerats har att göra med sådan kvalitetsskärpning på olika sätt. Några av kurserna rör mer direkt de kvalitetssäkringsprocedurer och metoder som ska införlivas i livsmedelsindustrin, andra kurser handlar mer om de bestämmelser som reglerar frågan om kvalitetssäkring. Sammanlagt har chattsessioner från tio kurser analyserats. Kurserna är upplagda så att de startar med en fysisk introduktion, sedan sker all interaktion via en välkänd webbportal, WebCT. Här finns diskussionsforum och chatt som huvudsakliga kommunikationskanaler. I de kurser jag studerat har framförallt chatt använts för innehållsliga diskussioner. I de fem veckor långa kurserna anordnar kursexperterna mellan 1 och 4 chatt sessioner. Deltagarna undervisas annars genom webblektioner. Kurserna avslutas också med ett fysiskt möte. Deltagarna är anställda hos stora eller medelstora livsmedelsproducerande företag, medan några har egna företag och ytterligare några är studenter inom detta fält. Kursexperterna i de kurser jag studerat arbetade vid tiden för studien på den myndighet som reglerar livsmedelsindustrin. Mellan tre och tio deltagare deltog i de olika chattsessionerna.

5 Forskningsmetod

Det empiriska materialet i avhandlingen består, som redan nämnts, av chattloggar, vilket innebär att materialet har gjorts tillgängligt för mig som forskare efter det att chattsessionerna genomförts. Jag har således inte varit närvarande när chattsessionerna ägde rum– utan materialet har jag hämtat från diskussionsfora i WebCT. Genom att ett antal chattsessioner arrangeras i varje kurs har jag haft möjlighet att följa kursdeltagarnas diskussioner över en längre tidsperiod. Deltagarna informerades vid kursstart om att materialet skulle användas som del av ett avhandlingsarbete. Alla inlägg har anonymiserats både vad gäller namn och företag/organisation.

De chatloggar som laddades ner från WebCT har, av läsbarhetsskäl, representerats på lite olika sätt i de fyra artiklarna. Jag har dock valt att avstå från att tala om transkriptioner i

arbetet med materialet. I stället refererar jag till data som de loggar som är tillgängliga via WebCT, och jag refererar till excerpt som de olika sätt som använts för att presentera data i de fyra artiklarna. Alla excerpt innehåller inlägg i den form de loggades, vilket innebär att jag behållit grammatiska fel, förkortningar etc. Däremot har jag valt att lägga till tiden när inlägget loggades på servern samt nummer på inläggen. Det senare har jag valt att addera för att öka läsbarheten av analyserna. Tid har använts som resurs i det analytiska arbetet, dels när kursdeltagarna själva gjort tid relevant i sina inlägg, dels för att förstå till exempel den sekventiella ordningen av inlägg.

I metodkapitlet diskuteras också problem kring översättning av excerpt. Svårigheten med detta har dels varit att hitta de specifika betydelserna av en mängd begrepp och uttryck inom livsmedelsindustrin, dels att synliggöra små nyanser så som när deltagarna blandar skriftliga och talspråkliga uttrycksformer i sina inlägg.

Som påpekats presenteras data på olika sätt i de fyra artiklarna. Generellt kan man säga att i artikel 1 och 2 liknar excerpten varandra genom att där tas alla inlägg med i respektive excerpt, medan i artiklarna 3 och 4 har jag valt att följa de innehållsliga diskussionerna mer i detalj (olika diskussionstrådar), vilket innebär att många inlägg har utelämnats från excerpten.

6 Sammanfattning av de fyra artiklarna

Vid en övergripande genomgång av materialet i sin helhet, med fokus på deltagarnas ”medierade handlande” som utgjorde analysenheten, observerades att deltagandet i miljön förändrades över tid. Vid närmare studier av materialet kunde fyra analytiskt åtskiljbara approprieringsprocesser observeras. De fyra artiklarna är upplagda för att analysera dessa olika dimensioner av vad deltagarna måste lära sig för att kunna delta i dessa webbaserade fortbildningsaktiviteter. I Artikel 1[25] är det övergripande intresset att analysera hur relativt ovana användare bekantar sig med en webbaserad miljö som arena för diskussion och lärande. De empiriska excerpt som används i själva artikeln är från början, mitten och

[25] Nilsen, M. & Säljö, R. (manuscript). From a trying environment to a familiar tool: mediation and appropriation in the context of using a web-based educational platform. To be published in R. Säljö (Ed.), *Information and communication technologies and the transformation of learning practices*.

