Online teaching practices

Sociomaterial matters in higher education settings

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Linköping Studies in Behavioural Science No. 190
Linköping University
Department of Behavioural Sciences and Learning
Linköping 2015

Linköping Studies in Behavioural Science • No. 190

Distributed by:
Department of Behavioural Sciences and Learning
Linköping University
SE - 581 83 Linköping

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Edition 1:1
ISBN 978-91-7519-123-2
ISSN 1654-2029

Cover design by Martin Pettersson, LiU-tryck

Printed by: LiU-tryck, Linköping 2015

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Acknowledgements

It is said that a prerequisite for learning is to be challenged; however, this should happen in a supporting environment. To undergo postgraduate studies is essentially about that; to learn. It is about learning to become a researcher; learning how to research and learning to act in an academic context. I am indebted to a number of mentors who have offered me challenges but also support in a number of ways.

First, I would like to express my deepest gratitude to my supervisor Professor Madeleine Abrandt Dahlgren. When I look back at our time together I remember our discussions with warmth. We have had so many of them; in offices, on walks, at cafés, in your car and by the coast. You have opened the doors to your home and country house for conversations and work on my research. I am filled with gratitude for all that you have done for me. Thank you for your tireless support and constructive feedback during the tribulations of writing. Today, I feel that the message on the box of mints that you gave me in the very beginning has come to express my current state of mind: I can do it! I also would like to express my gratitude to my co-supervisor Associate Professor Ann-Marie Laginder. You have also been a tremendous support to me during the years. Thank you for all the fruitful discussions and thorough comments on research design and manuscripts.

A particular thank you goes to the teachers who were the informants in this study. You have opened up your classrooms and your teaching for academic scrutiny, which takes a lot of courage. Thank you for your free-hearted generosity. I would like to thank all of you who have read and commented upon my research design and manuscripts. Thank you Professor Ericka Johnson for your invaluable comments at my final seminar. Thank you Associate Professor Hans Rystedt for your well-advised comments at the half-time seminar. I also would like to thank Dr Nick Hopwood for taking the time to discuss my research project on several occasions over the years. I am so grateful for all the times you have shared your theoretical sharpness. I also wish to honour the memory of Professor Lars Owe Dahlgren who made my transfer from the University of Skövde to Linköping University to such a welcoming experience. Lars Owe also generously contributed with his expertise during the process of shaping my dissertation project. I will always remember his good-hearted attitude towards doctoral students. Thank you to all the reviewers, editors and proof-readers that have been involved in parts or whole of this dissertation. During the years I have had the opportunity to receive comments, suggestions and valuable insights from colleagues at

research seminars at Linköping University. I would like to thank members of the research seminars at the unit for Education and Adult learning, Department of Behavioural Sciences and Learning, and also members of the Medical Education research seminar at the Faculty of Health Sciences. A special thank you to Annika Lindh Falk, Karin Thörne, and Lise-Lott Lundvall for the lengthy and stimulating theoretical conversations on sociomateriality we have had over the years. I hope you enjoyed these as much as I did.

A special thank you also to Dr Lennart Sturesson and Dr Francis Lee, who both encouraged me to continue my academic journey by applying for postgraduate studies. Thank you Lennart for your support and contributions over the years. Thank you Professor Andreas Fejes for offering me the position as head editorial assistant for the international journal RELA, I have learned so much from it. Thank you Dr Sofia Nyström, Dr Song-ee Ahn and Brita Bergseth for your support throughout my journey. I also would like to thank colleagues around the globe connected to the AoIR mailing list for the range of advice they have provided concerning internet research. Thank you to Alastair Creelman who encouraged me to address the subject of information and communication technology (ICT) in higher education.

I am filled with gratitude towards those who welcomed and supported me during my stay at the University of British Columbia, Vancouver, Canada. I would like to thank the staff at the Department of Educational Studies, particularly Dr Garnet Grosjean, Dr Janet Atkinson-Grosjean and Professor Kjell Rubenson. The time at UBC had a great impact on my postgraduate studies where both my writer's block and awkwardness in English disappeared. For a couple of months you gave me *a place of mind*; for that you will always have a place in my heart.

I especially would like to thank my family; my mother Gunilla and father Rolf. Thank you for raising me up with values that have persisted during my life journey. I would like to thank my husband Jonas, who has supported me in so many ways; emotionally, intellectually, linguistically, practically and technologically. I have never felt alone during the endeavours I have faced during this time. It is a blessing to have a life companion who so completely contributes to fulfilling the deepest dreams of your life. I am truly grateful for your assiduous support over the years.

I feel a deep gratitude for the challenges I have faced during the process of writing this thesis. A heartfelt thank you to all of you who contributed to challenging me in whatever way you did. It has been a truly transformative journey. You have made me intellectually and professionally stronger and, most of all, you shaped my character.

Karin Bolldén, Linköping, March 2015

List of original papers

I. Bolldén, K. (2014). Teachers' embodied presence in online teaching practices. *Studies in Continuing Education,* doi:10.1080/0158037X.2014.988701

II. Bolldén, K. (2014). *Teacher interventions in online teaching practices.* Manuscript resubmitted after revision.

III. Bolldén, K. (2014). *The emergence of online teaching practices: A sociomaterial analysis.* Manuscript resubmitted after revision.

IV. Bolldén, K. (2014). *Teaching practices in Second Life: Sociomaterial matters.* Manuscript submitted for publication.

1. Introduction

Mankind has through the ages used artefacts with the purpose of accomplishing particular actions, not least in educational contexts (Säljö, 2008). To teach when students and teachers are geographically separated is also an old phenomenon. Early examples of distance education were a shorthand course in 1728 in the USA, a course in composition in 1833 in Sweden, yet another shorthand course in 1840 in the UK and language teaching in 1856 in Germany (Holmberg, 1995). Technology has had a prominent position in denominating generations of distance education, such as a *first* generation of correspondence education where printed texts were distributed by postal services, a *second* where audio- and videotapes were used, a *third* including teleconferencing and broadcasting media such as TV and radio, a *fourth* where the internet made an entrance, and a *fifth* where the internet was used for communication purposes (Taylor, 2001). Today, information and communication technology (ICT) offers a pluralised landscape of artefacts for educational purposes, such as learning management systems (LMS) like Moodle™, Blackboard™ and itslearning© (IL), desktop video conferencing such as Adobe Connect™, voice over internet protocols (VoIP) such as Skype™ and three-dimensional virtual worlds such as Second Life® (SL).

The field of teaching and learning with the support of technology is like a beloved child with many names, such as online education, web-based instruction/education/learning, e-learning (or eLearning/E-learning), distance education, open and distance learning, technology enhanced learning, flexible learning, online pedagogy, online learning, computer-assisted learning, networked learning and tele-learning. All these denominations both confuse and complicate the ability to overview the field (Tallent-Runnels et al., 2006). Attempts have been made to demonstrate the problems in using several concepts and also to create some sort of consensus regarding concepts and the form of education they refer to (Thompson, 2007). Furthermore, educational forms can be difficult to distinguish since campus, distance and blended modes can all use ICT for pedagogical purposes and for more flexible forms of education. Hence, the field of educational technology is wide and has loose contours.

Irrespective of the denomination used, the question of why ICT should be used in teaching and learning arises. Several lines of thought can be identified, one of which involves expectations and hopes for efficiency and resource savings, both in terms of time and money (Annetta, Folta, &

Klesath, 2010; Snyder, Marginson, & Lewis, 2009). Another line of thought concerns broadened recruitment and an argument for equality among citizens. According to this view, regardless of place of residence, home background, age, and disability, education should be available to everyone in order to support lifelong learning (Evans, Haughey, & Murphy, 2008). This argument is not uncommon, and has a political perspective (Landri, 2012). A third line of thought concerns hopes and expectations that technology could revolutionise or innovate both teaching and learning (see e.g. Andrews and Haythornthwaite, 2007; Johannesen, 2013; Kirkwood and Price, 2012; Laurillard, 2010) and a fourth, often discussed in relation to massive open online courses (MOOCs), concerns ways to promote a university and its regular courses. Thus, there is great confidence in what ICT could accomplish in educational settings. However, several studies have already reported disappointing results. Teachers report that teaching with technology is time-consuming (Comas-Quinn, Arcos, & Mardomingo, 2012; Zhang 1998 in Tallent-Runnels, 2006) and several studies report no significant difference (NSD) in learning outcomes when ICT is used in educational settings (Andrews & Haythornthwaite, 2007). Kirkwood and Price (2012) contend that 'for more than 20 years much has been written about the potential for technologies to transform educational practices' (p. 6) but a non-transformation has been more common in that 'there is little evidence of university teachers' practices being changed greatly by the use of technologies' (p. 13). Furthermore, online courses are sometimes associated with large student populations (Mazzolini & Maddison, 2003), are time-consuming for teachers (Morris, Xu, & Finnegan, 2005), have a high dropout rate (Mazzolini & Maddison, 2003; Statistics Sweden, 2012) and may be considered an inferior kind of education (Wang, Doll, Deng, Park, & Yang, 2013).

In 2012, Statistics Sweden reported that the proportion of distance students in Sweden had increased during the last ten years. In 2012, one third of university students in Sweden were distance students. Ten years earlier the figure was one tenth (Statistics Sweden, 2012). The Swedish National Agency for Higher Education[1] reported similar figures that indicated a drastic increase. In 2010, the number of full-time students in distance education had increased 100 percent since 2002 (Högskoleverket, 2011). An increase in distance education has been seen worldwide. In the USA, for instance, there was a 21 percent increase in the number of distance students during 2010 (Högskoleverket, 2011). In Sweden, furthermore, it is most common with

[1] Today, The Swedish Higher Education Authority.

courses that are entirely carried out online, i.e. without physical gatherings (Statistics Sweden, 2012).

Hence, an increase in distance education could be seen, both locally in Sweden (where this study is situated) and globally. This increase calls for continued research attention to this broad area of education where teachers teach and students learn through and with technology, which connects them. The relation between pedagogy and technology has not been sufficiently elucidated and there remain uncertainties about whether it is technology that guides pedagogy or pedagogy that guides technology. Luke (2006), for instance, states that 'whether teachers incrementally develop a more collaborative and student-centered pedagogy as a result of the introduction of IT into classrooms, or whether teachers' established pedagogical knowledge and philosophy are grafted onto technology remains unclear' (p. 275). Furthermore, Laurillard (2010) contends that developments in e-learning have often been driven by technology. Mishra and Koehler (2006) also express a focus on technology in the field of educational technology, stating that 'part of the problem . . . has been a tendency to only look at the technology and not how it is used' (p. 1018). The present thesis is a contribution to an understanding of the relation between pedagogy and technology. More specifically, it focuses upon what teachers actually do when teaching online, and is based on a perspective that views teaching activities as sociomaterial practices.

Aim of the thesis

The aim of the study is to describe and analyse online teaching practices in Swedish higher education contexts. The overarching research question concerns how relations between teaching practices and arrangements unfold online.

The study contributes to an increased understanding of and knowledge about online teaching practices. In this thesis, online teaching practices is understood as the relations between teachers' doings and sayings, and material arrangements in terms of online settings treated as virtual material.

The research questions answered in this thesis are:

- How can teachers' embodiment in online teaching practices be described and analysed? (paper I)

- How is the teaching practice co-constituted as a relation between teachers' sayings and doings, and material arrangements? (paper II)

- How do online teaching practices unfold in the two settings studied? (paper III)

- How do settings in a virtual world such as SL become intelligible as teaching practices? (paper IV)

Structure of the thesis

In the following chapter, previous research on embodiment and technology, but also teaching perspectives related to LMSs and virtual worlds are elaborated upon. Contours of the field of online teaching and learning are also outlined.

Chapter three introduces Schatzki's practice theory – the theoretical perspective applied in the analysis of the empirical data. The theory is firstly situated among other theoretical families and subsequently contrasted against other perspectives within a sociomaterial family of perspectives. Schatzki's version of practice theory is thereafter presented, and critical voices against the perspective are addressed. Practice theory is then related to the present study.

Chapter four concerns the design and method of the study and begins with an argument for the choice of method – an online ethnographic approach. Online ethnography is thereafter briefly introduced. The two settings studied in this thesis – an education course on IL and a language course in SL – are then presented in more detail. This is followed by a review of the empirical data gathered through observations, interviews and document studies. The process of analysis is thereafter elaborated upon and my pre-understandings are presented. This is followed by a subsection where aspects of quality in the research process are elaborated upon. The chapter on method is concluded by a section in which ethical considerations are addressed.

In the fifth chapter, the four papers which form the core of the thesis are summarised. This is preceded by a discussion on how the papers hang together. The four papers are enclosed at the very end of this book.

The final chapter begins with some reflections on the research process and is followed by a discussion of the results of the study in its entirety. The thesis ends with concluding remarks and some suggestions for further research.

2. Previous research

In this chapter, literature related to the present study is introduced and thematised. The chapter opens with a subsection presenting some thoughts from previous literature on how embodiment can be understood when it is connected to technology. Embodiment is a central theme since online teaching entails a bodily presence online. This is followed by a subsection in which the contours of the disparate field of online teaching and learning are outlined by highlighting points of debate in published literature reviews. Thereafter, previous research in the field is presented and thematised with the point of departure in the two specific ICTs that were in focus in this study; LMSs and virtual worlds.

Relations between body and technology

Questions regarding bodily presence online, i.e. how teachers handle their bodies in the professional practice of teaching in online settings, concerns how the relation between teacher embodiment and technology could be understood. Feminist theories have noted that the body has been overlooked in Western philosophy (Suchman, 2007). Within cyberfeminism, a movement which has grown out of feminism (Consalvo, 2003), the relation between the body and technology has been studied (Sundén, 2007; Wajcman, 2006). Theories of embodiment have also been applied in the field of human-computer interaction (HCI), serving as a critique against prevalent cognitive perspectives (Marshall & Hornecker, 2013). Marshall and Hornecker contend that recent work on embodiment in HCI mainly draws on theories from phenomenology and embodied cognition. One of the most influential authors mentioned regarding phenomenology is Suchman. In her book *Human-machine reconfigurations: Plans and situated actions* (Suchman, 2007) she discusses embodiment throughout the last three chapters. When Suchman discusses embodiment, she takes Haraway's (1997) concept of figuration as a point of departure:

> Haraway's argument is, first, that all language, including the most technical or mathematical, is figural; that is, it is made up of tropes or "turns of phrase" that invoke associations across diverse realms of meaning and practice. Technologies, Haraway argues, are forms of *materialized figuration*; that is, they bring together assemblages of stuff and meaning into more and less stable arrangements. These arrangements imply in turn

> particular ways of associating humans and machines. One form of intervention into current practices of technology development, then, is through a critical consideration of how humans and machines are currently figured in those practices and how they might be figured – and *configured* – differently. (Suchman, 2007, p. 227, italics in original)

Suchman investigates what kind of figures are materialized in the fields of artificial intelligence and robotics and presents an argumentation that the boundaries between human and machine are fluid, and that instead of looking at human and machine as two separate entities, it is more fruitful to regard them as inseparable. Furthermore, the interface could be perceived as a relation instead of a boundary between human and machine. This relation could appear quite different from time to time. She refers to an example of the materialities and practices of anaesthesia, describing it as a choreography of both human and non-human entities. She also refers to another example of a surgical situation (Prentice, 2005) which shows how different surgeons may or may not experience the situation of working with new artefacts as disorienting:

> Prentice finds that surgeons accustomed to operating within previous configurations of patient and instruments express a sense of disorientation when they are translated into the reconfigured sociotechnical network of video camera and monitor. . . . In contrast, Prentice found that surgeons who have performed minimally invasive surgery mediated by camera and monitor throughout their career report a very different phenomenal shift. Far from being alienated from the patient, they experience themselves as proprioceptively shifted more directly and proximally into the operative site, with the manipulative instruments serving as fully incorporated extensions of their own acting body. As Prentice observes of these cases: "When the patient's body is distributed by technology, the surgeon's body reunites it through the circuit of his or her own body". (p. 265-266)

Suchman returns to the fact that human-machine configurations sometimes have drawbacks by referring to Jain (1999), who argued that prostheses could be enabling but also wounding. Suchman writes in a footnote that 'in contrast to the easy promise of bodily augmentation, she [Jain] observes, the fit of bodies and artifacts is often less seamless and more painful than the trope of the cyborg would suggest' (p. 275). Nonetheless, Suchman seems to be attracted by the cyborg metaphor[2] in that it indicates the intimate relationship between human and machine. At the end of the book she states that 'reappropriation of the cyborg, as a figure whose boundaries encompass intimate joinings of the organic and inorganic, has provided a means of

[2] See Haraway (1991).

analyzing myriad reformations of bodies and artifacts, actual and imagined' (p. 283).

A researcher connected to the field of cyberfeminism and who examines embodiment and technology is Sundén (2002, 2007, 2008, 2009, 2010, 2012). There are several similarities between Suchman's and Sundén's argumentation regarding how embodiment could be understood when it is connected to technology. Similar to Suchman, Sundén views technology as an extension of the human. When discussing the specific case of avatars, Sundén (2012) understands them as extensions but also something in itself. She suggests that the avatar and the person who controls it form a body double where each of them leaves traces in the other. The player and the avatar 'enter into a covenant that is both intellectual and bodily' (2010, p. 25, my translation) and where a total collapse of the bodies is possible; they intertwine (Sundén, 2008). She also put forward that a human could be understood as multiplied:

> Technologies extend and invade us and our bodies to the point where it becomes meaningless to think of ourselves as somehow ending with the skin. Through the use of networked computers, we are (by now, mundanely) "stretched out", potentially multiplied and distributed with the help of avatars or other kinds of alter egos populating online communities. (Sundén, 2007, p. 30)

One of Sundén's contexts of study is the online game World of Warcraft and she understands this game as 'an intense boundary surface of technology-corporeality' (2010, p. 33, my translation). A computer interface could be understood as what holds the offline and online body together but at the same time also distinguishes them from each other (cf. Sundén, 2008)[3]. She suggests elsewhere that the computer body is entwined with the body that sits at the computer (2008, 2009).

Sundén (2007) also argues that the subject gets new contours with a posthuman perspective. The boundaries of the subject are redrawn and stretched by the intimate connections with technology. However, the borders still seem to be there since 'it is not so much a story of completely dissolving borders, or a clear break with previous understandings . . . as a displacement and redesign of the contours of the subject' (p. 36-37). Sundén terms this as

[3] A similar argument could be found in Sundén (2007) where the relationship between a robot and its programmer is analysed. Sundén states that 'the computer interface becomes in this sense the surface and the space in which the choreographer's body and the body of the robot merge – but not without glitches and inconsistencies in the process of translation' (p. 40).

'boundary instability within and also between human and non-human subjectivity' (p. 39)

A conclusion to be drawn from previous studies of the relations between body and technology is that the boundary between them is understood as fluid. The encounter between them is described as a close relation, a boundary crossing, a choreography. Furthermore, a slippage could be discerned in the texts referred to above, between understanding human and technology as separate entities and as intertwined, inseparable, merged and ultimately collapsed. The body, furthermore, is described as distributed, extended and augmented by artefacts or prostheses, which are more or less seamless. However, the body is also described as multiplied, where the interface holds the bodies together but also separates them.

In light of the previous studies referred to in this section, the implications for this study is first that online bodies exist and second that the relation between body and technology could be understood in several ways. Questions are raised on what teachers' bodies look like and furthermore what these bodies do in the teaching situation. Questions are also raised regarding how the relation between body and technology could be described when taking the point of departure in a practice theoretical perspective, and not phenomenological, cognitivist, or cyber feminist perspectives, as was the case in the referred literature. Furthermore, the area of study in this thesis concerned online teaching – a formal practice, which is different from informal practices referred to here, such as online gaming. This thesis set out to elaborate on the themes of embodiment in online teaching and relations between body and technology seen from a practice theoretical perspective.

Online teaching and learning – a disparate field

In an effort to obtain an overview of the research and debate within the field of teaching and learning with ICT, combinations of the keywords *review*, *research* and variations of *teaching online*, *e-learning*, *distance education* and *online learning* were used to search in the local library catalogue. A variety of literature reviews published between 2001 and 2014 were identified (Berge & Mrozowski, 2001; Jump, 2011; Kirkup & Kirkwood, 2005; Kirkwood & Price, 2014; Tallent-Runnels et al., 2006; Wallace, 2003; Zawacki-Richter, Bäcker, & Voght, 2009).

After an initial scan of the identified reviews it was concluded that they had different orientations. For instance, educational levels were not always declared and teaching on campus with ICT was in focus in some reviews and hence, literature on teaching that takes place solely online was excluded.

Examples of areas of focus in these reviews were the teachers' rationale for using ICT in teaching, roles of students and teachers, online collaboration, course environment, learners' characteristics and outcomes, institutional and administrative factors, teachers' attitudes towards ICT in teaching, technology-enhanced learning and teaching (TEL), impact of ICT on students, and the introduction of ICT and the changes this had resulted in seen from a teacher perspective. Furthermore, a broader perspective was also assumed in that some of the reviews focused upon delineating the research areas, methods, and publication and authorship patterns in distance education.