slutet av en och samma chatt session. Syftet med detta sätt att studera och selektera data var att synliggöra hur kursdeltagarnas sätt att relatera till och agera i miljön förändrades över tid. Fynden visar att deltagarna approprierade de teknologiska verktyg som miljön erbjöd genom att de först deltog perifert och på ett prövande sätt – till att senare använda teknologin på ett mer aktivt sätt – för sina egna syften och som förändringsagenter i miljön. I början fokuserade deltagarna på att lära sig själva teknologin genom att prova olika funktioner och testa sätt att arbeta. Resultaten från den första studien visar med andra ord att deltagarna förändras, när de bekantar sig med miljön. Dels förändras deras sätt att kommunicera om teknologin men också deras sätt att förhålla sig till den och agera i miljön förändras. Studien visar att kursdeltagarna utforskade vad teknologin hade att erbjuda och använde dessa möjligheter för de aktiviteter och handlingar de behövde delta i. Dessa behov handlade inte bara om de sätt att agera som krävdes i miljön. Den typ av frågor som de kunde ställa om teknologin och dess funktionalitet förändrades också. På så sätt visade resultaten att kursdeltagarna utvecklade en egen agens; de kommenterade till exempel vilka funktioner de skulle vilja se i den teknologiska miljön. Ett sätt att beskriva denna förändring är att teknologin blev transparent för deltagarna (vilket var nödvändigt för att de skulle kunna fortsätta den fortbildningsaktivitet de deltog i) och att fokus, med avseende på teknologin, inriktades på möjliga förändringar av miljön. Vad som framträdde tydligt var att kursdeltagarna inte verkade ha några större svårigheter att koordinera chattdiskussionerna – en observation som var en aning förvånande, både med tanke på tidigare forskning och med tanke på att de flesta inte hade någon större erfarenhet av denna typ av teknologi. Hur kommunikationen koordinerades i chatt är det analytiska temat för Artikel 2.

I Artikel 2[26] är intresset att studera de specifika kommunikativa villkor som råder i en chatt. Mer specifikt analyseras hur kursdeltagarna hanterar kontinuitet och diskontinuitet i chattdiskussionerna, vilka kommunikativa strategier de utvecklar när diskontinuitet hanteras samt om det etableras några specifika normer eller lokala samtalskulturer i diskussionerna. De empiriska excerpt som valts ut för att rapportera resultaten i själva artikeln är hämtade från en chattsession. Syftet med detta val är att kunna visa en längre sekvens av interaktion. Excerpten är också utvalda för att visa instanser dels där deltagarnas interaktion koordineras smidigt, dels där kursdeltagarna får problem med att

[26] Nilsen, M. & Mäkitalo, Å. (in press). Towards a conversational culture? How participants establish strategies for co-ordinating chat postings in the context of in-service training. *Discourse Studies*.

koordinera interaktionen men där de så småningom kommer förbi sådana problem. Resultatet av den empiriska studien visar att kursdeltagarna utvecklade speciellt två kommunikativa strategier för att koordinera chattinteraktionen, vilket i sin tur gjorde att de kunde fortsätta med den aktivitet de höll på med. Den första strategin de utvecklade för att koordinera turer var att rikta sina inlägg till specifika personer genom att använda deras namn, vilket i forskningslitteraturen kallas för addressivitet (Werry, 1996) eller *cross turn reference* (Herring, 1999). Den andra strategin de utvecklade för att koordinera turer i chatten var att omformulera eller återanvända delar av det inlägg som man svarar på. Resultaten från denna studie visar tydligt att dessa kommunikativa strategier var produktiva i den meningen att man klarade av att koordinera vilka inlägg som var menade för vem. Analysen visar också att deltagarna etablerade vissa normer för hur de skulle kommunicera i chatten. Inlägg som inte var riktade till någon speciell person, det vill säga när ingen av de två strategierna användes, uppfattades per automatik som riktade till kursexperterna. Detta pekar mot en samtalskultur där kursdeltagarna ställer frågor och inväntar sina turer medan kursexperterna tar sig an en fråga åt gången i kronologisk ordning. Med utgångspunkt från de resultat som framkom i artiklarna 1 och 2 vändes det analytiska fokus mot mer innehållsliga frågor i de två sista artiklarna.

I artikel 3[27] är intresset att studera hur deltagarna hanterade den komplexa eller hybrida aktivitet som webbaserad fortbildning kan beskrivas som. Det analytiska intresset rör de kontextualiseringspraktiker som deltagarna etablerade i dessa situationer. De mer specifika analytiska frågorna är: Hur ramar deltagarna in aktiviteten? Ser de den som en eller flera olika kommunikativa aktiviteter? Vilka former av deltagande (*participant frameworks)* etableras av deltagarna? Upprätthåller deltagarna situationsdefinitionen i interaktionen i längre sekvenser (mellan så kallade *shifts in footing)* eller etableras en hybrid aktivitet där situationsdefinitionen växlar? De empiriska excerpten i artikel 3 är från en 9-veckors kurs och är inte fullständiga utdrag utan redigerade i enlighet med det innehållsliga intresset i artikel 3. Det vill säga de följer såkallade diskussionstrådar. Excerpten till artikeln valdes ut med utgångspunkt i att de visade instanser där olika former av deltagande som experter och icke-experter etablerade och instanser där dessa former för deltagande utmanades. Resultatet visar att deltagarna ramade in aktiviteten både som en utbildningssituation och som en aktivitet relaterad till deras arbete. I vissa sekvenser var deltagarna till exempel mer orienterade mot att aktiviteten skulle evalueras (utbildningssituation), medan vid andra instanser etablerades till exempel diskussioner av ansvarsfördelningen mellan