The reviews had also been conducted in various ways and were based on different sources of data. Based on the reviews above, the field of teaching and learning with ICT could be understood as vast and with loose contours, which results in difficulties when trying to gain an overview. In the following, previous research in the field will be discussed, taking the point of departure specifically in LMSs and virtual worlds applied to higher education purposes. The reason for taking the point of departure in LMSs and virtual worlds is that these ICTs were in focus in this study. I do not claim to make a complete overview of literature, since the field is extensive and unwieldy.

Teaching with learning management systems

In the introduction of this thesis, the problems with many names in the field of teaching and learning with technology support were highlighted. When several concepts are used in a field, it both confuses and complicates the ability to overview the field (Tallent-Runnels et al., 2006). This was particularly evident in the search for related literature for this thesis. Several concepts were used in order to describe platforms mainly for asynchronous communication where discussion forums have a central function. Examples of such concepts are Computer-Mediated Conferencing (CMC), Managed Learning Environments (MLE), Learning Management Systems (LMS) and Virtual Learning Environments (VLE) (Salmon, 2011). It seems that the concept of VLE is becoming dominant and is increasingly replacing other concepts. However, throughout this thesis, I have chosen to use the concept of LMS. The reason for this choice is that, based on searches for previous research on the technology referred to here, VLE seem to comprise all sorts of ICT, such as virtual worlds, LMS and open educational resources (see e.g. Annetta, Folta, and Klesath, 2010). In order to be clear about the object of study, i.e. the particular kind of technology that is in focus in one of the settings studied, I apply the concept of LMS. However, when authors in previous literature denote the technology as VLE, I use that concept when

summarising their research. A thematisation of literature on LMS will be carried out in the following with the purpose of portraying the research field.

To begin with, *the introduction/adoption of LMS in teaching practices* has been of interest in several studies (see e.g. Comas-Quinn, 2011; Comas-Quinn, Arcos, and Mardomingo, 2012; Samarawickrema and Stacey, 2007). A common argumentation in these studies is that knowledge and skills regarding mastering the technology attract too much attention and that developing a pedagogical understanding of the affordances is not gaining enough attention (see Comas-Quinn, 2011). Another theme of interest concerns the *benefits* of using LMS in teaching and learning where affordances, perceived benefits and what the technology enables were studied. Not infrequently, some of these suggested benefits relate to aspects of efficiency (see e.g. Habib and Johannesen, 2007; Johannesen, Erstad, and Habib, 2012; Lonn and Teasley, 2009; Wang et al., 2013). A closely related theme to benefits is the *potentials* of using LMS in teaching and learning, for example that the technology supports student-centred and constructivist teaching and learning (see e.g. Johannesen et al., 2012; Shah and Cunningham, 2009). *Barriers* or impeding factors have also been in focus in previous studies (see e.g. Garrote, 2013; Liminou and Smith, 2010, Schoonenboom, 2014). A theme with a generous number of studies concerns *the teacher*, e.g. the teacher role, teachers' professional identity, and teachers' new skills and competences (see e.g. Comas-Quinn, 2011; Comas-Quinn et al., 2012; Crook and Cluley, 2009; Johannesen and Habib, 2010; Mattsson, 2008; Mazzolini and Maddison, 2003, 2007; Morris et al., 2005). Examples of identified roles are cognitive, administrative and affective roles (Comas-Quinn et al., 2012), as well as tutors, moderators and facilitators (Comas-Quinn, 2011). It is argued that the teacher's identity has to be reconsidered and transformed and that the teacher's role needs reconceptualization. Comas-Quinn (2011) found that teachers in her study based their identity on face-to-face teaching, since it is a central activity for many teachers. Hence, the teacher role is often synchronous, but asynchronous communication is part of the new teacher role online.

The theme of *teaching beliefs* has also been an area of study. One example of these studies is Lawrence and Lentle-Keenan (2013) which studied the relation between teaching beliefs (thoughts on how teaching should be carried out), practice and institutional constraints when teaching with LMS in higher education. Another example is Johannesen and Habib (2010) which studied the relation between didactic practice and professional identity in the use of a specific feature of VLEs; multiple-choice assessment tools (MCAs). The study concluded that questioning the inscribed functionality in MCAs was related to the pedagogical beliefs held by the

teachers, which in turn was related to the wider professional community in terms of faculties. Johannesen (2013) contended that the teacher's pedagogical beliefs could come into conflict with the pedagogical stances the designers had when designing the technology. *Design aspects* regarding LMS in teaching and learning is another recurring theme in previous literature (see e.g. Goh, Hong, and Gunawan, 2014).

The literature referred to above seems to be focused on teachers, students, content (subject matter) and the relations between these. Some publications focus on a central actor, such as the students (see e.g. Hara and Kling, 2006) or the teacher and his or her views on LMSs (see Limniou and Smith, 2010). Other publications are more directed towards relations between actors, such as the interplay between students and teachers (see Mazzolini and Maddison, 2003, 2007). Another part of the literature could be understood as more directed towards the technology and its design, such as the studies where the technology acceptance model is central (see Goh et al., 2014; Schoonenboom, 2014). Johannesen and her colleagues (Habib & Johannesen, 2007; Johannesen, 2013; Johannesen et al., 2012; Johannesen & Habib, 2010) contributed to the study of LMS in teaching by applying a sociomaterial perspective based on actor-network theory (ANT), which helps to draw attention to the materiality of teaching situations, and which could be understood as an aspect of teaching that has not yet received any major attention. Johannesen et al. (2012) identified a knowledge gap in the literature on VLEs and contended that 'the existing literature on VLEs in educational settings gives relatively little attention to sociomaterial power relations in general, and to the agency of educators in particular' (p. 785). As I see it, there are two major points to take on board from Johannesen and colleagues. The first is that non-human entities are part of the process of shaping the teaching practice. The second is that the teacher's agency – what s/he does and says – needs to be understood as sociomaterial.

Furthermore, common to previous studies is that many of them often rely on methods (such as interviews and questionnaires) that focus upon what teachers *say* they do. Previous researchers have noted that there could be discrepancies between what teachers say they do and what they actually do when teaching online (Mazzolini & Maddison, 2007; Morris et al., 2005). The contribution of the present thesis to aspects of teaching with technology is to focus on what teachers *actually* do, which is achieved by observation.

Teaching in virtual worlds

An indication of the growing interest in virtual worlds in education is the many publications which emerged in the late 2000s and during the 2010s [4]. A dominating theme of interest in previous literature concerns the *possibilities* virtual worlds have in an educational context (Annetta, Folta, & Klesath, 2010; Conole & Alevizou, 2010; Deutschmann, 2012; Esteves, Fonseca, Morgado, & Martins, 2011; Inman, Wright, & Hartman, 2010; Kim, Lee, & Thomas, 2012; Petrakou, 2010; Rapanotti, Minocha, Barroca, Kamel Boulos, & Morse, 2012; Wang & Burton, 2013). Several concepts are used in these studies when describing this interest, such as opportunities, affordances, potentials, facilitations and strengths. Examples of possibilities mentioned are that virtual worlds could be used for distance education, and that they facilitate synchronous communication, collaboration, and social interaction among students, role-play, simulations, group work and problem-based learning (PBL). Furthermore, they foster immersion, a sense of presence and co-presence. Being together in the same place fosters team spirit and accountability among peers. Activities in virtual worlds support community building through activities that are both formal (such as lecture series) and informal (such as parties).

[4] See e.g. the many special issues published in international journals, such as *Computers and Education* (Chittaro & Ranon, 2007), *ALT-J* (Bell, Savin-Baden, & Ward, 2008), *Journal of Virtual Worlds Research* (Jarmon, Lim, & Carpenter, 2009), *British Journal of Educational Technology* (de Freitas & Veletsianos, 2010; Salmon & Hawkridge, 2009), *Educational Research* (Twining, 2010) and *Learning, Media and Technology* (Hunsinger & Krotoski, 2010). The educational context and type of virtual worlds varies in these publications, but SL in higher education dominates. A majority of the authors are located in the UK and the USA and several aspects of virtual worlds are covered in the issues. See also literature reviews on virtual worlds in education (Conole & Alevizou, 2010; Hew & Cheung, 2010; Inman, Wright, & Hartman, 2010; Kim, Lee, & Thomas, 2012; Savin-Baden et al., 2010; Wang & Burton, 2013). Some of these reviews not only report empirical studies, but encompass a range of sources. It should also be noted that the educational contexts in these texts are varied. Conole and Alevizou (2010) and Savin-Baden et al. (2010) focused on higher education and Kim et al. (2012), Hew and Cheung (2010) and Inman et al. (2010) were concerned with both higher education and K-12 (K-12 is a term for kindergarten and first through 12th grade in countries such as the USA and Canada). Wang and Burton (2013) took an overall educational perspective. Further examples of publications on virtual worlds in education are the many books and book chapters published (see e.g. Molka-Danielsen & Deutschmann, 2009; Peachey, Gillen, Livingstone, & Smith-Robbins, 2010a; Wankel & Kingsley, 2009).

A related theme to possibilities is *barriers* (Conole & Alevizou, 2010; Esteves et al., 2011; Inman et al., 2010; Petrakou, 2010; Rapanotti et al., 2012; Wang & Burton, 2013). These two themes often appear in tandem in previous studies. Several synonymous concepts are used for the theme of barriers, such as problems, constraints, obstacles and difficulties. Examples of problems mentioned are student acceptance, technical issues, a steep learning curve, distracting elements in the environment and the possibility of being exposed to dubious content. To start the process of community building can be difficult.

A third theme concerns *pedagogy* where several studies revolve around how virtual worlds could support student-centred, constructivist, social constructivist, experiential and situated learning (Deutschmann, 2012; Inman et al., 2010; Savin-Baden et al., 2010; Wang & Burton, 2013).

A fourth theme concerns *involved actors' perspectives and attitudes* towards virtual worlds (Hew & Cheung, 2010; Kim et al., 2012; Wang & Burton, 2013; Wimpenny, Savin-Baden, Mawer, Steils, & Tombs, 2012), with a major focus on student perspectives. Research topics regarding the student perspective have concerned students' attitudes towards and satisfaction with using virtual worlds, students' learning outcomes and student's social interaction with each other (Hew and Cheung, 2010; Kim et al., 2012). An example of a study that studied students' and teachers' perspectives on teaching and learning in virtual worlds is Wimpenny et al. (2012), where three frames of reference influencing expectations on teaching and learning in the virtual world SL were identified. The first concerned games and gaming media, which concerned that students position a virtual world in different ways (such as a game or a non-game), which affects the teaching and learning situation. The second frame of reference was termed 'disciplinary learning' and concerned whether the educational design in relation to the use of SL resulted in a disciplinary fit or not. A disciplinary fit, as far as I can understand, means that the use of SL for pedagogical purposes was in line with the subject's disciplinary views on learning. The third frame of reference concerned institutional space and ownership. The empirical data showed that tutors' perceptions of space and ownership varied, ranging from viewing the space online as formal (primarily belonging to the institution) or informal (primarily belonging to the students).

Space and spatiality is yet another theme in more recent publications (Minocha & Reeves, 2010; Savin-Baden, 2013). Common to the studies of both Savin-Baden, and Minocha and Reeves is that they set out to study actors' perspectives on space and spatiality in virtual worlds. Savin-Baden (2013) set out to study staff perspectives of spatiality in SL and how those views may affect teaching and learning. Four aspects of spatial practice were

identified in the empirical data; spatial negotiation, ownership, spatial violation and replication. Among other things, spatial negotiation concerned the fact that there are overlaps between SL and offline settings regarding proxemics (how people position themselves in relation to others in the spatial space). Spatial negotiation also concerned the difference between SL and offline settings regarding communication. To communicate in SL entails a personal cost since to operate oneself in-world is not automatic, but has to be considered all the time. An aspect of spatial violation that Savin-Baden highlighted was that the interaction territory differs between offline and SL settings. In SL, people readily join discussions, which is not the case offline. The replication aspect of spatial practice concerns the replication of offline buildings in-world. Savin-Baden found differing views in her empirical data regarding replication. Some staff members found it useful (e.g. for simulating offline practice) others found replication pointless. In sum, Savin-Baden concluded that spatial practice does matter in teaching and learning in SL: 'these findings indicate that pedagogic design, spatial design and spatial interaction are all important pedagogical consideration when choosing to teach in SL' (p. 71). She also pointed to the need for further research regarding spatiality and teaching:

> To date, space and spatiality in 3D virtual worlds such as SL have been somewhat taken for granted, which has resulted in a tendency to overlook or ignore . . . the way teaching within it is spatially constructed. . . . What this study appears to highlight, more than anything else, is the need to continue to explore . . . spaces such as SL in terms of their impact on teaching and learning in higher education. (p. 71-72)

Minocha and Reeves (2010) studied the perceptions of learning spaces in SL among educators, designers and students in further and higher education. They reported on how these spaces could be designed to support student engagement and provided design considerations based on their empirical findings. They found that pedagogy and design mutually influence each other in that pedagogical underpinnings guide the design of the space, but also that affordances of the technology affect the design of learning activities. Two of the design principles related to formality and authority. Teachers in the study perceived indoor environments to support formality and authority, which are reflected in the design principles 'consider indoor spaces such as auditoriums and lecture theatres to support formality and authority relationships similar to traditional learning spaces in RL [Real Life]' (p. 132) and 'design spaces to match the educator's authority that needs to be represented; for example, a podium for the educator or a circular seating arrangement for informal discussions and to allow for peer-to-peer exchanges' (p. 133).

Educators also reported that they chose RL-like settings in order to provide students who were not used to SL with a familiar environment or 'to relate to the users' expectations and mental models from RL' (p. 117) which was reflected in the design principle 'design RL-like learning spaces for users who are new to SL and 3D environments' (p. 132). Similarly, visual realistic environments were used to give students clues on how to make sense of, interact and behave in the environment, providing 'familiarity and support learners' existing mental models of what to expect' (p. 124) which are reflected in the design principle 'consider visual realism in the designs of spaces and activities to provide familiarity and comfort to users who are new to SL' (p. 132). Minocha and Reeves also highlighted that the space designed should be flexible in terms of possibilities of altering it in an easy way:

> It should be possible to quickly reconfigure the learning spaces to support different kinds of learning activity – moveable chairs and tables, for example. In SL, the flexibility of designing spaces is not constrained to moving the furniture but the entire environment and the scenery of the learning spaces can be changed. (p. 123)

They also commented that seating arrangements can imply power relations in that 'having a facilitator positioned higher up on a podium infers singular authority, whereas having an educator sitting at the same level in a circular arrangement infers shared and collaborative authority' (p. 127).

Common research methods in earlier studies of teaching in virtual worlds have an emphasis on descriptive studies, but experimental research is also mentioned (Hew & Cheung, 2010; Kim et al., 2012). There has been an even distribution of qualitative, quantitative and mixed method research (Inman et al., 2010). Very common data collection methods have been questionnaires and surveys (Deutschmann, 2012; Hew & Cheung, 2010; Inman et al., 2010; Minocha & Reeves, 2010; Rapanotti et al., 2012; Wang & Burton, 2013). Other common data collection methods mentioned are interviews (Minocha & Reeves, 2010; Rapanotti et al., 2012; Wimpenny et al., 2012), statistics (Rapanotti et al., 2012) and observations (Wimpenny et al., 2012). Several publications report studies that are often referred to as case studies in which teachers-researchers report on their own projects and courses where experiences, lessons learned and recommendations are part of the text (see e.g. Bani et al., 2009; Belei, Noteborn, and de Ruyter, 2009; Thackray, Good, and Howland, 2010). Common to many of these studies is that they do not have a distinct theory section. Moreover, they are often well contextualised, containing a detailed account of the course or project. However, the main method is often based on the teacher-researcher's observations and experiences when teaching the course. In some cases these experiences are

supplemented with further data, such as questionnaires or interviews with students on the course, or statistics regarding visitor traffic in the region[5]. Hence, it is difficult to draw a clear line between what can be termed research studies and reporting of educational activities of teachers-researchers on the field. Furthermore, there seems to be a tendency for more recent case studies to apply action research as a research design (see e.g. Deutchmann, 2012)[6].

So what is considered to be missing regarding research on teaching in virtual worlds? Savin-Baden et al. (2010) contended that the literature on virtual worlds in higher education has been characterized by the situation that 'technology has led the pedagogy' (p. 123), in other words, it has been technology-driven. They also contended that the educational value of virtual worlds is still unclear and that there is a lack of clarity concerning the teacher role. Furthermore, Savin-Baden (2010) contended that research regarding embodiment and identity is scarce, and she carried out a study where she explored staff experiences of teaching and learning in virtual worlds with a focus on identity issues. She found that some teachers wanted to retain control of learning and interaction when teaching in-world. This was for instance accomplished by retaining control of the virtual classroom or by creating the students' avatars and names. Other teachers were critical of 'the imposition of real world values on immersive spaces' (p. 32) questioning the existence of buildings and chairs in teaching and learning situations in-world.

The conclusion I draw from the literature above is that there seems to be a knowledge gap concerning teaching in virtual worlds. There is an expressed lack of clarity concerning the teacher role, and the issue of embodiment when teaching in virtual worlds has not been sufficiently explored. There also seems to be a need for further research on spatiality and teaching. Based on the character of previous studies I chose to study a setting that is not my own, in that I am not teaching on the course or affiliated to the university that offers it. The course studied, furthermore, was not an evaluation project that was evaluated through my research. I was also not striving to assess the quality of the course (and the virtual world) in terms of teaching or learning, nor to communicate lessons learnt. Instead I studied a regular course that had been available for several years and was conducted without any special funds. Since several empirical studies were conducted by methods that are based on what informants say they do (i.e. retelling methods such as interviews or questionnaires), this study takes another approach in order to

[5] A region is an area of 256x256 meters in SL.

[6] Further examples of case studies could be found in books and book chapters on virtual worlds in education (see e.g. Molka-Danielsen and Deutschmann, 2009; Peachey et al., 2010a; Wankel and Kingsley, 2009).

provide a contrasting entry to what is happening in the virtual world by studying what informants actually do. This is accomplished by an online ethnographic method.

3. Theoretical perspective

This chapter addresses the theoretical frame of reference – practice theory – used in this study. The chapter is divided into four parts, beginning with a section in which the choice of perspective is elaborated upon, both in relation to other cultural theories and to other theories within the same theoretical family of practice theories. Following that, the chosen perspective – Schatzki's practice theory – is first introduced, and then critical voices against the perspective are brought to the fore. Lastly, I describe how Schatzki's practice theory is connected to the present study.

Positioning practice theory

Since the aim of this study concerns teachers' doings in online teaching, a theoretical perspective where human actions are the focus is needed. But at the same time, a theoretical perspective that also takes into consideration materiality in terms of artefacts (in this study – online artefacts) is also needed. Furthermore, the starting point is that the teacher has a significant and central role in how the teaching is shaped. Therefore, a perspective focusing on practice and taking all the above mentioned aspects into consideration is needed.

Practice theory, however, is not a homogeneous perspective but consists of many variants with various origins, emphasising different aspects of practices and the location of the social (Hager, 2012; Kemmis, 2010; Schatzki, 2001). Despite the manifoldness of practice theoretical perspectives, Reckwitz (2002a) set out to discern what practice theory contributes, in relation to other theoretical perspectives. He did so by formulating ideal types of both practice theory and other theories and contrasting them against each other. According to Reckwitz, practice theory is a social theory and also a kind of cultural theory. What cultural theories have in common is that they all set out to explain actions and social order, but in different ways. Reckwitz formulated four ideal types of cultural theories; culturalist mentalism, culturalist textualism, culturalist intersubjectivism and practice theory. He contended that 'these schools of thought offer opposing locations of the social and conceptualize the "smallest unit" of social theory differently: in minds, discourses, interactions and "practices"' (p. 245). According to Reckwitz, and somewhat simplified, culturalist mentalism implies a view that the social is located inside the mind of human beings and

that knowledge and meaning are generated from the head. Culturalist textualism locates the social outside the mind in texts and discourses and culturalist intersubjectivism locates it in interactions as speech acts between humans. Practice theory locates the social in practices where activities, social order and '"things" and their use' (p. 249) are of central concern, and thus situates practice theory as sociomaterial.

At present, there is a growing body of literature that advocates sociomaterial perspectives in educational research (Fenwick, Edwards, & Sawchuk, 2011; Landri, 2012). Landri (2012) argued that 'simplistic descriptions of education have neglected, and silenced, the situated work of education' (p. 97) and also silenced 'the *materialities of education*' (p. 91, italics in original). He contended that

> practice as epistemology directs attention to education as an *embodied and materially mediated practice* that occurs in a material organisation of space-time and unfolds through sociomaterial arrangements (texts, blackboards, benches, pencils, technologies, objects of knowledge and space, bodies, etc.) which contribute to shape and, to some extent, are constitutive of educational practice. (p. 96, italics in original)

Despite the increase in the amount of literature that advocates sociomaterial perspectives in educational research, Johannesen (2013) stated that such perspectives are 'less mature' (p. 19) in educational research. However, studies have been published recently which argue that teaching could be understood in terms of a practice and where teaching is also studied with practice theoretical perspectives (Fitzmaurice, 2010; Johannesen, 2013).

As mentioned above, practice theory is a family of perspectives; hence, a choice among them was made. This choice will be elaborated upon in the following. As previously mentioned, a perspective where the focus is on human actions but at the same time takes materiality into consideration is needed. A perspective that meets these requirements is Schatzki's (2002) practice theory, since it views human agency (doings) as asymmetrical in relation to non-human agency. Thus, it recognises the teacher's unique role in shaping teaching. Schatzki's practice theory also views materiality as artefactual. It is necessary to view materiality as artefactual since online teaching practices are understood to comprise material arrangements that are virtual material. In the following, the asymmetrical view of human agency (doings) and materiality as artefactual will be further elaborated upon. The following account also positions Schatzki's theory in relation to other practice theoretical perspectives.

Practice theoretical perspectives have differing views on human and non-human doings (agency). In the following, Schatzki's (2002) practice theory

will be contrasted against ANT in terms of the core concept of doing. According to Reckwitz (2002b) and Schatzki (2002), ANT advocates a symmetrical approach to doings performed by both humans and non-humans. A symmetrical approach means that non-humans are seen as actors on the same conditions as humans in that they perform the same type of doings. More specifically these doings concern intentional doings (Schatzki, 2002). According to Reckwitz (2002b) things in ANT are seen as '"equal" components of a social practice' (p. 208). From Schatzki's theoretical perspective, the dividing line between ANT and Schatzki's practice theory is that intentional agency is a type of doing that is reserved for humans only. Humans, unlike non-humans, have 'intentional, deliberate, and planned doings' (Schatzki, 2002, p. 207). ANT, on the other hand rests on the premise that both humans and non-humans perform the same type of doings. Schatzki's asymmetrical approach could be seen as a *residual humanism* where the unique characteristics of human activities in terms of intentional doings are preserved (Hopwood, forthcoming). Reckwitz (2002b) regards the symmetrical view as too problematic:

> Bruno Latour does not, however, present his new outlook on the status of material objects in the form of an elaborated social theory and his approach contains a number of conceptual ambiguities, among which the alleged status of objects as "actants" in their own right is one of the most problematic and contested. (p. 210)

He highlights Schatzki's version of practice theory as the one that most systematically presents a practice theoretical approach

> Schatzki develops a detailed account of the philosophically sophisticated ideas of a theory of social practices, which in its systematic character surpasses the accounts of the other relevant authors. (p. 211)

Furthermore, Reckwitz argues that it is possible with a practice theoretical approach where materiality is taken into account but maintains an asymmetry between human and non-human:

> It seems that post-Wittgensteinian theory of social practices has good reason to regard artefacts as necessary and influential components of social practices, while wishing to retain an "asymmetric" relation between them and the human agents. When artefacts can only be effective within practices insofar as they are "handled" by human agents and when they are sites of "materialized understanding", then their status obviously cannot be completely "equal" with that of human agents and their embodied understanding. (p. 213-214)

Applying a theoretical perspective in which an asymmetric approach is preserved is in line with my basic assumption that the teacher has a unique position in relation to the teaching process, although the significance of artefacts is also recognised. A practice theoretical perspective based on Schatzki (2002) points to the differences that exist in the doings that humans and non-humans bring about in a practice, and also contributes knowledge on the co-constitution of artefacts (ICT) and teachers' doings in a teaching practice where the humans' unique doings are preserved.

Since this study concerns teaching with ICT, a theoretical perspective that views materiality as something artefactual was needed. There are practice theories that do not view materiality in terms of artefacts, for instance the theory of structuration by Giddens (Reckwitz, 2002b). Furthermore, according to Schatzki (2002) there are theories that do not take materiality into consideration, (such as Taylor) and theories that give materiality less significance than it should have (Spinosa, Flores and Dreyfus). It is important to note that neither the aim nor the overarching research question in this study centre on materiality. Rather, they are oriented towards materiality in terms of co-organising a teaching practice. The focus is not on the technological device per se, but on the teaching practice in an online material set up. The social (the teaching) is tied to the ICT. The teaching that is going on in these online spaces is more focused upon subject matter and interaction between human entities, than centred on the non-human objects as the ICT constitutes. Nonetheless, the online teaching practice takes place in a material setting which co-constitutes the teaching practice online. This co-constitution will be further elaborated upon in the following subsection where Schatzki's practice theory is introduced.

Schatzki's perspective of practice theory

Literature on Schatzki's perspective of practice theory began to emerge in the mid-80s and additional publications have continuously been added up until the present. An important point to note is that Schatzki's theoretical ideas are not static and consistent, but have changed over time (Hopwood, 2013a). Schatzki has also focused on different aspects of practice in his publications. A selection of literature was therefore considered, and the choice fell on the book entitled *The site of the social* published in 2002. At the time this study was conducted, the book was the most comprehensive publication on practice in relation to materiality, and it was therefore chosen as the theoretical base for the present study. Other publications of Schatzki were used as a theoretical frame of reference, particularly literature on bodies and

embodiment. The selection of the literature on embodiment is related to the research question that formed the basis for one of the papers (see paper I). However, the book from 2002 is essentially the key element for the theoretical frame in this study (see paper II, III and IV). Schatzki's (2002) view on practice, materiality and body will be summarised in the following and subsequently related to how it was applied in this thesis.

According to Schatzki (2002) the site of social coexistence – i.e. the place for social life for each and every one – is the practice. Expressed differently, social life occurs in a place context termed 'practice'. A practice consists of organised activities and arranged entities. Furthermore, organised activities and arranged entities co-constitute each other. Schatzki contends that the social and the nature are not two separate units, but only an analytical distinction. In order to understand social action materiality has to be taken into consideration. Humans do not act in a material vacuum but act together with and in relation to other humans, artefacts, organisms and things, which are referred to as entities. Arranged entities form orders which are interwoven with practice (the organised activities). By stating that entities are arranged, the intention is to imply that they are not random aggregations but instead are ordered. Entities hang together, relate to each other, occupy positions and have meaning. Practices and orders co-constitute each other, which means that they are intertwined; they are 'components of a single mesh' (p. 106). Schatzki's practice theory is therefore a holistic one since arranged entities and organised activities influence each other. In sum, practices and orders co-constitute the site of the social. The realms of practices and orders will be summarised in the following.

Practices as organised actions and orders as arranged entities

A practice, according to Schatzki, 'is an organized constellation of actions' (2002, p. 71). The body becomes central in practice theory since it is the human body that performs *actions*. Schatzki does not make any distinction between mind and actions but views the body as 'an ersatz seat of mental unity' (1996, p. 41). It is through the body that the mind is made present. The body 'manifests, signifies, and constitutes how things stand and are going in a person's life. Mind, consequently, comprises the ways of being, or conditions of existence, made present by the expressive doings and sayings of human bodies' (p. 54). To be a body (in addition to biological functions) is something to be learned in social practice where a repertoire of doings and sayings are developed. Schatzki describes bodyhood, i.e. what it means to be

a body, in three dimensions; being a body, having a body and the instrumental body. The dimension of *being a body* could be understood as a normal state, where the human being does not have to think about her body. It is a dimension 'that emphasizes the lack of experiential and conceptual disunity a person has with her body in normal circumstances of acting and experiencing' (p. 43). *Having a body*, on the other hand, is a dimension characterised by a breakdown in which the human becomes aware of her body:

> Having a body is made evident in situations of breakdown, malfunction, discomfort, and incompetence, where the fact that one is a body manifests itself explicitly. In cases of injury, disease, failure to achieve goals through physical effort, the gazes of others, and the acquisition of bodily skills, a person is forced to confront and deal with her body. Such experiences may also underlie her recognition of a distinction between herself and her body. Although this body is hers, she is not identical with it. Rather, she has it. (p. 43)

The third dimension, *the instrumental body*, concerns the bodily performances that are undertaken in order to achieve ends:

> It is through the performance of bodily actions that the performance of other actions is constituted or effected. . . . Bodily performance is unceasingly instrumental in the achievement of a person's ends. . . . There is no need for him to seize, occupy, or activate his body in order for bodily activity to occur. (p. 44-45)

According to Schatzki (2002), actions are denominated as *doings* and *sayings*, where sayings are a subtype of doings. Doings and sayings together constitute *basic actions* which are both bodily and mental. Examples of basic actions are walking, typing on a keyboard, uttering words, or thinking that it is nice to sit around a camp fire in a forest. Aggregated doings and sayings constitute *tasks*, and aggregated tasks constitute *projects*. Examples of tasks are dividing students into groups or uploading slides on a screen, and examples of projects are leading a group exercise or giving a presentation. Tasks and projects are concepts used to establish order in a larger whole. Projects, tasks, basic actions and doings should also be seen as hierarchical: 'a practice thus embraces a set of hierarchically organized doings/sayings, tasks, and projects; and at any given *durée*, a participant in the practice is likely, though not necessarily, to be carrying out actions of all three types' (p. 73, italics in original).

Furthermore, actions in a practice are guided by *practical intelligibility*, which could be understood as what it makes sense to do. Practical intelligibility is an individualistic phenomenon but is also shaped by practice,

in that the practice can shape the human's intentions, tasks and projects. Practices attribute meaning to actions and objects and focus upon the ends, i.e. what the practices' collective actions aim to achieve. In this study, the practice is online teaching.

Furthermore, a practice is organised by practical understandings, rules, teleoaffective structures and general understandings. A *practical understanding* means knowing how to do something; it concerns an ability to carry out specific actions; it is 'a skill or capacity that underlies activity' (p. 79). The difference between practical intelligibility and practical understanding is that practical understanding 'executes the actions that practical intelligibility singles out' (p. 79). *Rules*, according to Schatzki, concern 'explicit formulations, principles, precepts, and instructions that enjoin, direct, or remonstrate people to perform specific actions' (p. 79). When people perform actions, tasks and projects in a practice, they take rules pertaining to the practice into account. A practice is also guided by *teleoaffective structures*, which concern the aim or purpose of the practice, what the actions carried out aim for; what their purposes are. There is also an aspect of moods and feelings involved in teleoaffective structures, which means that people in a practice should or may feel in a certain way when taking part in the practice. Schatzki emphasises that a teleoaffective structure is a property of the practice and not of the individual. *General understandings*, finally, is a more overall and holistic understanding of the practice. These general understandings 'are expressed in the manner in which people carry out projects and tasks' (p. 86). In sum, practical understandings, rules, teleoaffective structures and general understandings are elements that organise a practice and make doings and sayings hang together.

The organised activities that constitute practices are intertwined with *orders*; arranged substances which Schatzki (2002) describes as *entities* and divides into four types; *humans*, *artefacts*, *organisms* and *things*. These entities 'relate, occupy positions, and possess meanings' (p. 22) and together constitute an arrangement. According to Schatzki, there are dimensions of social order where social relations are one dimension and meaning is another dimension. *Social relations* exist between both entities and between arrangements and practices (Schatzki, 2002, 2012). The four relations discussed in Schatzki (2002) are intentionality, causal relations, spatial relations and prefiguration. *Intentionality* is when a human entity direct actions, understandings, thoughts or feelings towards another entity (human or non-human) or towards an arrangement or practice. Note that the intentional relation is confined to the human entity only. This could be understood as a result of Schatzki's residual humanism (Hopwood, forthcoming). There are two types of *causal relations*; one where actions

make something happen and one where actions trigger other actions. The first could be seen to be more of a cause and effect relation. Schatzki argues that 'even in the realm of causality, activity holds the upper hand. . . . activity and its ends circumscribe the relevance of material causality' (s. 117). This speaks for a view on causality which does not determine actions in advance. *Spatial relations* concern the locality of entities in an arrangement. Entities could be positioned close by or far away from each other, or in front of or behind, in between, inside or outside. Schatzki contends that 'most of the spatial relations that characterize social arrangements are established under the aegis of practices' (p. 98). Finally, the *prefigurative relation* concerns how forthcoming actions are channelled in 'ways such as harder and easier, promising of ruin or gain, and prescribed and proscribed' (p. xxii). Prefiguration is, furthermore, a joint effect of both practices and orders:

> The prefiguration of agency is the joint effect of practices and orders. This means that courses of action are easier or harder, simpler or more complicated, safer or riskier, obligatory or proscribed, and so on because of the practices people carry on and the orders amid which they do so. (p. 226)

Entities' positions in an arrangement – i.e. their *meaning* – originate from the intentional, causal, spatial and prefigurative relations. What something is depends on where it fits into a given arrangement. Hence, the meaning of objects originates from practices:

> Activities and objects are not equals here. The character of social existence is, in the end, much more the responsibility of practices than of orders. . . . Practices are largely responsible (directly or indirectly) for the meanings of both actions and objects. . . . Objects lack the capacity to institute meaning. (p. 117)

Furthermore, the meaning is not given once and for all, i.e. it is not stable but 'its meaning can be multiple, unstable, and constantly changing' (p. 19).

In sum, the site of the social consists of practices (organised activities) and orders (arranged entities) which co-constitute each other. Orders are arrangements of substances of both human and non-human kinds, and practices are organised actions which only the human entity carries out. Prior to discussing the implications of applying Schatzki's practice theoretical perspective, the emerging critique of practice theory will be briefly considered.

Critical voices

According to Hopwood (2013a) criticism against Schatzki's version of practice theory has just commenced. Caldwell (2012) carried out a philosophical critique of Schatzki, and as far as I can understand Caldwell, his critique concerns how Schatzki explains agency and change in a practice. The concept of practical intelligibility, according to Caldwell, is not explained since Schatzki does not answer the question of where practical intelligibility originates from. Caldwell contends that 'practical intelligibility appears to assume a radical posture of epistemological neutrality in defining agency as a non-discursive form of doing' (p. 285). My interpretation of Caldwell's critique is that he regards Schatzki's practical intelligibility as value-neutral i.e. not influenced by any form of structure, such as language or discourse. This neutrality hampers the possibilities for explaining the origins of practical intelligibility. It is also unfortunate, according to Caldwell, that sayings are sorted under doings. This sorting, Caldwell asserts, leads to language and discourse being given a limited role in Schatzki's practice theory. Language and discourse have a limited impact upon agency. Schatzki's concept of general understandings is also criticised in a similar way to practical intelligibility. Caldwell argues that in order to explain the occurrence of practical understanding, there is a risk of moving beyond the practice, which is something that Schatzki seeks to avoid. Caldwell's critique ends up by stating that theoretical intelligibility is missing in Schatzki's practice theory. My interpretation of theoretical intelligibility is that it concerns aspects of the mind.

Since Schatzki (2002) defends residual humanism, he could be understood as being indirectly criticised by researchers who advocate symmetrical approaches to materiality, such as Bennett (2010), Sørensen (2009) and Waltz (2006) (referred to in Fenwick et al., 2011). Fenwick et al. argued that

> in education, voices like Sørensen (2009) are increasingly arguing not just for greater attention to materiality, but for this more symmetrical approach. Waltz (2006) claims that in educational analyses, material things too often are denied their vitality. Materiality is subsumed by human intention, design and drive, and treated merely as things representative of human ends. (2011, p. 4)

Orlikowski (2007) points to the need for sociomaterial perspectives in organisational studies and also discusses the diminished role of technology in perspectives that focus upon interaction with technology:

> The *human-centered* perspective focuses on how humans make sense of and interact with technology in various circumstances. Here the technology is

> not black-boxed but understood to be different based on the different meanings assigned to it and the different ways in which people engage with it. Furthermore, such interpretations, interests, and interactions are seen to vary by time and place, entailing a more dynamic and situated view of the relationship of technology with organizations. While this grounds use of technology in particular socio-cultural and historical contexts, it tends to minimize the role of the technology itself. By focusing primarily on the human side of the relationship, the technology – as commentators such as Button (1993) and Berg (1997) have argued – vanishes from view in the preoccupation with the social. (p. 1437, italics in original)

Orlikowski's critique could also, to a certain extent, be understood as a critique of the residual humanism that Schatzki advocates. I will return to the criticism of asymmetry in chapter six where intentionality and the concept of inscription are discussed in relation to the findings of the present study. Before turning to the design of the study, I will present how Schatzki's practice theory was applied in the study by presenting an analytical framework that connects practice theory with online teaching.

Analytical framework

At the very end of his book from 2002, Schatzki states that 'to describe social life and social phenomena is to detail the practice-order complexes' (p. 266). In this study, online teaching was viewed as a social phenomenon. This study also describes and analyses the practice-order complexes for online teaching. Through the perspective of practice theory, online teaching is understood as a practice that comprises organised activities and arranged entities. The teacher and also the ICT are viewed as central entities in the arrangement of online teaching. The site of teaching online is – in line with a practice theoretical perspective based on Schatzki (2002) – understood as a co-constitution of practice and material arrangement (see Figure 1).

Online teaching is understood as a practice where teachers and students carry out organised doings and sayings (activities, tasks and projects). These doings and sayings are organised by general and practical understandings, rules and teleoaffective structures. Since the aim of the thesis is to describe and analyse the teaching practice (and not the practice of learning), students' doings and sayings are only relevant when they are related to the teachers' doings and sayings. Furthermore, online teaching is also understood as comprising material arrangements i.e. orders of arranged entities comprising humans (teachers and students) and artefacts (ICT in terms of online settings). The online settings are treated as virtual material. Jakobsson (2002) pointed out that virtual objects are just as real as physical objects. Landri

(2009) and Orlikowski (2007) also contended that digital objects should be treated as sociomaterial. Furthermore, the online settings are treated as spaces and places, which is in line with how other researchers treat the online dimension (see e.g. Boellstorff, 2008; Hine, 2000, 2008a; Markham, 1998; Salmon, 2011; Tsatsou, 2009). The virtual material online arrangements and teaching practices are interrelated through the social relations of intentionality, causality, spatiality and prefiguration. Furthermore, the entities (in terms of virtual material objects, teachers and students) get their meaning from these relations. Together, the practice in terms of students' and teachers' doings and sayings, and material arrangements in terms of online settings treated as virtual material constitute what could be understood as online pedagogy. I will return to the concept of online pedagogy in the discussion section of this thesis, where I analyse how online pedagogy is constituted and how it could be understood.

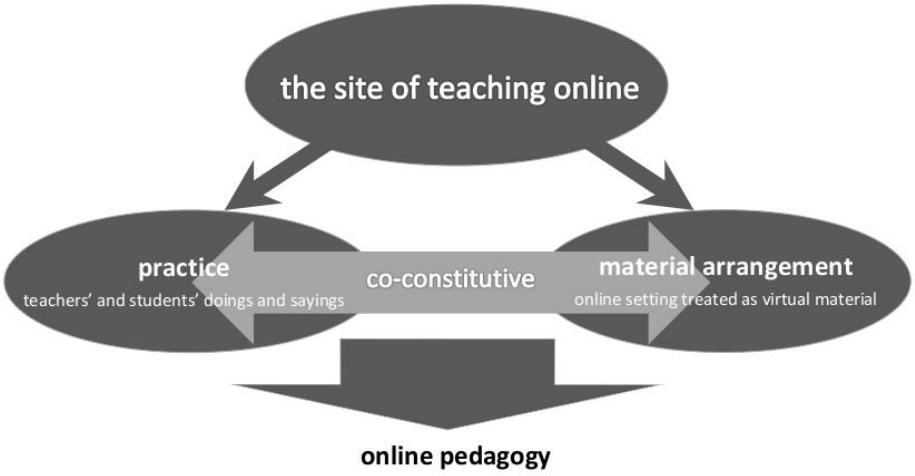

Figure 1. Analytical framework.

This thesis comprises four papers in which the practice-order complexes for online teaching are described and analysed. Since the aim of the thesis concerns teaching, and teaching is closely connected to the teacher, the first step was to describe and analyse teachers' activities in the online arrangement, in terms of their doings and sayings online. When taking the point of departure from practice theory, embodiment is of central concern since doings are seen as bodily. Therefore, the first paper set out to study teachers' embodiments in online teaching practices. As a second step, the teachers' organised activities were the focus of the second paper. This paper concerned the interventions teachers make in the online settings. These

interventions are linked by practical and general understandings, rules and teleoaffective structures. As a final step, the arrangements were the main focus of the third and fourth papers. In these papers, the relations between the arrangements and the practices were analysed.

That practices and orders were of central concern in different papers does not imply that practices and orders were seen as separated. It means that *the point of departure* in the second paper was practices, while in the third and fourth paper it was orders. To focus on one of the two dimensions (practices and orders) of the site of the social is in line with how Schatzki (2002) himself approaches the question of presenting the perspective. He argues that it is 'an analytic distinction between components of a single mesh' (p. 106). Hence, even if practices and orders are co-constitutive it is possible to allow one of them be in the foreground and the other in the background, and to relate the first to the second. Before turning to the papers in more detail, the design of the study and the methods applied will be presented in the following chapter.

4. Study design and method

This chapter describes the design and method of the study, which could be considered as online-ethnographic, since it rests on online ethnographic methods for studying online teaching practices. The chapter begins with an argument for the choice of method followed by a short introduction to the method applied – online ethnography. Two settings were studied in this thesis, a course in education and a language course. These two settings are outlined in more detail. The chapter also describes what the empirical data consist of and also how they were gathered by observations, interviews and document studies. The process of analysis is elucidated and my pre-understanding of the field is presented. This is followed by a subsection in which quality assurance in the research process is considered. The chapter ends with a section in which ethical considerations in relation to the study are discussed.