[27] Nilsen, M. (submitted). Negotiating the context of online in-service training: 'expert' and 'non-expert' footings.

deltagarna som företrädare för myndighet och branschorganisationer. På detta sätt konstituerade aktiviteterna en hybrid verksamhet där deltagarna kontinuerligt växlade *footings*, till den grad att växlingarna var svåra att hålla isär analytiskt. Resultatet visar också att deltagarnas etablerade och upprätthållande av former för deltagande som experter som kan mer och icke-experter som kan mindre användes på produktiva sätt med avseende på målen för fortbildningsinsatsen. Genomgående i de aktiviteter som jag har studerat positionerades kursexperten i den förstnämnda rollen och kursdeltagarna i den senare. Alla försök att utmana denna inramning för aktiviteterna blev inte bemötta - varken av de andra kursdeltagarna eller av kursexperterna.

I artikel 4[28] är intresset att studera om och hur deltagarna diskuterade och relaterade sina egna arbetserfarenheter till det kvalitetssäkringsinnehåll de förväntades lära sig i de webbaserade fortbildningskurserna. De mer specifika analytiska frågorna som ställdes i artikel 4 är: Pendlar kursdeltagarna mellan å ena sidan diskussioner kring generella formler och procedurer, och å andra sidan konkreta exempel från de egna verksamheterna? Gör deras diskussioner kring kvalitetssäkring att de utvecklar ett annat sätt att se på sina nuvarande arbetsprocesser? Hur formulerar de i så fall ett kritiskt förhållningssätt till sitt nuvarande sätt att arbeta? De empiriska excerpten är hämtade från chattsessioner från två kurser. Excerpten som selekterats och presenteras i själva artikeln är valda på grundlag av att diskussionerna i två av dem tar sin utgångspunkt i konkreta exempel som så småningom kommer att bli diskussioner som rör principiella frågor om kvalitetssäkring, och i ytterligare två är utgångspunkten den motsatta; diskussionerna börjar i principiella metoder där man tar in konkreta exempel som resurser för att förstå dessa principer. Resultaten från denna studie visar tydligt att deltagarna är i färd med att själva ta över frågan om kvalitetssäkring. Detta blir tydligt när de på andra och förändrade sätt skriver om sina egna exempel. De anammar de nya sätt att beskriva sina arbeten på som avses med målen för kurserna. För att de kritiskt skulle kunna granska sina egna arbetsprocesser pendlar de mellan principiella diskussioner och konkreta exempel. Resultatet visar också att kursexperterna utgjorde en oerhört viktig resurs i detta arbete, genom att de använde kursdeltagarnas konkreta exempel för att introducera termer och resonemang som är mer gångbara i en diskussion kring kvalitetssäkring. Detta pekar mot en specifik lärandesituation som på flera sätt skiljer sig från traditionell undervisning. Kursdeltagarnas exempel har inte enbart status som exempel; kursdeltagarna är ansvariga för de problem

[28] Nilsen, M. (in preparation). Learning the discourse of quality assurance: a case of learning through writing in online in-service training.

som dessa exempel tematiserar. Vad som också gör att deltagarna måste ha en annan relation till innehållet som diskuteras är att de så småningom förväntas introducera och ansvara för det nya förhållningssättet, de nya metoderna och principerna, i sina egna verksamheter. Detta förväntas de inte bara göra muntligt, utan också i skrift. Text som medium för både form och innehåll i fortbildningsprocessen kan beskrivas som en för dem ny diskursiv arena, som kursdeltagarna bokstavligen ”skriver in sig i”. Skrivandet utgör därmed en viktig komponent i den förändrade förståelsen av och förhållningssätt till det egna och det egna företagets produktionsarbete.

7 Diskussion och avslutande kommentarer

Det har betonats i avhandlingen att forskningsintresset har rört både mer generella aspekter, såsom internationella förändringar i livsmedelsindustrin och de konkreta insatser som följer på sådana förändringar. Detta innebär att den fortbildningssatsning som studerats, och de kurser som arrangerats för att tillmötesgå dessa förändringar, utgör konkreta exempel på aktiviteter som genomförs som en konsekvens av större samhälleliga förändringar av villkoren för produktion och produktionsarbete. Avhandlingen bidrar till att dokumentera några observationer av den typ av aktiviteter som arrangeras som distansutbildning (för vuxna) i början av 2000-talet. En slutsats är att detta sätt att organisera fortbildning på distans har klara utvecklingsmöjligheter. Detta grundar sig på resultaten av studierna, som visar att kursdeltagarna var engagerade i aktiviteterna och utförde dem på produktivt sätt. Vad är det då som gör dessa diskussioner eller fortbildningsaktiviteter produktiva? En av de aspekter som bidrar till det produktiva i dessa aktiviteter är att de utgör hybrida kontexter för lärande. Denna hybriditet tar sig flera uttryck i dessa aktiviteter. De är dels hybrida i meningen att de ligger mellan (traditionell) utbildning å ena sidan och arbete å den andra. Denna typ av hybriditet är svår att få till stånd i utbildning mer generellt. Att det lyckades här beror bland annat på att deltagarna hade en fond av erfarenheter av produktion och produktionsarbete som utgjorde viktiga resurser i diskussionerna om kvalitetssäkring. Kursexperterna använde till exempel sina erfarenheter som myndighetspersoner som en fond mot vilken en diskussion kring ansvarsfördelningen mellan myndigheter och branschrepresentanter kunde föras. Detta är alltså fortbildning i meningen att aktiviteterna är grundade både i deltagarnas erfarenheter av produktionsarbete, och i det kvalitetssäkringsinnehåll som ska läras. Detta pekar på ytterligare en aspekt av hybriditet i dessa aktiviteter; kursdeltagarna lär sig ”teori i praxis”.