Some remarks on the choice of method

In order to describe and analyse online teaching practices, a method that focuses upon *what is being done* in the online teaching practice (i.e. the doings and sayings that the teacher performs) is needed. Schatzki recommends ethnography as a method for studying practices:

> To acquire this knowledge, the investigator has no choice but to do ethnography, that is, to practice interaction-observation. Under "ethnography" writ large I include focus groups and meetings of subjects, as well as videotaping practices. . . . There is no alternative to hanging out with, joining in with, talking to and watching, and getting together the people concerned. . . . A further important method, in a way a part of ethnography writ large, is the interview or oral history. (2012, p. 24-25)

Hence, Schatzki asserts that an ethnographic method should be used when studying practices. Observation is, furthermore, seen as central. Not only Schatzki but also other researchers advocate ethnography when studying practices. Sørensen (2009), for instance, states that 'ethnography is a suitable method for studying practice, and for finding answers to open questions about the nature and formation of these practices' (p. 3). Mol (2002), who studied how the disease of atherosclerosis was enacted in a Dutch hospital, also combined an ethnographic method with a perspective of practice theory.

Doing online teaching is the focus of this thesis. The online teaching hangs together with the online settings because it is there that the encounter between teachers, students and materiality – and therefore teaching – happens. The virtual material online settings are part of the teaching practices and have therefore to be taken into consideration when analysing how teaching is carried out.

Hence, the choice of method should be understood as anchored in the theoretical perspective of practice theory. Observations are crucial from a methodological point of view since actions are central in the theoretical perspective: to teach is to act, and activities are central in practice theory. However, since sayings are a subtype of doings it is also of interest to talk and listen to the teachers. Therefore, informal conversations and interviews are also part of the empirical data in this study. An *online* ethnographic approach was applied since the teaching practices are located in online settings. Schatzki contends that one should join in and watch and talk to the people concerned. The sites in focus for this study are online sites. In order to observe these practices there is a need to join in. This means to go online, stepping into the environments where teaching takes place. I will therefore now turn to the area of online ethnography.

Online ethnography

Online ethnography constitutes an area within internet research (Bryman, 2008; Lee, Fielding, & Blank, 2008) and online ethnographic studies began to emerge with the internet's expansion in the 90s (Hine, 2008a). Both online ethnography and internet research are fields which are growing at a fast pace and include increasing types of ICT. Internet research is, furthermore, conducted across academic disciplines (Markham & Buchanan, 2012). Many concepts are used to describe the areas of online ethnography and internet research. Markham and Buchanan (2012) term the overall area *internet research*. Several concepts are used by Bryman (2008), such as *e-research* and *online research*. Lee et al. (2008) also describe the area as online research. Part of AoIR's (the Association of Internet Researchers) working definition of internet research is that such a study 'utilizes the internet to collect data or information' (Markham & Buchanan, 2012, p. 3) e.g. online interviews. Furthermore, internet research 'studies how people use and access the internet, e.g., through collecting and observing activities or participating on social network sites, listservs, web sites, blogs, games, virtual worlds, or other online environments or contexts' (Markham & Buchanan, 2012, p. 3). This study applies to both these aspects since it investigates the online

teaching practices carried out by humans in virtual material settings in terms of an LMS and a virtual world. Furthermore, the teaching practices are studied through observations of activities and also by interviews with informants.

The sub-area of online ethnography has also been named in several ways, such as *online ethnography* (Hine, 2008a; Skågeby, 2011), *virtual ethnography* (Hine, 2008a), *virtual anthropology* (Boellstorff, 2008), *cyber-ethnography* (Hammersley & Atkinson, 2007) and *netnography* (Kozinets, 2010). Other researchers term it only as *ethnography* (Taylor, 2002) and the concept *blended ethnography* was applied when both online and offline methods were used (Kozinets, 2010). Several of these authors suggest that their chosen concept differs from others in certain ways (see e.g. Hine, 2008a) or clarify why they prefer their own concept over others (see e.g. Boellstorff, 2008). All these concepts complicate the aim of offering an overall picture of the field. I will therefore in the following take the point of departure in Hine, since she is one of the most cited in the field. According to Hine (2008a) 'virtual ethnography transfers the ethnographic tradition of the researcher as an embodied research instrument to the social spaces of the Internet' (p. 257) and she contends that 'by and large . . . virtual ethnography has remained in dialogue with more conventional versions of the methodology' (p. 267). She also opens up the question of whether virtual ethnography will continue to be a certain kind of ethnography. Williams (2007), on the other hand, contends that 'an adaptive form of ethnography is required in the face of the complexities posed by online settings' (p. 8).

In this study, I took a pragmatic approach to the literature on internet research and online ethnography. This pragmatic approach implies that I did not choose one author or text to stick with. Instead I combined several sources in my work on this thesis. The reason for this approach was that it was difficult to find a handbook or any other text that alone covered all the factors that have to be taken into consideration when carrying out a study. Depending on what should be done in the research process (e.g. observations, interviews, or composing a form for informed consent), I turned to appropriate online ethnographic literature dealing with the area of interest and that discussed issues to take into consideration. This approach provided guidelines for the work that lay ahead. Most of these sources assumed that it was non-formal environments that would be studied. As a consequence, not all recommendations on internet research and online ethnography were applicable for this study. Furthermore, this study could be understood as an example of blended ethnography since part of the data collection in one of the courses studied was carried out offline. However, the majority of the time on the field was spent online, since both courses studied were carried out

entirely online. In the following, the two settings that were studied are presented in more detail. The methods and empirical data will also be elaborated upon and related to the particular literature on internet research and online ethnography that supported each step of the research process.

The settings

Two settings were studied in this thesis. The reason for selecting more than one setting was to create conditions for capturing as many aspects of online teaching practices as possible in the time available. Contrasting environments were therefore sought. The two settings studied were selected by purposive sampling (Bryman, 2008). The first criterion in the selection of settings was that both should concern a university course with a base at a Swedish university and where the course should be taught entirely online, i.e. without offline meetings. This criterion related to the aim of the study, which was to describe and analyse online teaching practices in higher education settings in a Swedish context. Hence, there was a specific interest in online courses without physical meetings. There is a great variety of ICT available on the Swedish market; open environments and closed, asynchronous and synchronous, text-based and graphical, chargeable and free. In the Swedish national agency for higher education's memorandum (Högskoleverket, 2011) LMS are mentioned as a mature technology in higher education whilst social networks are considered as a form of ICT that is sparsely used in education. One example highlighted by the Swedish national agency for higher education within the category of social networks was SL.

A selection of ICT settings was made with the aim of choosing one mature and one new-fangled setting. Accordingly, the first setting addresses a course that was mainly carried out on IL – an LMS. The second setting addresses a course where SL – a virtual world[7] – was used. IL is an example

[7] According to Bell (2008) there is no generally accepted definition regarding the concept of a virtual world. Castronova (2005) is a frequently cited source who defines a virtual world as a 'computer-generated physical space, represented graphically in three dimensions, that can be experienced by many people at once' (p. 22). Bell (2008), furthermore, combined earlier definitions into a new one that reads '**a synchronous, persistent network of people, represented as avatars, facilitated by networked computers**' (p. 2, bold in original). In turn, several names for virtual worlds exist and are referred to in the research literature. The choice of name often depends on what characteristics the researcher wishes to highlight regarding virtual worlds (see Mawer, 2011). Even if a setting in an LMS could be experienced and understood as a virtual world, the concept *virtual world* will in this study be reserved

of a closed, asynchronous, chargeable and mainly text-based environment. SL is, on the other hand, an example of an open, synchronous, free and mainly graphical environment. In this way, the study in its entirety addresses both an example of a more widely used ICT, but also an ICT which can be considered to be in the forefront. The strategy used when selecting the settings was to choose contrasting settings in terms of type of ICT, subject of the course, course level and university that provided the course. Both the settings studied could be described as relatively closed (Bryman, 2008), since they concerned university courses. Access to the IL setting was made through a sponsor who also served as a gatekeeper (Bryman, 2008). Access to the SL setting was made by a direct inquiry to the single teacher in the course.

From the outset, three settings were planned to be studied, but at a later stage it was decided to narrow the study to two settings. After the two settings had been studied, it was concluded that these two settings were sufficiently contrasting. Markham (2009) supports the view that it must be possible to change the research design if necessary, stating that 'the power of qualitative methods can be actually limited if . . . one sticks too rigidly to the study's design as initially planned' (p. 146-147). The two settings that were studied are presented in the following.

The education course on itslearning

Prologue

It is an early and sunny morning in May. I am on the bus on my way to work, staring out the bus window, my thoughts elsewhere. I am mentally preparing for today's work. Today, most of the day will be spent on continuing to go through the events in the course. A few days ago I began the work of analysing the course by just browsing the itslearning site to get an overview of the structure of the course space. This should make it easier for me to orient myself among all the folders, documents and forums. As a second step I read through all the posts and documents that the teachers have posted on itslearning prior to course launch. I also printed some documents; the syllabus, schedule and instructions for assignments. My plan is to have them ready at hand when following the discussions in the forums.

Once I arrive at the office I turn on the computer, grab a cup of coffee and pull out the printed documents. After some browsing I find the link again to itslearning on the University's website. I fill in my username and password. Enter. Loading… I am in.

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for the kind of environments that SL is an example of, i.e. a space in three dimensions mainly for synchronous communication carried out through avatars.

I am met by an orderly interface in grey and white and with black and blue text where the latter indicates links to further information. Here and there some splashes of colour sneak in, in the shape of small icons in green and orange. It is quiet and still. Nothing in the interface, either text or icons is moving. It is a peaceful environment.

In my list of courses I click on the education course and the start page shows up. Everything is arranged in straight rows and columns. Square areas with rounded corners divide the space into different types of information, such as bulletins, follow-up tasks and the latest changes. The course space is arranged in a hierarchical menu containing yellow folders and small icons in black and orange for each discussion forum. Shared spaces have a document icon in white and red. A bulletin board in reverse chronological order occupies the largest area on the start page. Here, teachers post information to the students during the course. I scroll to the bottom of the page in order to find out when the first message after the course launch was published.

Instead of reading every forum from beginning to end, and each one separately, I read posts based on when they were published, beginning from the date the course was launched. This means that I move between different forums guided by the publication dates of the posts. I have decided to read messages in chronological order so that I get a sense of the order and rhythm that the course had when it was active. I therefore begin today's work by going through the discussion forums that were used at the beginning of the course, i.e. the discussion forums for task one and forums that were open during the whole course, i.e. local tutor forums and the coffee-shop. I make sure to only expand one folder at a time in the menu on the left. There are not that many main folders in the course, only six. But several of the main folders have a complicated (yet logical) sub-structure with sub-folders, workspaces and discussion forums. When a main folder has several subfolders, I make sure to close them as I navigate to other spaces. Otherwise I easily get lost and have trouble understanding where I am in the structure.

Once inside the first forum I sense the febrile activity that has been going on here. This group of students seems, on the face of it, to have been enjoying their discussion. More than 40 posts in this forum! I'd better get going! The time stamps on each post guide my way and I curiously begin to read while sipping on my morning coffee. Some of the summer birds have come early this year and chirp carefree outside my window. I am losing myself in the saved interactions on my screen… (Field note IL 20130514)

The first setting studied was a course in education comprising 7.5 ECTS credits. The course was part of a master programme arranged by international universities, including a Swedish university. The programme was launched in early 2000 and was provided part time for two years. The course studied in

this thesis was the second course in the programme. The reasons for choosing this course were that the Swedish university was responsible for the course and hence also taught the course. Furthermore, this was the first course in the programme after the course introduction and was therefore the first course in which students did not work primarily on an individual basis. The course introduction also contained more administrative tasks, and since the research interest was the teaching practice the second course was chosen.

The course was conducted in the autumn of 2010, over 10 weeks, on a part-time basis. The whole course involved three teachers and 59 students. The students were divided into three groups, with one of the teachers serving as a tutor. Two of the teachers freely chose to participate in the study while the third chose not to participate. As a result, the data in this thesis are based on two teachers and their respective group of students (in total 39 students). These two groups of students were further divided into four subgroups, which meant that each of the two teachers was a tutor for four subgroups of students.

The IL platform was used during the whole master's programme and, consequently, also in the course studied. IL was established in 1999 and has more than two million users. It can be used with all levels of the educational sector – from primary school to university level (itslearning, 2014). The platform has been used in the master programme since 2007. IL is an LMS that primarily supports text-based and asynchronous communication and in which discussion forums constitute a central way of communicating. LMSs exist in several variants, other examples being Moodle™, Blackboard™ and Sakai™. The platforms also have synonymous names, such as LMS, virtual learning environment (VLE), course management system (CMS) and e-learning platforms (Brenton, 2009). Brenton outlines features that many of these platforms have in common. According to Brenton, a VLE is

> a piece of web-based software that allows the running of all or part of a course or module online. It gives a menu-based or point-and-click interface for constructing an online course area without the need for specialist web development skills. These [VLEs] typically include: a chat room; a discussion board; a calendar; an announcements feature; a tool for building online assessments; a function for setting work, for the students to submit it and for you to grade it; a way to upload, order, index and time-release learning materials; a glossary; a tool for providing web links; a way to track your students' activity in the VLE; and a facility for displaying syllabus information . . . . Your institution's VLE may also include a **blog**-like reflective journal, tools for you and your students to record, upload and download voice files, a messaging tool, perhaps an e-**portfolio** tool for your students to store and reflect on materials and information about their progress, and a 'Who's Online' tool. You log on to a VLE via a web

> address from any internet-enabled computer, and access to your course area/s is usually, though not exclusively, restricted to those students who are on your course. (p. 87, bold in original)

The description above corresponds to a large degree with the IL platform. When logging in, the user of the IL course is met by a start page containing a bulletin board with the latest news published by the course teachers. It also contains an area for announcements of new events that have occurred since the user's last visit. A menu containing the courses the user is involved in is shown on the left-hand side. The menu can be expanded, showing each course's content in a tree structure that can be further expanded (see Figure 2). A central function of the platform is the discussion forums. It is in these spaces that much of the communication occurs (see Figure 3).

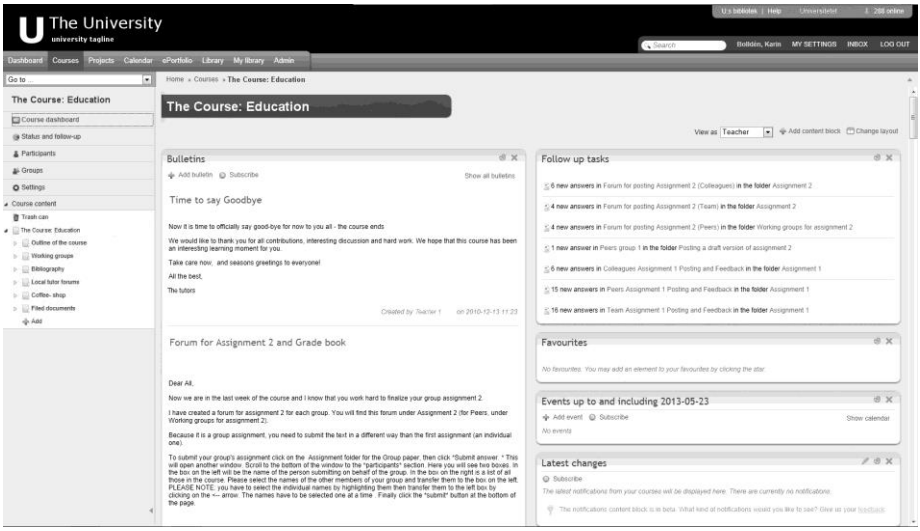

Figure 2. Start page for the course. (Edited screenshot by Karin Bolldén. Permission to use screenshot granted by itslearning©)

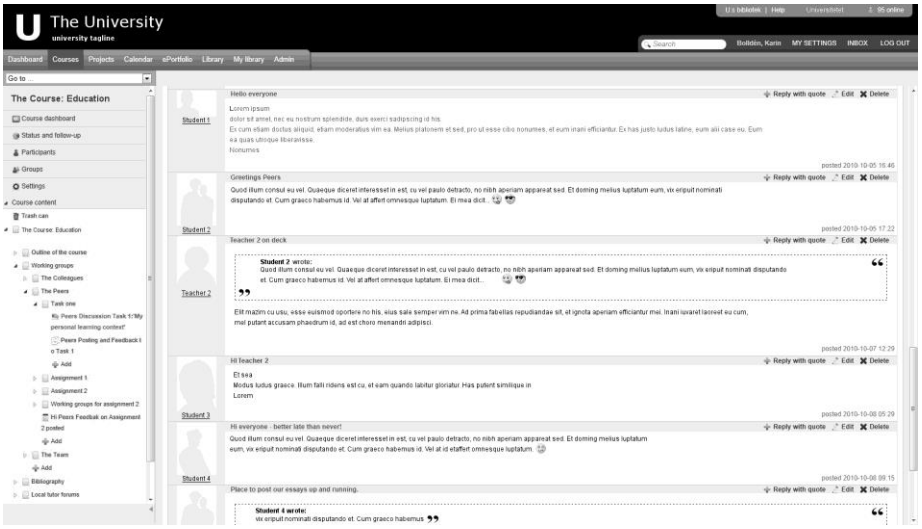

Figure 3. Example of a discussion forum. (Edited screenshot by Karin Bolldén. Permission to use screenshot granted by itslearning©)

The language course in Second Life

Prologue

It is quiet and still on the island. Clouds are slowly drifting over the summer sky towards a bright horizon. The birches are blooming in a beautifully green and sheer colour, as they do at the very beginning of summer in Sweden. Far ahead of me I catch a glimpse of the peaks of a mountain. I am hovering a bit above the ground in the forest, surrounded by all the beautiful birches. A little further on, I can see the island's central place, where most people arrive when they are teleported here. Over there is a map in three-dimensional form that gives an overview of the whole island. It is also the meeting spot for me and the teacher. We will meet at three o'clock Swedish time today. I say Swedish time to be very clear. In SL the time is 5:58 PST at the moment.

I walk towards the meeting spot and sit down on a bench while waiting for the teacher. On the mini-map I see five green dots. Apparently, there are four others on the island, but I do not have them in sight. I activate the voice function in order to be able to speak audibly with the teacher as soon as s/he arrives. The text *Researcher* in a white font floats above my head. Some flags are waving in the wind. It is only in that way that one senses the wind here; it cannot actually be heard. Suddenly, a little white cloud foams about ten meters in front of me. Shortly thereafter the cloud disappears and a figure in grey has appeared. There are now six green dots on the mini-map. The teacher has logged on. Whilst the teacher checks her/his sound and lets

the avatar to take shape (to rez), I stand up and walk over to her/him. We begin with a brief greeting via instant messaging (IM) and then move on to auditory communication.

The teacher is in contact with a colleague in the USA that is teaching a group of students on another island in SL. The teacher will visit the colleague and the students in order to introduce them to a forthcoming collaboration. The teacher gets a teleport request from her/his colleague and thereby disappears out of my sight. Only five green dots again. A few seconds later it is my turn. I have received a teleport request from the teacher. I accept by clicking on the button *Teleport*. My screen goes black and is accompanied by a *swooossshhh* in my headset. On the screen it says *Arriving…*

In comparison to the island I just left, I have now landed in an environment where a lot is going on – at the same time. I land in a room that I have never seen before. Ceiling, walls, floor and furnishing are rezzing gradually. Before figuring out what is front and back in the room, it is better to just stand still. Otherwise there is a risk that I will step over both tables and chairs. Suddenly I hear an unfamiliar voice in my headset speaking English. Fairly quickly, I grasp that it is a librarian who lectures for a group of students. I zoom out with my camera in order to get an overview of the room. The room is rezzing gradually and I can see that it is filled with avatars. Most of them are seated in red armchairs arranged in rows and turned towards two screens mounted on one long side wall. Because of the dark wooden floor and dark panelling on the walls I do not directly associate this with a traditional classroom. The armchairs are more like those found in a cinema. Several avatars are standing at the side of the armchairs and one stands between the auditorium and the screens. It turns out that it is she who speaks and asks questions.