Vad som också bidrog till att göra diskussionerna produktiva var att det stod något på spel för kursdeltagarna; de förväntandes så småningom om vara ansvariga för att introducera och upprätthålla denna typ av diskursivt arbete och diskussion på sina egna arbetsplatser. Denna form av hybriditet i deltagarstrukturen är också förmodligen en av de bidragande orsakerna till att väldigt få hoppar av kurserna. På så sätt kan dessa aktiviteter ses som exempel där distinktionen mellan lärande i utbildning och lärande i arbete suddas ut. Vad som också var intressant var att det de lärde sig inte enbart kan anses vara knutet till deras arbete – många av de färdigheter de tillägnade sig kan beskrivas i termer av livsvitt lärande[29]. Dels lärde de sig att hantera en vanligt förekommande teknologi och att kommunicera via skrift under de specifika villkor som erbjuds i sådana miljöer, vilket ses som viktiga färdigheter i ett komplext teknologiskt samhälle. Dels var materialet och innehållet de arbetade med i kurserna formulerade på sådant sätt att de kunde appliceras på vilken livsmedelskontext som helst. Resultatet visar att den vokabulär och de procedurer de lärde sig var generiska i meningen att de lärde sig diskutera till exempel relevanta kriterier i relation till sin egen arbetskontext men också i relation till andra kursdeltagares verksamheter. Detta innebar att kursdeltagarna tillägnade sig ett generiskt språkbruk som är produktivt just för att diskutera arbetsprocesser på den nivå som gäller för dessa nya internationella system och procedurer. På så vis kan deltagarnas kunskaper användas för att överbrygga (Lave, 1988) klyftan mellan de reglerande praktikerna inom industrin och det egna företagets konkreta produktionsprocesser.

En ytterligare intressant aspekt av dessa fortbildningsaktiviteter var *hur* och *vad* kursdeltagarna lärde sig. Resultaten visar att kursdeltagarna så småningom lärde sig hur de skulle agera i den webbaserade miljön genom att de tillägnade sig en rad kommunikativa och teknologiska färdigheter. Många av dessa färdigheter kan ses på som generiska in meningen att de grundar sig i ett nytt sätt att kommunicera på, och de utgör därigenom en del av vad man kan benämna digital kompetens. Kursdeltagarna lärde sig också att delta i diskussionerna och använda dessa former för deltagande på olika sätt. På så vis kunde de betrakta industrin från olika perspektiv. På många sätt utgör dessa färdigheter och kunskaper steg mot vad de slutligen lär sig om kvalitetssäkring i livsmedelsindustrin. Vad de lär sig innehållsligt har också, som redan nämnts, ett drag av livsvitt lärande över sig. De tillägnade sig bland annat en kvalitetssäkringsvokabulär som de kunde använda för att diskutera fall från helt andra arbetsplatser än sina egna. Genom att tillägna sig ett sådant

[29] Huruvida de sedan tar dessa färdigheter i anspråk i andra sammanhang har dock inte studerats i denna avhandling

generiskt språkbruk har de möjligheter att utvecklas och diskutera med myndigheter, branschorganisationer, kollegor och konkurrenter på ett mer kvalificerat och kritiskt sätt. Sådana färdigheter och kunskaper möjliggör också ett mer kvalificerat bemötande av den kritik som ibland förs fram i media vad gäller kvalitet och processer i livsmedelsbranschen. På så sätt blir de också potentiellt mindre knutna till sina egna verksamheter, och de lär sig ett annat sätt att betrakta industrin. De blir på så sätt förberedda att så småningom anta sina nya organisatoriska roller som ”discourse technologists” (Fairclough, 1996, 2002).

En intressant paradox i dessa hybrida kontexter för lärande är att hur kursdeltagarna lär sig till en stor del blir vad de lär sig, vilket innebär att hur och vad blir komplementära element. När det gäller de generella färdigheter de lär sig i relation till kursinnehållet, det vill säga kvalitetssäkring, så handlar det om praktiker som bygger på användning av procedurer, vilket är vanligt innehåll för lärande i sammanhang som är metodorienterade. Uttryckt på annat sätt, hur de lär sig gå tillväga när de exempelvis gör en riskbedömning, blir också vad de lär och vad de så småningom blir ansvariga för i sina respektive organisationer. Denna sammansmältning av hur och vad visar sig också i de sätt på vilka de lärde sig växla mellan olika roller i diskussionerna. Å ena sidan handlar dessa växlingar om hur de gick tillväga för att lära sig i dessa aktiviteter, å andra sidan handlar de om centrala delar av kursinnehållet, det vill säga ansvarsfördelningen mellan myndigheter och branschorganisationer. På så sätt kan hur de lärde sig beskrivas som en fråga om att antecipera vad de förväntades och faktiskt lärde sig. Dessa växlingar i deltagandet mellan olika roller eller positioner i diskussionerna är ytterligare en dimension av hybriditet i dessa aktiviteter. Hur deltagarna gick till väga för att kunna delta i dessa aktiviteter blir också en del av vad de lärde sig, det vill säga de lärde sig en uppsättning kommunikativa och teknologiska färdigheter som är nödvändiga för att genomföra utbildning på webben.

Som resultatet visar, så bokstavligen skrev sig kursdeltagarna till en förändrad förståelse av sitt eget produktionsarbete i dessa fortbildningsaktiviteter. Dessa aktiviteter tar sin utgångspunkt i en kvalitetssäkringsdiskurs som till stora delar är baserad på texter och dokument av olika slag. På så vis kan fortbildningsaktiviteterna beskrivas som en arena for att socialisera kursdeltagarna in i ett dokumentationssamhälle. Genom nya regler och procedurer som bestäms på europeisk nivå uppkommer en rad textbaserade praktiker som människor som arbetar inom livsmedelsindustrin måste förstå och ta hänsyn till i sitt dagliga arbete. Detta innebär att de måste lära sig läsa lagstiftningstexter, beskrivningar av procedurer och metoder, på så sätt att de kan föra in de institutionella kraven som

kommer med dessa dokument i sina egna arbeten. Fortbildningsaktiviteterna är också textbaserade i meningen att diskussionerna genomförs via skriftliga meddelanden i en chatt. På så sätt blir den skriftliga formen för diskussionerna både innehåll och form i det som kursdeltagarna förväntades lära sig i dessa aktiviteter.

Även om kursdeltagarna så småningom förväntas ta sig an rollen som ”discourse technologists” genom att föra in och upprätthålla en kvalitetssäkringsdiskurs i sina respektive organisationer, så var det kursexperterna som till stor del agerade ”discourse technologists” under själva fortbildningsaktiviteterna. Mot bakgrund av sina erfarenheter som myndighetspersoner, och därigenom med en specifik kompetens om frågor kring kvalitetssäkringsfrågor, tog de sig an rollen att introducera och träna kursdeltagarna i denna diskurs. De balanserade mellan att agera myndighetspersoner och att agera som kursledare; den sistnämnda rollen innebar ett ansvar för att utvärdera studenternas deltagande i kurserna. Kursexperterna bidrog med produktiva svar på kursdeltagarnas frågor samt använde sig av deras uppgifter för att peka på goda och sämre exempel av exempelvis en riskbedömning. Det sistnämnda genererade diskussioner kursdeltagarna emellan. På så sätt utgjorde kursexperternas ständiga växlingar av roller, som hade sin grund i bred yrkeskompetens, produktiva element i dessa hybrida fortbildningsaktiviteter. Resultatet visar att den inramning för deltagande som etablerades i dessa aktiviteter var den mellan experter (mer kunniga) och icke-experter (mindre kunniga). Denna asymmetriska distribution av rättigheter och kunskap i diskussionerna användes produktivt i detta sammanhang, bland annat för att upprätthålla en tematisk kontinuitet. Samtidigt tog kursdeltagarna tillfället i akt att diskutera frågor eller problem mellan myndighet och bransch. På så sätt skiljer sig dessa aktiviteter från andra utbildningsinsatser där utmaningen är att utforma uppgifter och få tillstånd diskussioner som påminner om autentiska situationer (Petraglia, 1998).

Avslutningsvis diskuteras några punkter kring hur denna avhandling ska läsas. De produktiva aspekterna av de webbaserade fortbildningsaktiviteterna ska inte tas som konsekvenser av den webbaserade teknologin i sig. I stället bidrar ett antal olika komponenter till att dessa etableras. Avhandlingen ska inte heller läsas som ett inlägg i debatten kring webbaserad utbildning som bättre eller sämre i jämförelse med traditionell utbildning. Några av de komponenter som finns i dessa aktiviteter och som bidrar till produktiviteten handlar bland annat om: den närhet till yrkesverksammas praktik (livsmedelsindustrin) som diskussionerna tar sin utgångspunkt i, de diskussioner mellan kursdeltagarna som etablerades, de metadiskussioner som etablerades där det var legitimt

att ställa frågor och visa osäkerhet, det externa trycket på industrin och därigenom det innehåll som diskuterades, och de förväntningar som fanns på kursdeltagarna när de återvände till sina respektive verksamheter. Det är dock viktigt att komma ihåg att det inte är dessa komponenter i sig som åstadkommer produktiva diskussioner – det låter sig aldrig göras utan deltagarnas bidrag till aktiviteten. En konklusion från denna avhandling är att när dessa komponenter sammanfaller får aktiviteterna en balans där produktiva diskussioner om kvalitetssäkring genomförs och där kursdeltagarna tillägnar sig en rad yrkesspecifika och men också mer generella kunskaper. Slutsatsen är att detta sätt att organisera fortbildning har klara utvecklingsmöjligheter.