While I gently try to move my avatar to the back of the room, I get an IM from the teacher's colleague who greets me and welcomes me to the class. I interrupt my movement and begin to reply to the message, but am impeded by acoustic feedback when the librarian speaks. Worried that it is due to my audio settings I wait to respond to the text message and check my settings. No, the problem must be with someone else, because everything looks okay here. I now move my avatar to the rear, long side of the room in order to not be in the spotlight and continue to respond to the IM that has now become two. The mini-map is crammed with green dots. While I type a response to the IMs I have received, another window pops up on my screen. It is the teacher making a friend request. I continue to answer the first two messages at the same time as the librarian's slides are rezzing on one of the screens. The librarian is having a conversation with the auditorium whilst I send my answers to the teacher's colleague. I barely have time to approve the teacher's friend request before a new IM from the teacher's colleague shows up on the screen again. I begin a new answer. Meanwhile, the

> librarian finishes off the presentation and leaves the floor open to the teacher's colleague. I realise that the teacher and I will shortly be presented to the auditorium and hasten to check my audio settings in order to be ready if it turns out that I should say something through sound. I also open the window for public chat if it turns out that interjections through text are more appropriate. The teacher takes up a position between the screens and the auditorium, begins her/his presentation and introduces me in such a way that I deem it appropriate to leave a short greeting message through text in the public chat.
>
> The teacher's colleague and I continue our private conversation while the teacher continues with the presentation. Messages concerning the content of the presentation are posted in open chat, both by the teacher's colleague and the students. The teacher comments on this as they pop up. After about fifteen to twenty minutes the teacher is finished. The teacher and I thank the teacher's colleague and the students for the visit, and the teacher and I teleport back to the island where we met. Everything is calm and quiet again. Despite my three years in SL I have still not managed the multimodal environment without effort. The teacher has been teaching in SL for five years and has handled the situation without problems. We talk for a while about what it is like to teach in a multimodal environment before it is time to leave the island for another visit to the teacher's colleague. (Field note SL 20120131)

The second setting studied was a single subject language course at undergraduate level, comprising three ECTS credits and arranged by a Swedish university. The course was launched towards the end of the 2000s and was offered part-time at quarter speed over nine weeks. The reason for choosing this particular course was that it had been offered for a longer time (compared with the launch of SL). The course studied was conducted during spring 2012 and had one teacher and 14 students. It was offered both as a day and evening course and students had the possibility to alternate between them, depending on if they had conflicts with other courses or work-related tasks, or if they were travelling to remote areas where the time zone made them prefer an early or late class. Each course had five meetings in two-hour sessions. Both courses had a joint course launch lasting four hours. The teacher also had two pre-meetings with a colleague and her/his students, which lasted for 50 minutes.

Both the day and evening classes were followed in this study. The reasons for following both versions were threefold. First, the course had not that many meetings and was therefore sensitive to losses in terms of observation occasions due to technological hazards. If the researcher's attendance at a meeting had failed due to technological problems it would have made an impact on the results of the study. Since the technology was

shown to be vulnerable during pretesting, a decision to also attend the evening class was considered. Second, the informant had limited possibilities for informal conversations after day classes but several opportunities after the evening classes. Third, the informant expressed on several occasions prior to course launch, a desire for me to attend during evening classes as well. In order to establish confidence and also because I wanted to spend time with the informant, such as meeting the informant online after classes, the invitation was accepted.

The virtual world SL was used as the main technology during the whole course. According to Linden Lab (the company behind SL) SL is the leading three-dimensional virtual world. According to figures from 2013, 36 million accounts have been created and transactions among users amount to 3.2 billion USD since its launch in 2003. SL has more than one million visitors monthly (Linden Lab, 2013). It is the most frequently used virtual world among educators and over 250 higher education institutions use it for teaching purposes to a greater or lesser degree (Conole & Alevizou, 2010; Kingsley & Wankel, 2009; Minocha & Reeves, 2010).

Several terms are used when defining what virtual worlds are, e.g. three-dimensional (3D) virtual worlds, immersive virtual worlds, three-dimensional virtual environments (see Mawer, 2011, for additional terms). According to Mawer, special terms are often used in literature with the purpose of accentuating a certain characteristic of the virtual world. The term 'virtual world' is used throughout this thesis. Boellstorff, Nardi, Pearce, and Taylor (2012) provide a definition of virtual worlds:

> First, they are *places* and have a sense of *worldness*. They are not just spatial representations but offer an object-rich environment that participants can traverse and with which they can interact. Second, virtual worlds are multi-user in nature; they exist as shared social environments with synchronous communication and interaction. While participants may engage in solitary activities within them, virtual worlds thrive through co-inhabitation with others. Third, they are *persistent*: they continue to exist in some form even as participants log off. They can thus change while any one participant is absent, based on the platform itself or the activities of other participants. Fourth, virtual worlds allow participants to *embody* themselves, usually as avatars . . . such that they can explore and participate in the virtual world. (p. 7, italics in original)

Boellstorff (2008) emphasises that virtual worlds are places, which 'means they can be field sites; it makes an ethnographic approach conceivable' (p. 91). Furthermore, SL is a social virtual world, which means that it is not based on a game idea (Peachey, Gillen, Livingstone, & Smith-Robbins,

2010b) but is instead open-ended with no goal other than offering a space for people to interact.

Users get access to SL by means of a client (software installed on the computer), internet connection and an account. When an account is created, an avatar (an online body) is also chosen and associated with the account. The avatar is controlled by pressing keys on the keyboard but also by pointing and clicking with the mouse. Among many other functions, the avatar can walk, sit, stand, and run, but also fly, hover, and teleport. SL comprises three-dimensional spaces consisting of two-dimensional images combined together, in order to get a view in three dimensions. Users can talk with others synchronously by both text chat and audio. Communication can be both public and private. In order to talk and listen to others by audio, a headset with a microphone is needed[8]. The language course was conducted on an island in SL specifically designed for educational purposes. Several different kinds of settings were located on the island and three of them were used more frequently in the language course; the classroom setting, the camp fire setting and the conference table setting (see Figure 4-6).

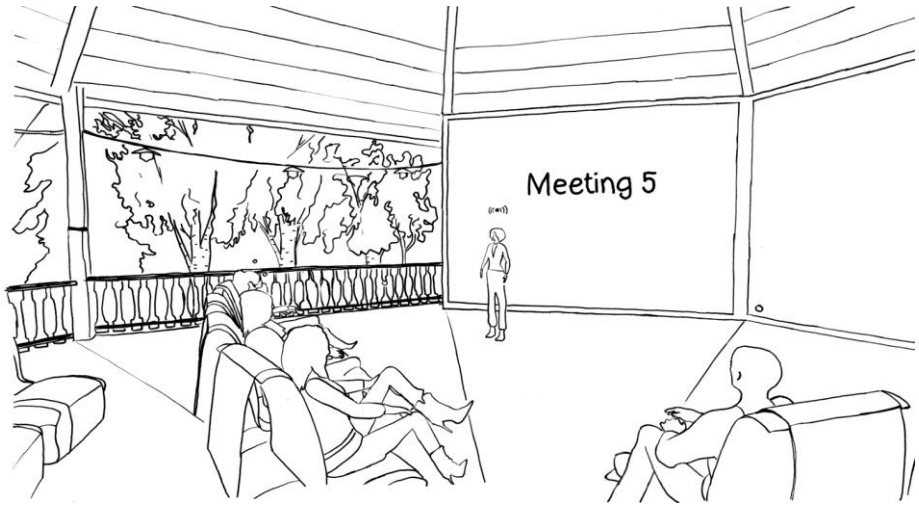

Figure 4. The classroom setting. (Line drawing based on snapshots in-world. Line drawing by Karin Bolldén. Permission to use snapshots granted by land owner in SL.)

[8] See Boellstorff (2008) for a longer and more detailed introduction to SL from a non-formal perspective.

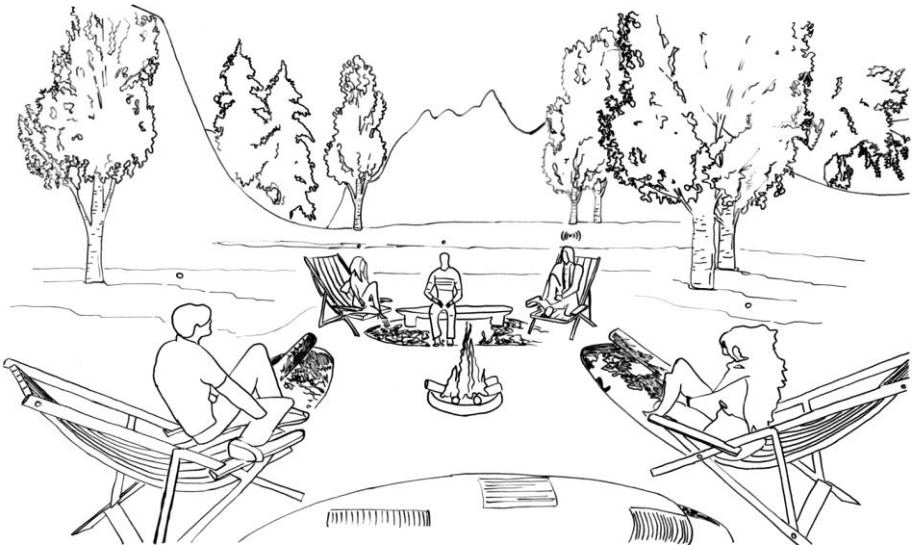

Figure 5. The camp fire setting. (Line drawing based on snapshots in-world. Line drawing by Karin Bolldén. Permission to use snapshots granted by land owner in SL.)

Figure 6. The conference table setting. (Line drawing based on snapshots in-world. Line drawing by Karin Bolldén. Permission to use snapshots granted by land owner in SL.)

As previously mentioned, SL was the main technology in the language course. However, other technologies were also used with supportive functions, such as a course home page and a Facebook group. The course

home page functioned as a repository of information, for example providing the course schedule, slides from presentations, information about the meetings in the course, and video tutorials about navigating in SL. The Facebook group served as a communication channel between meetings. In the following, observations, interviews and document studies in both the IL and SL settings will be described.

Observations

> The ethnographic study of practices does not search for knowledge in subjects who have it in their minds and may talk about it. Instead, it locates knowledge primarily in activities, events, buildings, instruments, procedures, and so on. (Mol, 2002, p. 32)

The extract from Mol above is an argument that observation should have a major role when practices are studied. This was also the case in this thesis and therefore the section on observation is both the first and the most comprehensive one when turning to the subsections of observations, interviews and document studies. In the following, the areas of stepping into the field, observation roles, observation focus, informal conversations, field notes and recordings will be discussed.

Several researchers have described the process a researcher needs to go through when entering the online dimension. This can briefly be summarised as an immigration process where the researcher needs to acquire new skills and master a range of tools in order to create an online persona/identity, and then learn ways to interact online, understand the local etiquette, and also learn how to fit in and how to conduct research in the setting (Hine, 2008b; Moschini, 2010; Williams, 2007). Hopwood (2013b) uses the concept *grotesque bodies* in order to highlight the 'corporeal and material interweaving' (p. 235) of an ethnographer's body in the fieldwork practice. This corresponds well with what an online researcher faces when conducting research online. Artefacts, together with the human body, constitute an ethnographic field work practice. In both the IL and SL setting, the built-in profile was filled with information, such as a profile picture and a link to my researcher website where further information about the research could be found. Furthermore, in the SL setting, an avatar was created and customised (see subsection *Ethical considerations* for an elaborated discussion on my presence online).

The observations in the SL setting were preceded by several visits during the autumn of 2011. On these visits I familiarised myself, on my own, with the island where the observations were going to take place, and practiced

how to navigate in the area. It also implied a second step in which I visited the autumn version of the course with the purpose of testing the recording function. A checklist for screen casting sessions was also constructed that contained issues to deal with before, during and after observations. During the observations in the SL setting I was either hovering above the setting or sitting or standing slightly removed in relation to the teacher and the students. The camera angle was usually a wide-angle perspective capturing the teacher, the students and the whole setting they were interacting in and with. Several angles were also used, such as viewing the situation from behind and in front (e.g. from in front of the classroom or from the back of the classroom). Alteration of camera angles cannot be observed by others and therefore does not disrupt the ongoing activities. Observing from different angles is valuable (Moschini, 2010) since it captures activities that otherwise would not be seen.

It should be noted, however, that altering the camera angle does not imply that you see what other participants see, since they could have adopted any camera angle[9]. To take one example, there is no guarantee that the teacher has a camera angle showing students from the front. It is possible that the teacher has set the camera to show the setting with the teacher from the front. Furthermore, the angle could vary from close up to panorama, giving a view from above or from below. What is more, even if the camera angle is altered, the setting where activities in the course took place was in focus. This means that other areas and settings on the island were not recorded. Furthermore, when group work was carried out in class and student groups were scattered on the island, I chose to follow the teacher's movements and participation in the groups. This means that some of the activities during class were not recorded (or observed).

Observations in the IL setting took place after the course was finished. Hence, the observations were carried out in retrospect. In this study, observation in the IL setting was to read all the messages and information on the platform.

I had an overt role (Bryman, 2008) during observation in both settings. During classes in SL and observations on IL I had the role as a *total researcher*, which meant observing without participating (Bryman, 2008). The reason for taking this role was the situation, i.e. I did not want to disturb the teaching that was taking place. The observation focus in both settings was on what was done and said in the teaching situation, with a particular focus on teachers' doings and sayings. Furthermore, I had a particular focus on

[9] Regardless of whether a participant is recording or not, they have a camera since vision in SL (and control thereof) is managed by a camera. Hence, what is seen is also what is recorded.

these doings and sayings in relation to the virtual materiality in the online settings.

Informal conversations were carried out with the teachers in both settings. In the IL setting, the conversations took place offline and during the time I observed the IL course. In the SL setting they were carried out in SL and in direct connection to the meetings in the course, but there were also a handful of meetings prior to the course launch. During informal conversations I was a *total participant* (Bryman, 2008), engaging in ongoing conversations and activities.

Field notes were taken during the observations of both settings, but they were very different in character, which was due to the character of the settings. IL is an asynchronous setting and the empirical data is – to a large extent – already documented. This led to a process where the empirical data were read through on the platform and an initial analysis was written down in documents that were subsequently imported to NVivo® (see section *Process of analysis*) for further analysis. Furthermore, activities and information on the platform were imported to NVivo for further analysis. Hence, empirical data, field notes and analysis pertaining to the IL setting are intertwined.

To take field notes in a synchronous setting such as SL is quite another thing compared to asynchronous settings such as IL. During the first meeting in the SL course, I tried to work using the recommendation of Williams (2007), which is to use two screens; one for observing activities in the setting, and one for taking field notes in a word processor. Despite prior experience of SL, the multimodal situation became too difficult to handle at the same time as taking field notes. All I got after the first session was jotted notes on post-its and nothing in the word processor. Williams (2007) also asserted that 'online graphical environments pose unique methodological challenges, beyond that of text-based and offline settings' (p. 20). One of these difficulties is managing a synchronous and multimodal setting while taking field notes. This led to the decision to discard the word processor and rely more on the recordings (see below). During the remaining observations, I took *jotted notes* (Bryman, 2008) on post-its and wrote these up into *full field notes* (Bryman, 2008) as soon as time allowed – usually the day after. Each full field note included information about date, time, location in-world and people attending. I took as *detailed field notes* as possible, comprising both summaries and initial analyses of the teaching practice (Bryman, 2008).

It should be noted that the process of taking jotted notes was performed in synchrony with the observations in real time. These notes were taken without the need to depart to a secluded area, since the offline space where I dwelled was already secluded in relation to the online environment. The

purpose of taking jotted notes during the live observations was to document initial analysis when observing activities in the online setting.

Williams (2007) contends that field notes can be complemented with recordings. Meetings in the SL course were recorded, mainly for two reasons. The first reason relates to the theoretical perspective applied in this thesis. Seen from a practice theoretical perspective, it is not possible to know what is actually going to happen in a setting, until it actually happens. Hence, the researcher has to make a retrospective analysis of what actually happened. In order to conduct this retrospective analysis in a detailed way, I found it necessary to record the activities in the setting (cf. Johnson, 2004 for a similar argument). The second reason pertains to the multimodal situation outlined above. Since I found it very difficult to take field notes at the same time as participating in the course meetings, the notes were very limited in character. Instead of focusing on documenting what happened in detailed field notes, I focused upon analysing the activities and jotting down central themes in those very early and direct analyses of live activities. The recordings later supported the development of those initial analyses into very detailed analyses of what had happened. Video analysis of work situations where the relations between humans and technology are studied are common in earlier studies (Johnson, 2004). Suchman, Blomberg, Orr, and Trigg (1999) for example, argued that analysing interactions and relations between humans and artefacts in real time is difficult, and therefore they recommended the use of video recordings.

Several snapshots were taken in both the IL and SL setting, in order to recall the spaces and situations (Bryman, 2008). In sum, the observational data for the SL setting contained 211 pages of field notes, 20 hours of class recordings, 13 hours of informal conversations and 25 snapshots. The observational data for the IL setting contained 18 discussion forums (which included 415 threads and 2153 posts), 18 posts on a bulletin board, a handful local tutor forums with 32 threads (including 118 posts), and one coffee shop with 61 threads (including 666 posts). In total, 508 threads and 2955 posts, nine snapshots and approximately 10 hours of informal conversations constituted the observational empirical data in the IL setting.

Interviews

Prior to the observations, three semi-structured interviews (Bryman, 2008; Salmons, 2010) were carried out, serving the purpose of getting an introduction to and a basic knowledge of the two courses studied in this thesis. All interviews were conducted during the autumn of 2011. Only one

of the two teachers in the IL course was interviewed since the other one had passed away but an informant interview with the program coordinator was also carried out. The only teacher in the SL course was also interviewed. The interview with the teacher in the IL setting was carried out offline and lasted for one hour and a quarter. The interview with the SL teacher was carried out online and lasted for two hours. The informant interview lasted for two hours and was carried out online. The interviews with the teachers concerned both their intentions and their doings in the course. Questions posed revolved around educational matters, such as what students should learn during the course and how they should learn, course design, and assessment design. Other areas concerned the ICT used and questions on online teaching (see Appendix A for the interview guide). The interview with the program coordinator revolved around the same questions as in the interview with the teachers, except that the questions instead covered the program in its entirety. An interview guide (see Appendix B) was constructed and employed for the informant interview. The guide comprised two sections; one with questions pertaining to the program as a whole and one with questions concerning the specific course, since the informant was a local tutor for the course. Being a local tutor implies acting as a contact person for students connected to the same university as the local tutor. In this way, the informant gained an understanding of the specific course in question as well. However, the informant interview came to focus only on the program in its entirety.

As mentioned above, two of the interviews were carried out online and one offline, which was due both to conveniences related to geographical proximity and also to the informant's preferences. The online interviews were carried out with Adobe Connect; a multichannel online meeting space (Salmons, 2010). This tool enables the creation of an interview situation where interviewer and interviewee see and hear each other synchronously. It is achieved by using a web camera and a headset with microphone, together with Adobe Connect. Furthermore, the program has a range of meeting tools, such as text chat, and recording and archiving functions[10]. According to Salmons (2010), the location for an online interview should be safe, neutral, easy to access and comfortable for the interviewee. Therefore, a private online environment in terms of an e-meeting room in Adobe Connect was designed, created and used. The two interviews were carried out as a private one-to-one-session in the e-meeting room.

There were several reasons for choosing this kind of meeting space. First, such spaces increase the immediacy and presence between people interacting in them (Salmons, 2010). Secondly, the tool (and supporting functions) is

[10] See Salmons (2010) for a more detailed description of online meeting spaces.

available in every university in Sweden. Third, the informants had the technology that was needed in order to participate (i.e. a high speed internet connection, headset with microphone, web camera and computer) and also the know-how; which both related to the fact that the teachers are teaching online. Fourth, I had previous experience in Adobe Connect, since I had participated in several webinars in which Adobe Connect was used.

The interviews were preceded by a period of constructing the e-meeting room, supportive documents and training. Salmons (2010) served as a support in that process and was a source of practical advice and tips (e.g. adjusting the camera position to close-up view to get the *best virtual eye contact*, and to practice interviews both in the role as interviewer and interviewee in order to become fluent in using the technology). I developed a checklist for online interviews in order to keep track of all the practicalities when carrying out a session. I also developed a document for the interviewees containing information on technological preparations required prior to the interview. Pre-interviews (Salmons, 2010) were also carried out with the informants in which we checked that the technology was working properly and also talked informally with each other.

The offline interview was carried out in a meeting room at the interviewee's workplace. All interviews were recorded and subsequently transcribed verbatim. The three interviews together provided 77 pages of transcribed text. In an initial stage of the research process, follow-up interviews were planned. These plans were discarded at a later stage due to the research focus that the theoretical perspective contributed, i.e. a major focus on analysing the observations (see also the subsection *Process of analysis* concerning the role of theory in this study).

Document studies

Virtual documents (Bryman, 2008) pertaining to both courses were also part of the empirical data. In the SL setting, a course website containing information such as lesson plans, slides, schedule information on SL and various administrative documents was part of the empirical data. The course also had a Facebook group containing 139 events at the end of the data collection process. This group was followed and all the posts were read through. The teacher on the course also had a blog in which s/he had documented the process of planning and carrying through the course the first time it was launched. The blog contained 41 posts; all of them were read through. Furthermore, approximately ten documents were accessed and read through. Examples of these documents are the course syllabus, a welcome

letter template and examples of individual feedback on assignments. As part of the field notes, approximately 25 snapshots were taken in-world. Examples of these snapshots are the teacher's profile and the settings.

In the IL setting, the master programme had a website which was visited and read through. The site mainly contained information on the programme. Approximately 20 documents pertaining to the course and located on the platform IL were part of the data. Examples of these documents are the course syllabus, netiquette information and examples of emoticons. Approximately 10 snapshots were taken on the platform. Examples of these snapshots are teachers' profiles, teachers' welcome messages and snapshots of the setting as a whole.