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Appendixes

Appendix A

	Duration	*Postings*
Bioactive Substances		
Session 1	0.21.49	45
Session 2	0.35.06	67
Session 3	0.24.34	36
Session 4	0.33.36	40
Course total	1.55.05	188
HACCP1-2		
Session 1	1.24.05	83
Session 2	1.43.37	152
Session 3	2.00.42	124
Session 4	1.24.44	98
Session 5	1.20.25	114
Session 6	1.27.51	143
Session 7	1.26.22	96
Session 8	1.25.24	67
Session 9	1.00.12	73
Course total	13.13.22	950
HACCP3		
Session 1	1.02.37	33
Session 2	1.07.58	37
Session 3	0.19.49	13
Course total	2.30.24	83
Consuming and Marketing		
Session 1	0.26.53	40
Session 2	0.30.11	21
Session 3	0.25.07	27
Course total	1.22.11	88
Legislation		
Session 1	1.16.32	134
Session 2	0.32.04	44
Session 3	0.40.17	53
Course total	2.28.53	231
Product Development Method		
Session 1	2.08.11	88
Session 2	2.00.28	288

	Duration	*Postings*
Session 3	1.50.57	136
Session 4	1.50.04	185
Session 5	1.54.47	243
Course total	9.44.27	940
Risk Analysis		
Session 1	0.56.48	79
Session 2	0.54.00	43
Course total	1.50.48	122
Microbiology		
Session 1	1.27.37	63
HACCP1-2		
Session 1	1.24.26	136
HACCP3		
Session 1	1.21.55	65
TOTAL	**37.19.08**	**2866**

Appendix B

Original Swedish data from chapter 5

Example of data from chat log file

Message no. 110

Author: Jonas (Lagstiftningv1004)

Date: Friday, March 12, 2004 11:05

[3/10/2004 12:54:49 PM] [Lagstiftning] [Peter => All] "Hej Emma, Kul att du är med"

[3/10/2004 12:55:08 PM] [Lagstiftning] [Anna => All] "och så sitter vi tysta som små möss allihop och väntar på att någon annan ska börja prata eller?"

[3/10/2004 12:55:22 PM] [Lagstiftning] [Emma => All] "Hej! Tack för det!"

[3/10/2004 12:56:52 PM] [Lagstiftning] [Anna => All] "Ta det på rätt sätt... Jag menade inget illa!! Det kändes bara så dumt och sr att vi var fler och ingen sa nåt!"

Example of excerpt appearing in Article 1

[2003-04-14 13:19:59] [Riskhantering] [Mary =>All] "OK då förstår jag varför jag inte fick någon kommentar för den här datorn verkar inte ha något ljudkort "

[2003-04-14 13:20:34] [Riskhantering] [Peter=>All] "Mary är det ok om jag lägger mina kommentarer på diskussionforum eller vill du ha dem via e-mail?"

[2003-04-14 13:21:27] [Riskhantering] [Mary =>All] "Lägg dem på forum så går jag in där och kollar."

[2003-04-14 13:23:43] [Riskhantering] [Peter =>All] "Har ni haft någon nytta av faktalådan vid riskbedömningen?"

[2003-04-14 13:23:53] [Riskhantering] [Mary =>All] "Tom kan du slå Susan ensignal och kolla om hon hinner komma in?"

Example of excerpt appearing in Article 2

[1/23/2004 2:40:10 PM] [Bioaktiva substanser] [Pedro => All] "Vad är anledningen till att de som behöver mycket energi inte skall inta mycket kostfiber?"

[1/23/2004 2:40:11 PM] [Bioaktiva substanser] [Gina => All] "Om ni inte har frågor så kan vi ju avsluta chatten. "

[1/23/2004 2:40:46 PM] [Bioaktiva substanser] [Gina => All] "Det går jättebra att ni skickar in inlämningsuppgiften idag."

[1/23/2004 2:41:11 PM] [Bioaktiva substanser] [Helen => All] "Vii du ha den i bifogad fil som word-dok?"

[1/23/2004 2:41:13 PM] [Bioaktiva substanser] [Eve => All] "Jo en snabb fråga. jag får inte riktigt i gå¨ng bildspelet/föreläsningen. Är detta nödvändigt eller kan jag läsa all info i boken"

[1/23/2004 2:42:05 PM] [Bioaktiva substanser] [Gina => All] "Kostfiber är mättande och då kanske man slutar äta innan man fått i sig tillräckligt med energi."

Example of excerpt appearing in articles 3 and 4

[4/29/2004 2:02:04 PM] [Konsument] [kate => All] "vi kan ju börja så smått - har du några frågor på uppgift 2?"

[4/29/2004 2:06:25 PM] [Konsument] [kate => All] "Ska vi vänta tills 10 minuter över på att strukturera upp inför uppgift 2 så att fler får chansen att logga på?"