Process of analysis

This study is characterised by thematically oriented qualitative analysis whose focus was on finding themes and patterns in the data. The process was exploratory and inductive. A Computer Assisted Qualitative Data Analysis Software (CAQDAS) (Bryman, 2008) package was used in this study with two overall purposes: organising and analysing data. One of the strengths of CAQDAS is that it facilitates the process of organising data (Bazeley, 2007; Stewart, 2012). Since the data in this study was comprehensive, there was a need for a way to store and organise it in an accessible way, and also to bring it together to a whole in order to create an overview of the whole data set, regardless of data type. The whole data set in this study, i.e. field notes from observations, documents, snapshots, and interview transcripts, was imported to the CAQDAS package. Additional data that could not be imported were linked to the software, such as video recordings of observations, course websites and audio recordings of interviews.

Another strength of CAQDAS is that it facilitates the process of analysis: 'large numbers of coding categories plus related relevant information such as definitions and notes on the development and refinement of ideas are also more easily managed and stored' (Stewart, 2012, p. 505). CAQDAS was used for facilitating analysis by supporting coding, linking and storing data in a systematic way. NVivo 9 (which is an example of a CAQDAS) was chosen, since it supports a range of data types (Stewart, 2012), such as different formats of text documents and images. It is also flexible in managing codes both within and outside of coding hierarchies. Memos were used for connecting a code to an analysis; in this case the memo was the location for the analysis. The reason for integrating the analysis in NVivo was that data

and analysis in this way is closely connected. This is in harmony with an ethnographic approach where thick descriptions are central:

> The benefit of using integrated memo systems rather than keeping memos outside of the CAQDAS package relates to the systematic management and retrieval of writing, alongside the integration with data. This will be particularly so with methodologies relying on thick description. (Silver & Lewins, 2010, p. 332)

Data were linked, for instance from a part of an analysis in a memo to a related analysis located in another memo. However, it is important to note that the use of CAQDAS does not imply that coding and analysis are automated and performed by the computer software. Rather, as Bazeley (2007), Bryman (2008) and Silver and Lewins (2010) contend, the software supports the process, but the researcher is responsible for the quality of the analysis made:

> The researcher determines the way the software is used, the sequencing of tasks, and the interpretation of the data. While software can certainly enable more transparency in process and offers means by which analytic rigor and the robustness of conclusions can be tracked, the quality of the output is not guaranteed or enhanced merely by use of the software. (Silver & Lewins, 2010, p. 333)

The empirical data was imported to NVivo where it was subjected to several rounds of thematic analysis. The first round was exploratory and empirically driven. The searchlight was focused on the relation between teachers' doings and sayings and technology. In this stage, the analysis was characterised by an explorative and inductive approach and the focus was on interpreting and naming meaning units and generating categories and themes which formed the basis for a further round of analysis. Thus, this stage of analysis did not emanate from predefined themes, but generated themes from the empirical analysis that was carried through. These themes served as the basis for follow-up questions during informal conversations and also for the second round of analysis. The first round of analysis also indicated a need for a theoretical perspective that could describe and elucidate the relation of teachers' doings and sayings and technology, whereupon a theoretical literature review was conducted and a practice theoretical lens was added to the analysis.

This was followed by a second round of analysis, which was theory-driven. In this second round, existing categories and themes were further analysed and additional categories and themes were generated (see Table 1 for an illustrative example).

Table 1. Illustrative example of the thematic analysis undertaken.

Meaning unit	Code	Category	Theme
/..The teacher is invisible… if there's no text… so the teacher has to be… it requires a lot… reading all those messages and taking care of (the students), tracking all that are not visible there, encouraging them../	invisible and visible	instrumental body	embodiment
/..I use podcasts… the real function… is to make sure to regard those students who could be anywhere… It's okay… you are still with us../	invisible and visible	instrumental body	embodiment

Note. Adapted from "Teachers' embodied presence in online teaching practices", by K. Bolldén, 2014, *Studies in Continuing Education*, advance online publication, p. 5. Copyright 2014 by Taylor & Francis.

Furthermore, themes were ordered in relation to each other by arranging them in hierarchies and folders. Themes were recoded, grouped, copied and moved between overarching areas. NVivo supports these activities in a flexible way (Silver & Lewins, 2010). Theoretically-driven concepts were added as themes which were coded when analysing the data and when reading and re-coding older themes anew. The practice theoretical perspective sharpened the analysis, going deeper into the study's observational data and towards what was *done* in the teaching practice. In some cases, the theory-driven analysis indicated a need to return to specific recordings, documents or interviews for a deeper analysis of the existing theme. In this phase, different strategies were used when analysing the data in order to direct the focus towards *what was being done*. For example, the video recordings were analysed both with and without sound. This strategy was used in order to direct the analytic focus to doings beyond speech and to the online arrangement. Hence, both the field notes and the video recordings were used in the analysis. Silver and Lewins promote the usage of both video recordings and field notes together:

> The development of a written log (which may vary from a fully verbatim transcription, to a summary overview, or an analytic memo), may be an important analytic task in its own right. It will certainly provide an additional dimension to the data. While audio visual data is incredibly rich,

> it can only be viewed and heard in real-time, and it is therefore difficult to consider as a whole without some written summary. Abstracting from the data by working with a written log as well as directly with the multimedia file can provide the researcher with an additional perspective and means of analytic consideration. Playback options and tools that allow shuffling through help to deal with this, but nevertheless, a written transcription of some sort usually acts as a valuable data source. (2010, p. 329)

In the process of analysing data and finding patterns, all the data were analysed separately and together, each course individually, and also each course in relation to the other. Themes with content that overlapped with other themes were merged and themes that related to each other were linked together by adding an overall theme which spanned across the related themes. NVivo facilitated the process of analysing the data from different angles, such as what was analysed and to what extent. In this way, the tool, to some extent, made it possible to observe more potentially interesting aspects. Four major areas were identified in the empirical data, and these constitute the four papers in the thesis. The themes were sorted into these four areas. Thus, the analysis was both iterative and reflexive (Srivastava & Hopwood, 2009).

CAQDAS is often associated with grounded theory since the course of action taken when analysing empirical data in CAQDAS resonates well with procedures in grounded theory (Bryman, 2008; Stewart, 2012). Much of the CAQDAS software was in fact designed with grounded theory in mind (Bryman, 2008). The first round of thematic analysis carried out in this thesis resembled a grounded theory approach. However, in the second round mentioned above, I also added a practice theoretical perspective when carrying out the analysis. I did not develop theory out of data in the manner as grounded theory are often described (see Bryman, 2008) but rather applied an existing theoretical framework to the data.

It should be clarified that the theoretical perspective was added in the middle of the research process. This means that the initial and overall aim and research question were not theoretically driven. Neither were the interviews and the questions posed generated from a theoretical perspective, but instead from the initial research question. However, the theoretical perspective was added in the middle of the data collection process, and therefore, some of the informal conversations and the main part of the analysis are grounded in the theory.

Pre-understandings

When launching this study I had completed my undergraduate studies in ICT and learning and also had a couple of years' experience of teaching in higher education, both offline and online. Therefore, I had a pre-understanding of what it could mean as both a teacher and student to work in a formal context online. I also had a particular understanding of the ICT used in the two settings. Firstly, I had a pre-understanding of different types of LMSs. During my years as a university teacher I used FirstClass® for teaching purposes, and during my time as a student I gained experience in several LMSs. During my time as a Ph.D. student I used IL for other purposes than my research and thus have experience of using the platform as an administrator, which is similar to how teachers in the IL setting are using it. I also used SL occasionally with colleagues when working as a university teacher with the purpose of testing the functionality in order to get an understanding of its potential for use in university courses. I therefore had a pre-understanding of the different kinds of ICT that have been in focus in this study, which implies that I already had basic skills and mastered tools in both settings.

Markham (2009) advocates iterative reflexive self-analysis during the whole research process as a way of 'understand[ing] one's own framework in relation to other choices one could make, so that one can make well-founded decisions and articulate these to others' (p. 151). This was done in this study by reflecting upon choices, decisions and the self in relation to the research process. This was an ongoing and documented process involving writing notes in reverse chronological order in a log book with time stamps. In the log book I posed counter arguments (Baym, 2009) to decisions made during the research process in order to argue for the decisions taken. In sum, I share an approach that views the researcher as part of the method, and a person who co-creates the empirical data together with the informants.

Ensuring quality in internet research

The situation concerning which criteria to use when conducting and judging quality in qualitative research is not straightforward. At present, there is no consensus regarding quality criteria in qualitative research. In the literature, though somewhat simplified, two lines of thought are often presented; one where quantitative criteria are used but adapted to a qualitative approach in different ways, and one where other criteria are used. There have been several suggestions for other criteria that could be used, but there is no mutual agreement upon which ones should be used. There are also

researchers who position themselves in between these two lines of thought (Bryman, 2008; Svensson, 1996).

Based on the situation that no agreement on which criteria to use in qualitative research seems to prevail, a point of departure was taken in Baym (2006, 2009) and Larsson (2005). The rationale for the choice of these authors and the texts that they have written is that Baym (2006, 2009) writes about quality in qualitative internet studies, which this study is an example of. Larsson (2005) writes about quality in qualitative studies and has also been active in the field of education, which in turn is the major subject that this thesis applies to. Both Larsson (2005) and Baym (2006, 2009) relate to an ethnographic approach in their texts. This is also a reason for choosing these texts since this study has an online ethnographic approach. The selection of quality criteria should thus be understood as based on the type of study, i.e. an online ethnographic study within the area of internet research and education.

Both Larsson (2005) and Baym (2009) express caution about the criteria or guidelines that they present and they also carefully point out that these cannot be used without reflection. Furthermore, many of the criteria affect each other, meaning that the use of a certain criterion excludes or complicates the use of other ones. In other words, pairs of criteria could be understood as opposite sides of the same coin. Larsson contends that 'for certain types of studies, certain criteria are getting more important' (2005, p. 33, my translation). This study, which is an example of qualitative online ethnographic research, brings certain criteria into focus. These will be presented in the following.

There are several similarities in what is discussed in Baym (2009) and Larsson (2005). Baym seems to take different positions as regards whether there is a need for certain quality guidelines for internet research or not. In the text from 2006 she contends that internet research has its own specific concerns because of its relative newness. These concerns include thoughts among researchers that previous rules do not have value in internet research, and problems in finding other researchers' results due to fidelity to the discipline the researcher is active in, which leads to research results being published in journals and other forums connected to a specific discipline. This makes it difficult for other internet researchers in other disciplines to find relevant research (Baym, 2006). But in the more recent text from 2009 she emphasises that the guidelines presented in the text do not only concern qualitative internet research but qualitative research in general. Perhaps these two lines of argument do not contradict each other. While guidelines concerning qualitative research in general are applicable to qualitative internet research, there are also specific issues within the area of qualitative

internet research that necessitate clear emphasis on certain issues. In the following, five criteria based on Larsson (2005) and Baym (2009) will be presented and related to the conducted study. The criteria relating to the particular situation for internet research will be embedded in the discussion of the five criteria.

The criteria that will be discussed in the following are *perspective consciousness, ethical value, richness of meaning, the pragmatic criterion* and *empirical anchorage*. The names of the criteria are Larsson's (2005) but will also refer to guidelines presented by Baym (2009) that have a similar content. The six quality criteria related to the particular situation in internet research are: the research should be grounded in theory and previous research, rigor in the collection of data and in the analysis, generating data in several ways, participant perspective, reflexivity in the research process, and viewing offline and online as something that hangs together (Baym, 2006). These six criteria will be discussed in relation to the five criteria mentioned above.

First, Larsson (2005) highlighted the importance of *perspective consciousness* when conducting, reporting and judging research. By accounting for the previous research in the field which the study relates to and the theories and the methods used in the study, the researcher clarifies his or her pre-understanding. Another aspect of perspective consciousness is to describe previous experiences that have a bearing on the researcher's pre-understanding. Accounting for the pre-understanding is essential, because in this way the reader is informed of the starting points of the study. This relates to Baym's (2006, 2009) guidelines concerning reflexivity during the research process and the importance of accounting for the reflexivity by documenting and communicating choices made during the research process and the underlying arguments for these choices. According to Baym (2009) reflexivity relates to reliability. Accounting for previous research, chosen theories and methods are related to one of Baym's criteria, namely that the research should be grounded in theory and previous research. According to Baym (2006) there is a widespread notion among researchers that the phenomenon of the internet is so new that the 'previous research' mentioned above has not been done, resulting in deficient literature reviews in relation to the researcher's own study. A similar argument is made in relation to theories and methods, with assumptions implying that old theories and methods cannot be used when studying the 'new' media. Baym (2006) makes counterarguments against these ideas and calls for usage of existing theories and reviews of previous research. I set out to find and report what other researchers have accomplished in the area (see chapter 2). I also describe the theoretical perspective that was used in the study and also for when in the

research process it was added (see chapter 3). The theory used, practice theory, is not one generated within the area of internet research, but following Baym's (2009) suggestion I applied an 'old' theory on the 'new' media. I also discuss the relation between the theory and the object of study and how the theory should be understood in relation to the object of study, i.e. online settings. More specifically, linking practice theory to the object of study concerns how to approach and understand the concept of the body in online environments (see chapters 3 and 6, and paper I), online teaching, virtual materiality and online pedagogy (see chapters 3 and 6, and paper II-IV). By discussing the body and materiality (which are central concepts in the theory) in relation to online settings, thoughts are brought back to the theory and its use in different settings, which is a point that Baym (2006) highlights. I also give a detailed description of my methods and how I used them. My pre-understanding of teaching and the different types of ICT that were in focus in the study are also described. In order to reflect upon choices made during the research process a log book was used for documentation and argumentation regarding the choices made. The log book served as a supporting resource when reporting the research. Another criterion related to perspective consciousness is the sixth criterion mentioned in Baym (2006), namely viewing offline and online as something that hangs together. Baym (2006) contends that what happens online is not isolated from what happens offline (and the other way around):

> Offline contexts always permeate and influence online situations, and online situations and experiences always feed back into offline experience. The best work recognizes that the internet is woven into the fabric of the rest of life and seeks to better understand the weaving. (Baym, 2006, p. 86)

The results in this thesis show examples of how this interweaving takes place in two formal educational settings.

The criterion of perspective consciousness concerns quality in the study as a whole. Another criterion that also concerns the study as a whole is *ethical value* which means that 'a reasonable balance' (Larsson, 2005, p. 22, my translation) should be sought between protection of informants and the gaining of new knowledge. Larsson (2005) contends that there is a tension between ethics and validity. This tension was abundantly present during the research process in this study. Ethical considerations in this study are described in the next section where, among other things, protection of informants and field sites are discussed. At the beginning of reporting the results of the study, a strong weight towards protection of informants and field sites was prioritised. This led to difficulties in validity, more specifically to richness of meaning. In order to rebalance ethics and validity I opened up

and presented more of the context, such as mentioning the subjects in the two courses and creating and enclosing drawings of the settings studied. The drawings add to the contextualisation but do not reveal as much as snapshots would do.

The third criterion, *richness of meaning*, concerns the quality of the results. The results should be rich in meaning in order to provide a cross-contextualisation of the results between the context of the study and the reader's context. The results should provide rich descriptions so that the reader, based on these descriptions, is able to judge the extent of the bearing the reported results could have on the reader's context (Larsson, 2005). The results in this study contain thick descriptions in order to provide richness of meaning. The kappa complements the papers and provides a thorough contextualisation of both settings that serves as the base for the study as a whole. The criterion of richness of meaning is similar to the tension between local and global that Baym (2009) discusses. As researchers, we are studying local contexts but also need to attend to global comparability. My interpretation of how the tension between local and global could be handled is that thick descriptions are a prerequisite for comparability. Related to richness of meaning is *the pragmatic criterion* (Larsson, 2005) or ecological validity (Bryman, 2008) which concerns the practical significance of the result for the practitioners' settings. According to Larsson (2005) the choice of media is important when presenting the results; however, he does not further specify what this means. I chose to interpret it as where the results are published and in what way. This study is a compilation thesis written in English. The argument for choosing a paper-based approach in English is to position the study in an international discussion. I thought it important to make use of the ongoing research globally in the area, with the purpose of informing the local Swedish context. But the opposite approach is important as well, that is, to inform the global academic discussion, depicting one example of a local context.

A fifth quality criterion is *empirical anchorage*, which means that the analysis should be anchored in empirical data, in reality. In ethnography, presence in the field is seen as a way of anchoring the analysis. According to Larsson (2005), technique triangulation, which means combining different types of data, is a technique for validating analysis. Presence is also highlighted in the criterion of rigor in the collection of data and in the analysis (Baym, 2006, 2009). Triangulation is part of Baym's (2006) criteria generating data in several ways. In this study the empirical data comprise several data sources such as participant observation, document studies and interviews. Thus, the technique of triangulation was used where several kinds of data sources have been analysed in relation to each other. I was also

present in the field, observing the everyday activities and interacting with the teachers between teaching sessions. Talking to the teachers, both formally and informally, is highlighted by the participant perspective (Baym, 2006). My interpretation is that Baym (2006) with this criterion, would like to get away from a passive way of studying an online site, i.e. not asking the people inhabiting the online space for their views on the object of study.

My interpretation of Larsson's (2005) and Baym's (2006, 2009) positioning in relation to the two lines of thought presented at the beginning of this section is that they lean towards the second line of thought. They both use other criteria when discussing the quality of qualitative studies. Furthermore, both Larsson (2005) and Baym (2006, 2009) refer to Hammersley when discussing ethnographic approaches, and according to Bryman (2008) Hammersley positions himself in between these two lines of thought. If one still wants to attempt to use quantitative concepts on the study presented here, my interpretation of how the criteria I have discussed here could be related to quantitative concepts is that the criterion of perspective consciousness corresponds to reliability, richness of meaning corresponds to generalizability, and the empirical anchorage together with the pragmatic criterion corresponds to validity.

Ethical considerations

Since the study is situated in Sweden, Swedish regulations and documents concerning research ethics were considered. A central document is the Ethical Review Act (2003) which regulates what kinds of research should be reviewed by an ethical review board. The law applies to research that involves sensitive personal information, physical interventions, physical or psychological impact, or risk of injury. This study does not involve these matters and is considered to have a harmless impact on the persons participating in the study, and therefore does not need to be reviewed (Vetenskapsrådet, 2005, 2011a). However, this does not imply that ethical aspects and guidelines should not be considered. In the following, ethical considerations in the study will be elaborated upon.

An information and consent form was developed and applied in the study (see Appendix C). The content of the form was based on §16 and §17 in the Ethical Review Act (2003) and section 24 and 33 in the World medical association declaration of Helsinki (2008). Guidelines given in Forskningspersonsinformation (2011), Forskningsetiska principer inom humanistisk-samhällsvetenskaplig forskning (Vetenskapsrådet, 2011b) and Vetenskapsrådet (2005) were also considered. More specifically, these

documents highlight the importance of addressing the background, aim and methods of the study, describe what the study is expected to contribute in terms of new knowledge, provide information about why particular informants have been contacted, and state that participation is voluntary and can be terminated whenever the informant wishes to do so. They also highlight information about confidentiality and the affiliation of the researcher(s) responsible for the study, and give information about where and how the results of the study can be found when published. Furthermore, the information should be given before the study begins, in easy and clear language, and it should not be too long. Informed consent should be documented in writing.

Accordingly, written informed consent from the informants was sought and obtained in this study. The informants in turn informed the students about the study. Prior to the observations the students received a letter with information about the study which also included contact details. Furthermore, they had the possibility to pose questions through the media used in the course. Information should also be given orally (Forskningspersonsinformation, 2011) so this was done in connection to the first observation session and at the beginning of each interview.

There are several guidelines that could serve as support for the individual researcher in the process of making wise decisions. The choice of guidelines should correspond to the kind of research that is carried out (Vetenskapsrådet, 2011a). This study is an example of internet research and therefore ethical guidelines that concern this area have been considered.

AoIR have developed a set of guidelines for ethical decision-making in internet research, the first version of which was published in 2002 and the second in 2012 (Ess and the AoIR ethics working committee, 2002; Markham & Buchanan, 2012). Both versions of AoIR's guidelines were considered in this study. The reasons for using both versions were twofold. First, when this study started in 2009 the version from 2002 was considered, since the version from 2012 had yet to be published. Since the process of ethical decision-making takes place during the whole research process, the version from 2012 was also considered when it was published since this study was still in progress. Second, the internet as research phenomena is changing rapidly. Therefore, the content of the two versions addressed some different aspects of internet research. The version from 2002 was consulted at the beginning of the research process and the version from 2012 at the end. Both documents offer ethical questions for reflection that span across the research process. The purpose of AoIR's guidelines is to foster the process of phronesis i.e. the individual researcher's own judgment on ethical issues related to the specific context that they study. These guidelines were read in

this manner. Furthermore, they served as guidance when considering informed consent, specific questions in relation to the venues studied, and when judging whether the venues should be considered as public or private.

Kozinets (2010) presents four ethical guidelines for conducting online research: identifying yourself as a researcher and informing the informant about the research, asking for permission, gaining informed consent, and anonymising participants. Guidelines two and three have already been discussed above, but guidelines one and four will be discussed below.

According to Kozinets (2010), it is important to have a presence online and this presence should clearly show that you are a researcher. This could be achieved by using a sig line[11] and/or the user profile to make the purpose of your presence clear. In the SL setting in this study, a researcher tag in the form of the text *Researcher* floating above the researcher avatar's head was created and used. This is in line with a sig line discussed by Kozinets. In both the SL and IL settings in this study, the built in profile on each platform was completed and used for informing people of the presence and identity of the researcher. Furthermore, the presence should blend in and should also not be misleading concerning the identity of the researcher:

> It is also important that the way the researcher reveals his or her presence should not be disruptive to the normal activity of the site. Even if the practice of identity play, gender mixing, and other types of altered representation is common on the site, the researcher is more bound by codes of research ethics to disclose themselves accurately than they are by the practice of netnography to fit in as a culture member. Netnographers should *never, under any circumstances*, engage in identity deception. (Kozinets, 2010, p. 147, italics in original)

In both the IL and SL settings, there was a possibility of uploading a photo of oneself. This was done and the photograph chosen was one that was used both in online and offline settings when I presented myself, and corresponded to my appearance in a formal setting. It is required in the SL setting to create and use an avatar in order to navigate and participate in-world. The purpose when creating this avatar was to create an online body that was not misleading and with which I could immerse and engage online and which I could identify as mine; this in order to fulfil the ethnographic approach of being there in the field. Therefore, a human female avatar which resembled my offline appearance – at least as far as the system's limitations and my ability to adjust an avatar permitted – was created and used. To create an online presence in accordance with the offline one was preferred by other

[11] A signature line, or in short-form 'sig line', is a short line of text that ends every post or email a user sends.

researchers (Boellstorff, 2008; Sundén, 2002) and is also in line with general precepts such as to speak the truth and being honest (Vetenskapsrådet, 2005). Nevertheless, there may be objections to whether it is dishonest or unprofessional to appear as a ship or a unicorn in-world. I think this is both a philosophical and an ethical question that needs to be further elaborated in the research literature on virtual worlds.

Kozinets (2010) advises the usage of a researcher home page with additional information about the researcher and the research. Such a site was constructed, used and linked to in the profiles on both platforms. Anonymising of the participants was done at a medium cloaked level (Kozinets, 2010) based on the judgement of balancing confidentiality and contextualisation of the study. Kozinets (2010) discusses things to be considered in relation to anonymisation in online research, such as that the online names and places should be treated as offline ones to ensure protection in terms of using pseudonyms. This was done in this study. The generated data that is digital is password-protected and analogue data are stored in locked rooms.

5. Summaries of the papers

The thesis comprises four papers and this chapter presents these in brief. The papers are summarised separately and presented in chronological order i.e. in the order they were written. Prior to presenting the papers, I will elaborate on how they are related to each other and how they contribute to answering the overarching research question of the thesis.

How the papers hang together

Since the aim of the thesis is to describe and analyse online teaching practices, the teacher comes into focus since this entity has a major impact on the teaching. Furthermore, the teacher entity comes into focus in a particular way when employing a perspective of practice theory. Bodies are central in practice theory since they perform the organised activities that constitute practices, and they are also seen as part of the material arrangement. Hence, teachers' embodied presence in online teaching practices are described and analysed in the first paper.

When applying a perspective of practice theory the site of teaching online is seen as a co-constitution of teachers' doings and sayings and material arrangements in terms of online settings, treated as virtual material. The second paper has its point of departure in teacher interventions in online teaching practices. Foregrounding practice implies that the arrangements are also important to take into account in the analysis. More specifically, it means that the point of departure when studying the sociomaterial co-constitution of practice was to focus on teacher interventions as doings and sayings that are relational to arrangements.

The third and fourth paper do the reverse i.e. they take the point of departure in online arrangements seen as relational to teachers' sayings and doings in the co-constitution of teaching practice. All four papers apply the same theoretical perspective; practice theory (see chapter 3). However, each paper takes its point of departure in different theoretical concepts due to the research focus of each paper. The same methods and empirical data (see chapter 4) were used for all papers with the exception of paper four which is only based on the SL setting.

Together, these papers contribute to answering the overarching research question by exemplifying and making the relation of teachers' doings and sayings (practice) and technology (arrangement) explicit. In the following,

each paper is presented in brief. The papers in their entirety can be found at the end of the thesis.

Teachers' embodied presence in online teaching practices

Studies in Continuing Education, doi:10.1080/0158037X.2014.988701

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The aim of the first paper was to examine teachers' embodiments in online teaching practices. In previous research, teachers' presence in online settings has been discussed in terms of social, emotional and cognitive presence (Garrison, Anderson, & Archer, 1999) and less in terms of embodied presence. This can be linked to a growing body of literature claiming that embodiment occurs in online settings (Sundén, 2002), although in different forms depending on the ICT used. Previous research also points to the fact that bodies can be multiple (Mol, 2002). The body has not had a prominent role in the educational field, but when employing a perspective of practice theory it is placed at the forefront since it performs activities in a practice (Landri, 2012).

Three dimensions of embodiment are used in this paper as an analytical tool; *being a body*, *having a body* and *instrumental body* (Schatzki, 2002). These concepts are elaborated upon when analysing the embodiments of three teachers who teach in the two online courses that were the focus of this thesis.

The results showed that embodied presence is relational to both teacher judgements and to what the technology offers. Furthermore, being a body implies multiple bodies; both an offline one and online ones. Being a body online also implied various degrees of embodiments with the possibility of leaving certain characteristics behind. The concept of having a body appeared in the SL setting, but not in the IL setting. Having a body was related to the participation in the online setting in terms of an avatar – an online body. The analysis showed that participating as an avatar meant to be in the dimension of being a body, but also in the dimension of having a body, which was interpreted as a state of malfunction or breakdown between the teacher's online and offline body.

Teachers' embodiments online also had an instrumental dimension that brought about a certain teaching situation. Teachers in both settings had strategies for keeping themselves present throughout the course, showing that they were *there*. Furthermore, teachers in both courses positioned their bodies, or traces thereof, in some areas of the arrangement and not in others, in order to prefigure certain teaching situations.

The paper discusses whether the concept of teacher presence may be given an additional dimension since presence exists in terms of embodiments. These online bodies bundle with the virtual materiality and together prefigure forthcoming activities in different ways. The paper contributes to opening up questions concerning whether it matters to students, the social situation and learning, that teachers embody themselves in different ways. Stepping into embodied presence does not happen by itself and it is suggested that teacher training could contribute to awareness that online bodies exist, of how to handle them, and furthermore, that they could be used for pedagogical purposes.

Teacher interventions in online teaching practices

Manuscript resubmitted after revision

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The aim of the second paper was to analyse teacher interventions in online teaching practices. Previous research on teachers in both offline and online settings has focused on their roles (Baran, Correia, & Thompson, 2011; Ramsden, 2003). Examples of teacher roles in online settings are pedagogical roles, social roles and technical roles. The way roles and competencies have been discussed in relation to online teaching was criticised for focusing on skills and techniques. This can be related to a common view on (offline) teaching in higher education based on information transmission. A transmission view is linked to perspectives on teaching as acquisition and improvement of skills and techniques.

Fitzmaurice (2010) has argued that a way to avoid taking a mechanistic view of teaching is to consider it as a practice instead. However, studies with a practice-based approach to teaching are, according to Fitzmaurice, scarce. Carmichael and Jordan (2012) have also suggested adopting perspectives of

practice theory when teaching and learning with technology are studied; this in order to get away from focusing on affordances of technologies in teaching and learning situations, something they regard as technologically deterministic. Therefore, this second paper sets out to study teacher interventions in online teaching practices from a perspective of practice theory based on Schatzki (2002).

A practice theoretical perspective situates teacher interventions in online practices where virtual materiality co-constitutes the site of online teaching. Teacher interventions are understood as intentional doings and sayings which constitute activities in an online teaching practice. These activities are bundled with virtual materiality; arrangements comprising entities such as artefacts and people. Hence, teacher interventions are understood as a co-constitutive relation between the teacher's intentional actions and the virtual material arrangement. In this second paper, teacher interventions were analysed using the practice theoretical concepts of doings and sayings, teleoaffective structures, general and practical understandings, and practical intelligibility. Empirical data from both the IL setting and the SL setting were analysed in this paper.

The results showed that the mode of interventions was relational to the ICT used in the settings. Teachers' doings and sayings were quite different in character when comparing the IL and SL settings, which can be related to what the particular ICT in the setting contributes in terms of ways to communicate. However, the modes also relate to teachers' intentionality since not all possible ways were used.

Teacher interventions arranged both students and ICT to work as a teaching practice. Teachers arranged the students in groups and also arranged their activities to a certain degree. Furthermore, teachers arranged the virtual material arrangement into designated spaces for teaching and learning. The teachers in the IL setting were thrifty with their interventions, which led to the creation of empty spaces for students to take control of. Interventions by the teacher in the SL setting were more extensive, which led to a filled sound surface for students to be quiet in. Hence, teacher interventions intentionally direct how spatial and audial surfaces are made intelligible for students. Teachers' structuring of the online teaching practice could be understood as a complex relation of pedagogy and technology. This structuring involves practical understanding of how to adapt interventions to the ICT used. It also involves how to structure the arrangement in relation to the activities carried out.

The result also showed how teacher interventions were organised by teleoaffective structures which pertained to a calm and safe climate. Interventions made by teachers in both settings were conducted in order to

foster a safe environment. Teachers' calming interventions were carried out both to counteract technological anxiety among the students, but also to reduce anxiety related to student performance in the course. In the SL setting the student performance concerned speaking, and in the IL setting, writing.

The concluding discussion suggested that there is no causal relation between technology and the character of teacher interventions. Instead, it was proposed that teachers' interventions could be understood as relational to both the technology (the virtual material arrangement) and pedagogy (the teaching practice).

The emergence of online teaching practices: A sociomaterial analysis

Manuscript resubmitted after revision

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The aim of the third paper was to analyse the co-constitutive relation between virtual material arrangements and online teaching practices. Teaching online is a common feature of the higher education workplace, and research on teaching with ICT in higher education flourishes. For instance, research on virtual worlds in higher education has often had a student perspective and has also focused upon problems, opportunities and recommendations for using virtual worlds in teaching (Hew & Cheung, 2010; Inman et al., 2010). Research on LMSs has focused upon the potential of using technology for teaching. Furthermore, a teacher perspective is also salient in previous research on LMS focusing upon roles and competencies but also on whether teachers are supporters or barriers when implementing ICT in teaching (Habib & Johannesen, 2007; Johannesen, 2013; Johannesen et al., 2012). However, a burgeoning plethora of literature is now requesting sociomaterial perspectives on the educational field in general, and on teaching with ICT in particular (Fenwick & Edwards, 2013; Johannesen, 2013). A sociomaterial perspective on teaching implies that teaching is seen as not only a social process, but also as something material; teaching with and among virtual material objects. Therefore, this third paper set out to study relations between virtual material arrangements (i.e. the material in the sociomaterial) and online teaching practices (i.e. the socio- in the sociomaterial). Empirical data from the two online courses (see chapter 4) constituted the basis for analysis,

and Schatzki's (2002) concepts of practice and arrangement served as the theoretical point of departure.

A number of relations between arrangement and practice were identified and analysed in the two settings studied, beginning with the education course on IL. First, the relation named *empty spaces as intentional design* was elaborated upon. Teachers intentionally arranged empty spaces on the platform and made them intelligible as learning spaces for students. This was accomplished by giving the spaces meaning and purpose by providing instructions to students in adjacent spaces. Furthermore, teachers guided students' forthcoming activities in these spaces by instructing them regarding what and whose activities the space was intended for. Second, a relation termed the *emerging absence of designated spaces* was analysed. Many of the activities carried out in the education course had their designated space on IL and students to a great extent interacted with and in the space in line with teachers' intentionality. However, certain spaces also served other purposes, such as posing course-related questions of different character and reporting on technical problems. Hence, it became clear that there were no designated spaces on the platform for these kinds of activities. The absence of designated spaces can be understood as relational to both students' needs and activities, and to the arrangement of the existing space. Third, a relation called *blurring designated spaces* was analysed in connection with the IL setting. Teachers in the course structured the online space with the intention of separating formal and informal discussions from each other. This was done by creating a separate space for informal discussions among students. However, when analysing the activities in the spaces, it became clear that the spaces were blurred, since the activities exceeded the intended content. The relation of blurring designated spaces could be understood as relational to both the spaces that were intentionally arranged by teachers, and students' activities that at some times were not in line with these intentions.

The second section of the results focused upon the activities in the language course in SL. These were mainly carried out in a classroom setting. First, the two relations of *interacting with* and *modifying materiality* of the designated space were analysed. The teacher and the students interacted with and in the space by sitting on chairs directed towards an open space and screens on a wall, or by standing in the open space. The classroom setting can be understood to prefigure that students should occupy a certain position. Occupying a space is shown to be relational to both activities (teacher's intentional doings and sayings) and materialities (such as chairs and screens) which together prefigure students' forthcoming activities. But the designated space was also modified in different ways. The teacher intentionally modified entities, positions, meanings and activities in the classroom setting. This was

done with the purpose of bringing about other teaching situations. These modifications could be understood as relational to both the artefacts in the arrangement but also to the meaning they acquired through human activities. Lastly, the relation of *making the online space intelligible and giving it meaning* was analysed. To teach in this kind of setting not only concerned subject matter but also to make the virtual material arrangement intelligible both to oneself as a teacher, but also for students. The teacher often helped the students understand the meaning of objects and activities. This relation of making space intelligible and giving it meaning is a co-constitution of both the virtual material objects and how they should be understood in the practice of teaching and learning.

In the discussion section of the paper, it is suggested that in order to understand the complexity of online teaching practices, it is not enough to only focus upon the material arrangements alone. It is crucial to also focus on the activities taking place *amid* and *with* materiality. Furthermore, the design and use of a space is not stable, but could alter along the way. This paper is therefore seen to contribute a view on online pedagogy as something that could be understood as a sociomaterial practice.

Teaching practices in Second Life: Sociomaterial matters

Manuscript submitted for publication

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This paper aimed to analyse the relation between technology and practice in online pedagogy. In this fourth and closing paper, two other arrangements in the SL setting were analysed; the camp fire and the conference table. Furthermore, the relations between the different arrangements in which the teacher and the students interacted during the course were analysed.

Considerable research on virtual worlds in educational settings has been carried out and several publications have elaborated upon the potential opportunities and problems of using virtual worlds in teaching and learning. Many of the publications also focus upon student perspectives, such as students' attitudes towards virtual worlds in educational settings, their learning outcomes, and their social interaction in-world (Conole & Alevizou,

2010; Duncan, Miller, & Jiang, 2012; Hew & Cheung, 2010; Inman et al., 2010; Kim et al., 2012; Wang & Burton, 2013).

Studies of the potential and affordances of virtual worlds can be linked to a germinal demand for richer accounts when ICT is theorised (Oliver, 2013). Theory within the field of educational technology has often viewed technology as given or neutral, and practice theoretical alternatives are emphasised as a way to nuance the depiction of the role of technology (Oliver, 2013). Therefore, this paper set out to analyse technology in educational settings with a sociomaterial approach. The question posed was 'how do these settings become intelligible as teaching practices?' (paper IV, p. 3). Practice theoretical concepts based on Schatzki (2002) were used in the analysis. The results showed that the settings became intelligible by intentional, spatial, prefigurational and causal relations between the virtual material arrangement and the teaching practice.

The camp fire setting was analysed with the help of the causal, intentional and prefigurational relations. The teacher instructed the students in how the camp fire setting should be occupied by helping them to take a seat in the setting. Certain seats were easier to sit on than others and the teacher therefore directed the students to the easier seats. The way the setting was occupied can be understood as a causal relation between the ICT and the teacher; the more difficult seating led to the teacher's actions of occupying the setting where students primarily took positions in seating spots that were easier to handle.

The camp fire setting was made relevant as a space that was both informal and formal at the same time. The setting was intentionally arranged for informal talk with the purpose of making the students calmer when speaking in a foreign language. However, the activities in the setting also had a formal character, since they were structured by the teacher and had a clear goal. The artefacts, together with the doings and sayings in the camp fire setting, prefigured a certain teaching practice which was informal in that talk occurred in a relaxing environment, but also formal in that the talk was directed by the teacher. The analysis of the camp fire setting and the activities that occurred there showed that the setting was not intelligible beforehand, but was emergent. It became intelligible as a certain teaching and learning situation in the moment.

The setting with the conference table was analysed with the point of departure in the intentional relation between teachers' doings and sayings and technology. The teaching and learning situation that occurred in this setting was of a formal character. Both the virtual material environment in terms of a conference table and the intentional activities in terms of a role-play simulating a negotiation situation within a company and with students

playing professional roles, contributed to the formal situation. Furthermore, the teacher directed actions toward certain artefacts in the conference table setting, but not toward others. This meant that only part of the arrangement and functionality thereof became relevant in the teaching and learning situation. The teaching and learning situation that occurred in this setting can be understood when turning to the intentional relation. The teacher's intended activities in the setting only needed certain parts of the arrangement in order to carry through the practice of teaching.

The results section ended with an analysis of the relations between the three settings in the language course; the classroom, the camp fire and the conference table. The teacher had well thought out ideas concerning why and when to interact in these spaces during the course. How the settings were related pertains to both technology and pedagogy. Technologically, the classroom setting was easier to access, for reasons such as its spatial closeness to the students' initial position. The students' limited experience of navigating in-world led to abilities being limited initially, which was something the teacher took into consideration when carrying through the teaching activities. But the order of locations also pertained to pedagogy. Activities in the camp fire setting occurred during the first two meetings in the course, i.e. when the students were in the situation of speaking in a foreign language in front of their peers and the teacher for the first time. Then an intentional action of interacting in a space which contributes to relaxation occurred. Only at the end of the course, when the students began to find their feet, was a role play examination carried out in the more formal environment of the conference setting. Thus, the teacher carried out a pedagogical adaptation in terms of reducing anxiety and stress by gradually moving from informal to more formal interactions.

In the discussion section, further research was suggested on the causal relation between surrogate nature and teaching and learning practices. It was also concluded that the settings became intelligible as certain kinds of teaching and learning practices when analysing what was actually done in and with them. The intelligibility of online teaching practices is suggested to be emergent and not given beforehand. It was also concluded that a setting's intelligibility not only pertains to the potential of technology, but also to the activities that take place in and with the setting.

6. Discussion

In this final chapter of the thesis the study in its entirety is discussed. The chapter opens with some reflections on the research process, which is followed by a theoretical revisit and a discussion of the empirical findings of all four papers taken together. Concluding remarks of the study are set out in a shorter subsection and some suggestions for further research end the chapter.

Reflections on the research process

In this section, some methodological questions regarding participant observation, time in the field, the context of observation and the multiplicity of settings are discussed. The choice of theory in the study is also considered.

The course in the IL setting was observed in retrospect after the course was finished. In the section *Virtual environments for ethnographic research*, Pole and Morrison state that 'with the possibility of working in asynchronous and synchronous time frames, the approach to data collection might shift' (2003, p. 124). This resonates well with the way the IL setting was studied. The research process in this setting was different in character when compared with the research process in the SL setting. The interaction took place offline instead of online, and in retrospect instead of live. Choosing the IL setting for this study made it possible to collect data within the planned time period for this research project. The aspect of accessibility was therefore an aspect which both influenced and narrowed down the choice of settings. Furthermore, getting access to the IL course was facilitated by a gatekeeper, which in turn made it possible to get started on data collection more quickly. Since the course was already finished, there were no delays in waiting for the course to start, and in turn having to postpone the analysis.

That the IL setting was studied in retrospect after the course was finished could by some critiques be viewed as a drawback in terms of not constituting a case of participant observation, but instead a case of document collection (Skågeby, 2011). From such a standpoint, this could lead to criticism that the whole study should not be counted as an ethnographic study. Hine (2008a) discussed this common dilemma concerning the extent of participation which could be characterised as a continuum between passive observation and active participation. She stated (with reference to Hammersley and Atkinson, 1995) that it is up to each researcher to make a judgement of what is most

appropriate regarding the extent of participation, related to the site that is the focus of the study. Hine also discussed the epistemological value of being participant:

> To lurk implies a lack of engagement and ability to develop the in-depth understanding from the inside that ethnography requires. Nonetheless, it is clear from a survey of the literature that the term 'ethnography' is sometimes being used in senses which stretch the notion of immersive learning to the limits and which rely, rather, on collecting a corpus of messages, or on observing interactions without making any attempt to interact with members. Such an approach risks losing the benefits of trying out emergent knowledge in practice that the 'participant' part of participant observation affords. (2008a, p. 262)

It is true that interaction with the informants did not take place on the IL platform. On the other hand, informal conversations with the informants were carried out during the retrospective observation of the course. In this way, there were plenty of opportunities for informal conversations where questions were posed by the researcher and stories told by the informants. Furthermore, even if the study would have been carried out during the time the course actually was carried out, there would not have been any natural interventions on the LMS from the researcher's point of view, since the study concerns education in formal settings where the focus rests on the teaching practices. Communication with informants would still have been carried out outside of the teaching setting.

Furthermore, Hine (2008a) also advocates participation in the asynchronous setting in order for the researcher to get a feeling for the rhythm of the activities that are taking place. In order to take the rhythm into account, time stamps on posts were taken into consideration when analysing the data. The analysis was carried out in relation to when in time the messages were posted on the LMS, i.e. the messages were read chronologically in order to get a sense of the rhythm in the course. Hine (2008a) also states that it is important to participate in order to get experience of the practice that is studied, i.e. to appreciate what it means to participate as an actor on the platform being studied as a way of understanding how to act and communicate. Since I had previous experience of both the specific LMS IL and of other LMSs, as both teacher and student, I had a pre-understanding of what it meant to participate in these kinds of settings in general and on IL in particular.