[4/29/2004 2:06:28 PM] [Konsument] [Eve => All] "Jag har en fråga, försökte öppna länkarna till artiklarna, en om CHD och en om Probiotika-översiktsartikel. Dessvärre kunde jag inte alls öppna den utan får ett felmeddelande på datorn. kan någon annan få upp den?"

[4/29/2004 2:06:54 PM] [Konsument] [ulrich => All] "Hej, vet inte. Det är första gången som jag skriver ngt."

[4/29/2004 2:07:10 PM] [Konsument] [kate => All] "Välkommen Susan!"

[4/29/2004 2:07:32 PM] [Konsument] [Eve => All] "Jag tycker vi börjar nu. Jag har inte så mycket tid att bara sitta och vänta..."

[4/29/2004 2:16:36 PM] [Konsument] [Bonnie => All] "ang uppgift 2 - OK om man arbetar utifrån en studie som belyser problem i kosten och utifrån den arbetar med hälsosamma ingredienser?"

[4/29/2004 2:17:14 PM] [Konsument] [kate => All] "Syftet med denna övning är att vi skall läsa igen om begrunda ett ämne utifrån ett vetenskapligt perspektiv; precis som vi i första uppgiften faktiskt läste oss igenom VDN-näringsläran på förpackningarna. Alltså, inget skummande..."

[4/29/2004 2:18:47 PM] [Konsument] [kate => All] "Svar på Bonnies fråga: det är ok i princip - det som man får ytterligare i en redan publicerad artikel i en välrenommerad tidskrift är att att arbetet är "peer reviewed" alltså granskat utifårn erfarnehte och beprövad kunskap."

Original Swedish data from Article 3

Excerpt 1

[1/10/2003 8:53:50 AM] [meNY] [Susan => All] "Jag haren fråga; det är lite svårt att förklara skillnadenmellan verifiering och validering på ett bra sätt. Hur kan man göra det?"

[1/10/2003 8:56:50 AM] [meNY] [Lenny=>All] "Validering gör man för att bedöma om en HACCP-plan har förutsättningar att produvcera säkra livsmedel om man följer den, dvs man svarar på frågan är det en bra plan? Verifiering görs man för att svara på frågan följer man planen och får man säkra livsmedel? Det är ju ingen större vits att implementera en plan som är dålig."

[1/10/2003 8:58:29 AM] [meNY] [Susan => All] "Nejok,dåblirskillnadenlitetydligare."

Excerpt 2

[1/10/2003 8:59:42 AM] [meNY] [Lenny =>All] "För myndigheten är det viktigt att kunna göra valideringar. Annars blir ju kravet på HACCP inget värt. Dåliga HACCP-planer, som det finns gott om , är inget som ger oss säklrare livsmedel och det är ju säkra livsmedel som är avsikten med HACCP. "

[1/10/2003 9:01:12 AM] [meNY] [Peter => All] "Ni betonar starkt att myndigheterna inte får ge företaget ens en vink om åtgärder vid problem.Vad är syftet med detta?"

[1/10/2003 9:02:22 AM] [meNY] [Lenny =>All] "Problemet med HACCP är att det är inte så djäkla lätt att göra en bra plan om man inte lärt sig vad det handlar om. Många tror de vet vad det handlar om utan att de besvärat sig att ta reda på fakta . Följden blir dåliga

HACCP-planer och sådana skall vi inte , tycker jag, acceptera bara för att det råkar stå HACCP på dem."

Excerpt 3

[1/10/2003 9:04:53 AM] [meNY] [Lenny =>All] "Du får inte tolka det alltför hårt Peter men tanken är att om myndigheten säger att så här eller så där skall du fixa ett problem då blir myndigheten ansvarig. Och det vill vi inte. Men det är klart att helst vill man ju att det blir en diskussion där båda parter är överens om att företagets förslag verkar OK "

[1/10/2003 9:07:04 AM] [meNY] [Lenny =>All] "Å andra sidan måste myndigheten vidta åtgärder om man uppfattar att produkterna är hälsovådliga. det är emellertDet ansvaret måste man ta. Men det är inte detsamma som att man kommer med lösningen på problemen."

[1/10/2003 9:08:02 AM] [meNY] [Per Forsberg => All] "Då förstår jag. Det låter rimligt."

[1/10/2003 9:08:26 AM] [meNY] [luke => All] "Företaget får presentera en lösning och myndigheten validerar denna, det vore trevligare om vi kunde medverka men som sagt då blir vi medansvariga. Dessutom har inte myndigheterna resurser att arbeta med såna saker, det tar ju tid och kostar pengar."

[1/10/2003 9:08:41 AM] [meNY] [Lenny =>All] "Man kan och bör som myndighet inte tveka att ge sin syn på problemen och föreslå lösningar är tycker jag alltid OK men man skall inte säga: så här skall du göra.hoppas du hänger med i nyanserna här Peter."

[1/10/2003 9:10:28 AM] [meNY] [Peter => All] "Ja jag hänger med. Det var också detta jag anade. Det vore ju bra dumt att inte åtminstone få delge om man har erfarenheter från liknande problemlösningar."

Excerpt 4

[4/4/2003 8:41:14 AM] [HACCP 1-2] [Ingrid =>All] "Har inte hunnit Haccpa så mkt den här veckan men har träffat Anticimex som just nu satsar stort på säkre livsmedel och som tagit fram ett komplett program som bygger på HACCP. De anställer en massa livsmedelstekniker som skall lära ut detta och stötta allt från gatukök och uppåt. Har någon hört om det fungerar? Undrar också om det är chat på måndag igen?"

[4/4/2003 8:43:52 AM] [HACCP 1-2] [Lenny =>All] "Jag vet inget om vad Anticimex gör i detta sammanhang men det finns många företag som "säljer HACCP" och vad jag sett hittills har inte fått mig att jubla precis."

Excerpt 5

[4/4/2003 8:40:52 AM] [HACCP 1-2] [Lenny =>All] "Tillbaks till köttbullarna. Något förslag på smart övervakning av att kärntemperaturen blir tillräckligt hög tillräckligt länge?"

[4/4/2003 8:44:46 AM] [HACCP 1-2] [eve => All]"Om man har mätt att en viss omgivande temperatur (vid stekningen) ger en väl genomstekt köttbulle måste det väl räcka med att man har klar koll på den yttretemperaturen?"

[4/4/2003 8:47:47 AM] [HACCP 1-2] [Lenny =>All] "Vid all övervakning av CCP vill man ju helst ha kontinuerliga processer. Att mäta temperaturen i köttbullar på ett band eller i en fritös är knappast möjligt att göra på varenda köttbulle men man kan ju indirekt mäta temperaturen genom att ha koll på ugn/fritöstemp och genom försök lära sig att vid en viss temp får man efter viss tid en kärntemp på x grader. Och temp i ugn/fritös kan mätas kontinuerligt liksom tid."

[4/4/2003 8:49:10 AM] [HACCP 1-2] [Carina => All] "Det är då det gäller att ha koll på hur stora köttbullar man värmer oxå eller hur? Så att temperaturen och tiden blir rätt för att kärntemperaturen ska bli bra."

[4/4/2003 8:50:05 AM] [HACCP 1-2] [alexander => All]"Tiden för nedkylning i exemplen är ju lite olika... Kycklingen 90min och Risotton 4h ner till < 4C"

[4/4/2003 8:50:15 AM] [HACCP 1-2] [Lenny=>All] "Just precis Carina"

[4/4/2003 8:52:15 AM] [HACCP 1-2] [alexander => All]"Vi har ju ingen möjlighet att göra försök för gunnars köttbullar här. Kan jag hugga till med 90min som på kycklingen?"

[4/4/2003 8:52:57 AM] [HACCP 1-2] [Lenny=>All] "står det verkligen 90 min i exemplet? I mitt manus står det < 4grader på < 4 timmar."

[4/4/2003 8:53:45 AM] [HACCP 1-2] [alexander => All]"Måste kolla en gång till..."

[4/4/2003 8:54:30 AM] [HACCP 1-2] [alexander => All]"På risotton står det <8C på <2h och sedan <4C på <4h"

[4/4/2003 8:55:49 AM] [HACCP 1-2] [Lenny =>All] "Jag tror du blandar i hop temp och tid. För kycklingen står att den skall uppnå en temperatur av 90 grader - vilket inte är satt för att först då avdödas bakterier utan av andra orsaker som är process och produktrelaterade."

[4/4/2003 8:57:55 AM] [HACCP 1-2] [alexander => All]"Ja, jag hade lite bråttom o blandade ihop det..."

[4/4/2003 8:58:30 AM] [HACCP 1-2] [alexander => All]"Nej, nerkylning efter grillning anges till 90min"

[4/4/2003 8:59:21 AM] [HACCP 1-2] [Lenny =>All] "Men rent principiellt så kan man naturligtvis tänka sig att kraven på nerkylningstid varierar mellan olika produkter. det viktigaste är under alla förhållanden och oavsett livsmedel att alltid så snabbt som möjligt passera intervallet 48 ner till 12 grader. Även på andra hållet finns anledning att skynda sig här."

Excerpt 6

[4/4/2003 8:59:51 AM] [HACCP 1-2] [eve => All]"Blir inte en 90 graders kyckling väldigt torr? (fråga till kockarna)"

[4/4/2003 9:00:05 AM] [HACCP 1-2] [alexander => All]"Då hugger jag till med 90min ner till <4C"

[4/4/2003 9:01:53 AM] [HACCP 1-2] [Lenny =>All] "Jag skall kolla det här. jag har 4 timmar i mitt manus och jag tycker 90 minuter låter lite väl tufft."

[4/4/2003 9:02:25 AM] [HACCP 1-2] [alexander => All]"Ok. Då hugger jag till med max 4h. xx("

[4/4/2003 9:03:37 AM] [HACCP 1-2] [Lenny =>All] "mitt kycklingexempel är faktiskt inte helt påhittat utan jag har utgått från en industriell produktion och där har man 90 grader i bröstmuskeln som sluttemp."

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