Both the courses that were in focus in this study were followed from beginning to end. They were temporally bound (Baym, 2006) and the time in the field was adapted to this fact. The length of the two courses studied generated such a large volume of data that additional time online would have

meant some delimitations. A shorter time online could therefore be seen as a demarcation but also as a way of adapting the design of the study to the purpose of studying how teaching practices unfold in a very detailed manner. Baym (2006, 2009) views studies based on shorter time spans in the field as problematic and favours longer time periods, preferably years, in the field. The first setting was observed in retrospect and therefore it is difficult to even measure the time in the field. The study of the second setting lasted for seven months, where the course lasted for three months, and during the four months prior to the course there were occasional meetings with the informant. It was not possible to meet the kinds of requirements stated by Baym within the time frames for this study.

The focus in this study was on the online teaching practices. It is inevitable that offline arrangements are related to and discussed, but in order to maintain sharpness concerning the phenomena of online teaching practices, the online arrangement had to be the main focus while still not neglecting the fact that relations between online and offline arrangements existed. It might be argued that the study should have included teachers' offline settings, since offline arrangements affect what happens online. Schatzki (2002) points out that demarcation of arrangements can be done in different ways and that it is 'relative to the interests and purposes of the demarcator' (p. 46). The point of departure when demarcating the arrangement was based on the aim of the study, which was to study online teaching practices. Therefore, the focus was on the online arrangement.

In this thesis, two settings were studied. These settings could be understood as constituting multiple case studies. The rationale for studying two settings was to pluralise the depiction of online teaching practices. By foregrounding different practices it was possible to give a more nuanced picture of what online teaching practices could be. Bryman contends that a comparative design 'implies that we can understand social phenomena better when they are compared in relation to two or more meaningfully contrasting cases or situations' (2008, p. 58). A drawback with multiple case studies, on the other hand, is that they risk being too focused on looking for comparisons between the cases rather than focusing more on the context of the individual case (Bryman, 2008 with reference to Dyer and Wilkins, 1991). Analysing two settings that are contrasting in a number of ways contributed to making online teaching practices intelligible. In order to take into consideration the unique context of each setting but also to contrast them against each other, the empirical data elements were analysed one by one and also in relation to each other. As a consequence there was not an equivalent space for each setting when presenting the results. Depending on the research question posed in each paper and in combination with the characteristics of each

setting, certain aspects of one setting were sometimes more salient than they were in the other setting.

The choice of Schatzki's (2002) practice theoretical perspective highlights the co-constitution of practices and arrangements with a preserved residual humanism. This means that the teachers' doings in the online teaching practices had a superior role for the unfolding of the practices. Previous research has shown how technology often gets a central position when discussing ICT in education, and pedagogy is set aside. In order to put pedagogy in the front seat, I think it is necessary to preserve the residual humanism. Markham states that 'obviously, we cannot pay attention to everything – our analytical lens is limited by what we are drawn to, what we are trained to attend to, and what we want to find' (2005, p. 803). I am trained to take a critical stance to the transformative force of the technology in educational settings. This stance, coupled up with history's hindsight when looking at the changes technology has accomplished in educational settings, led me to adopt a theoretical perspective that views the residual humanism as essential in understanding how online teaching practices unfold.

Results revisited

This section opens with a theoretical revisit, which is followed by a revisit to the results in the four papers. These revisits are then incorporated in a discussion on how sociomateriality matter in online teaching practices.

A theoretical revisit

The analytical framework applied in this study (see Figure 1, p. 35) shows that the site of teaching online has in this study been understood as a co-constitution of a social practice consisting of teachers' and students' doings and sayings, and material arrangements in terms of online settings treated as virtual material. As mentioned in the introductory chapter, great credence is given to the transformative potential of technology in educational settings. But at the same time it could be concluded that there is an absence of change regarding teachers' teaching practice when ICT is introduced. I believe that this situation relates to the lack of the 'practice' side of the framework in Figure 1 when working with and analysing technology use in educational settings. What is missing is an examination of what is *actually done* with technology. I would like to suggest that technology itself is not able to change a practice entirely on its own. How online teaching practices unfolds has to be seen as a co-constitution both of what teachers and students do and

say (intentional actions), and of the technological arrangement that also contributes something – it *does* something with the practice.

Taking the point of departure in Schatzki (2002) entails an asymmetrical view on the relations between teachers and ICT. This is because Schatzki preserves a residual humanism (Hopwood, forthcoming) which implies that the unique characteristics of human agency are preserved. Suchman (2007) has described the ongoing tug of war between different ways of viewing agency and whether human agency should be understood as unique and different in relation to non-human agency. She also proposes another way of looking at asymmetry where 'persons and artifacts do not constitute each other *in the same way*. . . . persons just are those actants who configure material-semiotic networks, however much we may be simultaneously incorporated into and through them' (p. 269-270, italics in original). In a footnote associated with the citation, Suchman refers to Pickering who also acknowledges the unique position of humans: 'Pickering (1995: 15) similarly poses the question of who does the "delegation" of agencies across actor networks' (p. 270). Suchman draws upon ANT concepts in her analysis and therefore uses a different terminology than Schatzki. However, my interpretation is that *humans configure material-semiotic networks* and *delegate agencies* is other theoretical ways to express what Schatzki terms as the unique position of human doings in a sociomaterial practice. Unlike non-human entities, humans are in a position to perform situated intentional doings towards other entities. Suchman argues that 'there is a profound and persisting asymmetry in interaction between people and machines, due to a disparity in their relative access to the moment-by-moment contingencies that constitute the conditions of situated interaction' (p. 182-183). However, as I interpret it, the dividing line between Suchman (ANT) and Schatzki (practice theory) is the view on where intentionality (and also agency) is located. Schatzki ties it to the human entity[12] (see e.g. 2002, p. 198-199) whilst Suchman ties it to network effects (see e.g. 2007, p. 256).

To sum up so far; online teaching practices could be understood to be characterised by a residual humanism but where an artefactual agency also exists. Next, I discuss the artefactual agency i.e. the doings of technology. I will begin with a point of departure in Schatzki (2002) since it was the theoretical perspective applied in this study.

Towards the end of his book, Schatzki (2002) opens up the concepts of doings and agency to not just include humans but non-humans as well. Thus, both humans and non-humans perform 'doings', i.e. have agency, but the

[12] However, in later publications by Schatzki, intentionality is also more closely tied to the concept of practice (see e.g. Schatzki, 2012).

human agency is still given prominence by Schatzki: 'human agency . . . is the most complex form of agency, and that it holds special determining significance for social existence' (p. 193). This view parallels his view on the relation between activities and objects stated earlier in the book, where objects are not able to institute meaning. Schatzki thus acknowledges that objects contribute something but he does not however, as far as I can understand it, carry through any thorough exposition of the character of this contribution. My understanding of Schatzki (2002) is that objects' doings are relegated to causal relations. To the extent that people react to events caused by objects, it is thus possible to say that 'material agency changed the course of activity' (p. 108). Objects and arrangements exercise a causal impact on activities and practices – they cause activity, which Schatzki denotes as non-human agency. A supplementary question to pose is whether the causal relation is the only theoretical concept that could be applied when analysing non-human agency. In my early readings of Schatzki (2002) I identified the concept of prefiguration as a potential theoretical concept to apply when analysing non-human agency. However, an artefact cannot alone prefigure according to Schatzki. It is only artefacts in combination with activities that prefigure forthcoming activities:

> The prefiguration of agency is *the joint effect* of practices and orders. This means that courses of action are easier or harder, simpler or more complicated, safer or riskier, obligatory or proscribed, and so on because of the practices people carry on and the orders amid which they do so. (p. 226, my italics)

Schatzki also makes clear that his discussions of prefiguration only concern human action:

> The following analysis of prefiguration focuses on human action alone. The discussion has implications for nonhuman agencies to the extent that they approach ours (thus for the agencies of thinking machines and "higher" organisms), but what these implications are await developments in knowledge, technology, and animal research. In the case, moreover, of fabrications, mongrels, and most beings of nature, prefiguration is, above all, the channeling of the physical causality that laces through the social site. (p. 211)

The scope that material agency has in Schatzki's version of practice theory could therefore be understood as limited, since the causal relation is what is left for the role of technology (since prefiguration is so tied up with doings). As previously mentioned, an artefact cannot alone prefigure, according to Schatzki. Schatzki still claims that artefacts *do* something, but there are no theoretical concepts or discussions on how these doings could be described

and made intelligible except for causality. A text which was published after 2002 is an article entitled *Materiality and social life* in which Schatzki (2010) returned to the question of materiality in practice theory. In this text there are at least two passages where it becomes clear that arrangements and materiality affect practices. Schatzki states that

> another way physical composition affects the course of practices is by rendering combinations and sequences of action physically impossible, physically easier or harder, physically painful or pleasing, and the like. The physical compositions of humans, artifacts, organisms, and things of nature likewise structure what actions can and might be carried out when, where, how, and for what ends. (p. 137)

Further ahead he also states that

> material arrangements clearly prefigure practices in such varied ways. . . . A heating system might make it sensible during the winter to read the morning newspaper indoors, while the conducting properties of outside metal furniture help make it uncomfortable to do so on the porch. The particulars of material arrangements prefigure the course of practices in indefinitely complex ways. (p. 140)

Both excerpts point towards the concept of prefiguration in a way that arrangements and materiality on its own could affect forthcoming activities. As I see it, this argumentation opens up for possibilities of applying the concept of prefiguration when analysing the doings of artefacts. However, the research community also has to acknowledge such an interpretation of prefiguration, which does not seem to be the case today.

Schatzki divides entities into organisms, artefacts, things and people. Hence, there is a difference between things and artefacts. As I see it, the difference could be explained by saying that artefacts have 'built-in-intentionality'. Not uncommonly, artefacts are built with an intention in mind, such as a needle for sewing, a hammer for hammering or a chair to sit on. Schatzki is correct on the point that artefacts can be used for other purposes than originally intended, but this – and this is my critical contribution – does not mean that an original intention does not exist. Even if used in another way (or perhaps not even understanding what the initial intention of the artefact is), there exists some 'built-in-intentionality'. When turning to other authors, other concepts can be identified as a potential help in understanding non-human agency. I will elaborate on two of those concepts in the following, namely *inscription* and *affordance*.

To begin with, Reckwitz (2002b) criticised Schatzki for not taking objects into sufficient account and suggested that thoughts within ANT should be brought into practice theory, but leaving thoughts on symmetry

out[13]. As I see it, Reckwitz (2002b) and Suchman (2007) share the view that asymmetry/dissymmetry exists between non-human and human entities. Landri (2009) applied the ANT concept of *inscription* when analysing the co-constitution of ICT and society. He argued that

> the notion of *inscription* is useful to understand the making of electronic space. . . . Here, the concept of inscription sheds light on the fact that picto-textual artefacts are embodiments of the designers' configurations, of the actors' interests and visions of the digital artefacts, and of the different assumptions on what will be the use of a digital environment. (p. 209-210, italics in original)

The concept of inscription is, as I see it, in line with my own concept of built-in-intentionality mentioned above. My reading of Schatzki also suggests that he himself approaches thoughts of inscription when he writes that 'artifacts possess programs of action because the humans who create them or put them to new uses give them such programs. That artifacts translate other entities is, thus, itself the product of human activity' and that 'artifacts, however, carry out translations that are intentionally or accidentally built into their design and otherwise effect them through physical causality' (2002, p. 203). Suchman (2007) has expressed criticism, however, towards the notion of inscription, arguing that 'there is no stable designer/user "point of view" nor are imaginaries of the user or settings of use inscribed in anything like a complete or coherent form in the object' (p. 192-193).

Despite Suchman's objections, I would argue that inscription could still be useful in order to describe the fact that artefacts are built with a certain purpose in mind and also that an artefact is not totally neutral regarding its use. Another concept that also indicates that artefacts guide activities in some

[13] Reckwitz's critique is based on the book that was published in 1996 entitled *Social practices: A Wittgensteinian approach to human activity and the social* (Schatzki, 1996). The criticism that Reckwitz brings forward was published in 2002. During the same year, Schatzki's subsequent book, *The site of the social: A philosophical account of the constitution of social life and change* was published. In the book from 2002 Schatzki expressed his awareness that he had not given materiality the attention it ought to have, and the book from 2002 should be seen as a way of dealing with this deficiency. As early as the first line in the book, Schatzki indicated the deficiency that is to be remedied, stating that 'this book was born of the realization that the concluding chapter of my previous book slighted the role of materiality in social life' (Schatzki, 2002, p. ix). Although the book meritoriously discusses materiality, the overall result of my study indicates that material agency in terms of digital artefacts is in need of additional theoretical concepts in order to impart a greater explanatory value to material agency.

direction is affordance (see e.g. Gibson, 1977, 1979; Norman, 1993, 1999, 2002). The concept has evolved over time (Jones, 2003) and several definitions and interpretations of the concept exist (McGrenere & Ho, 2000). The concept was applied in relation to learning (see e.g. Selander and Kress, 2010) and Dickey (2003) contended that 'Affordance Theory has relevance when examining learning environments' (p. 107). A commonly quoted definition is Norman's (2002):

> The term *affordance* refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used . . . A chair affords ("is for") support and, therefore, affords sitting. A chair can also be carried. . . . Affordances provide strong clues to the operations of things. Plates are for pushing. Knobs are for turning. Slots are for inserting things into. (p. 9, italics in original)

According to McGrenere and Ho (2000), there are differences between Gibson's and Norman's interpretations of affordance. Gibson's view of affordance implies 'an action possibility or offering' whilst Norman's implies 'a perceived suggestion' (p. 4). What differs is that Norman introduced a relational view of the concept of affordance (Selander & Kress, 2010). This discussion chapter is not the place for getting involved in a deeper analysis of the concept, but offers the observation that several concepts from different directions seems to revolve around the fact that artefacts are built with an intention in mind, and that makes certain actions easier or more difficult to perform. My reflection is whether these concepts could be brought into practice theoretical perspectives without bringing about an ontological conflict. The reason for a suggestion for additional concepts is to avoid a social deterministic ditch and, consequently, to highlight non-human agency a little further.

Revisiting paper I

The first paper in this thesis concerned teachers' embodiment in online teaching practices and it exemplified how bodies bundled with materiality in different ways. To say that bodies bundle with materiality could be linked to the previous research on the relations between body and technology where it was concluded that a fluid boundary between body and technology exists, where connections between them are weaker or stronger, more or less overlapping. In light of previous research, being a body could be understood as the state where the online and offline bodies work smoothly and in harmony – a choreography. It could be possible to think of the situation as a

collapse of online and offline bodies when in the dimension of being a body. Furthermore, by profile bodies and avatars the body could be understood as extended and distributed. But as Sundén (2012) contended, online bodies could also be understood as something on their own. That appears most apparent when breakdowns occur between the two entities, but it could also be when a person does not identify with the online body. Having a body could be understood as a state where the fit of body and artefact is less seamless; when the prosthesis rather wounds or impedes instead of augmenting the offline body. Savin-Baden (2013) observed this, contending that communication in SL entails a personal cost since to operate oneself in-world does not happen by itself.

This fluidity of the body means that the boundaries of the online teacher have to be redrawn. I suggest that the online teacher does not end with the offline skin (cf. Sundén, 2007), but also exists in various embodied ways online. To teach online could be understood as a professional practice that the teacher needs to master. One aspect of this mastery is learning to be a body. Acting with the online body is part of a teacher's bodily repertoire. When new to the particular ICT it could feel disorienting, perhaps residing more in the dimension of having a body. Approaching the dimension of being a body could be understood as learning to have fully incorporated extensions, learning to stretch out – to reach further than the offline skin is able to. It concerns handling the instability of the boundary, to be a hybrid – a cyborg.

Suchman (2007) contended that figures of human are materialized in technologies. In the IL setting, one of these figures was the teacher as an invisible body when only reading posts on the platform. Using Suchman's conceptual apparatus, what happened was that one of the teachers reconfigured this figure by making the action of reading visible. This shows that it is possible to not accept the existing configuration, and that reconfiguration is, to some extent and in some cases, possible. To know this, and knowing how to accomplish the reconfiguration could be understood as part of an online teacher's profession. Knowing how to reduce the complexity for students, as in the SL setting, by reconnecting the student's distributed online body back to the offline one (cf. Suchman, 2007 with reference to Prentice, 2005) is another professional task of an online teacher.

A final question to pose is whether online bodies should be considered as extensions of the same (offline body) or as more than one (Sundén, 2012), a body double, or a body multiple (Mol, 2002). I suggest that it could be more fruitful to embrace all these ways of describing the fluid relation between human and technology rather than jettison a way of describing the relation that could have a significant explanatory power in a specific situation of an online-offline encounter. Perhaps there is no contradiction in viewing

embodiment in an online-offline situation as both a case of being both one and many at the same time. Think about the situation when playing a table hockey game. The person who plays manoeuvres six hockey players on ice. These are literally bodily extensions of the person who plays, but you do not say that it is seven bodies playing, only one.

Revisiting papers II, III and IV

A common theme in previous research on both LMSs and virtual worlds is the benefits and possibilities the technology offers for teaching and learning. A common concept of use is what the technology affords for teaching and learning. As seen in this study, the ICT used in the IL setting offers an asynchronous and text-based platform for communication. In the course, the platform is mainly used in this way. The same applies to the SL setting where the virtual world is mainly used for synchronous communication, and part of the teaching practice is role-play activities, an activity that is made possible by the platform. However, there are plenty of examples in this study where affordances of the technology are not used; for example, the non-use of e-portfolios and the possibility to upload a photograph and present oneself further by text in the IL setting, or the non-use of a pollster and several conference tables in the SL setting. The point is that there is no guarantee that possibilities offered by the technology will actually be used in the teaching practice. This, in turn, suggests that it is important to study both *what* technological arrangements are used for but also *how* they are used, and not to focus only on what they *may* be used for. This is important in order to understand how online teaching practices unfold in a more nuanced way. The previous research regarding teaching beliefs could have explanatory value when it comes to how teachers use technology in educational settings.

Another recurring theme in previous research on both LMSs and virtual worlds is their potential to support student-centred and constructivist teaching and learning. This study has shown that both student-centred and teacher-centred teaching and learning can take place online. Again, this highlights the importance of not focusing blindly on what technology *can* support, but on what is *actually done* in the teaching and learning situation online. I would even suggest that in order to ensure high quality learning, it is essential to focus on the practice of online teaching, i.e. the relations between teaching practice and online arrangements, in order to promote good learning. Previous research has shown that technology has been brought to the fore when aspects of teaching and learning online are discussed. I would suggest

that a practice theory perspective highlights what is done with technology and therefore puts technology in a less dominant position.

Barriers, problems and constraints have also been a common theme in previous studies, including matters such as technical issues and the steep learning curve required to use virtual worlds. This study also discusses barriers in both the settings studied. What a perspective of practice theory adds, however, is an understanding of how these problems are handled in the teaching situation by the teacher.

One of the themes identified in previous research on virtual worlds concerned space and spatiality. One aspect of spatial practice that Savin-Baden (2013) identified was the replication aspect of spatial practice. This replication aspect is found in both settings studied here; the classroom in the SL setting perhaps being the most obvious one. But the coffee shop in the IL setting could also be understood as a kind of replication, but perhaps not in the same straightforward way. The fact that replications of settings are performed raises the question of the power of replicated settings when making an online setting intelligible for students, but also for teachers. Do replicated settings facilitate teaching practices or are these settings superfluous, and even problematic? I think the answer is that it depends on the kind of teaching that takes place, and what purposes it serves.

Minocha and Reeves (2010) found that affordances of the technology affect the design of learning activities. This is in line with the findings of the fourth paper in this study, where the teacher used settings in an order that corresponded to thoughts on when certain activities should take place in the course, but that also related to affordances in the technology in terms of proximity of settings and simplicity regarding seating. Two of Minocha and Reeves' design principles concerned formality and authority. One of them read 'consider indoor spaces such as auditoriums and lecture theatres to support formality and authority relationships similar to traditional learning spaces in RL' (p. 132) since teachers had perceived that indoor environments supported formality and authority. That indoor environments supports formality and authority is in line with what took place in the classroom in the SL setting. It was often a formal setting where the teacher had a position of authority. However, as seen in paper III the setting was also used for warming up exercises, and on several occasions was rearranged to function as a meeting space for students to practice in. Hence, the classroom may outwardly support formality and authority, but that does not imply that the practices carried out there will always be in that manner. The same applies to the camp fire setting in paper IV, but the other way around. The setting with a circular seating arrangement may in its material characteristics support informal discussions and allow peer-to-peer exchanges (cf. Minocha and

Reeves, 2010 design principles), but when analysing what was really done in the setting, it is better described as a formal and an informal setting at the same time. Again, the results of this study show the importance of not analysing an online arrangement in isolation, but relational to practice.

Minocha and Reeves (2010) also highlighted that the online space should be flexible in terms of being easy to alter. As seen in this study, the teacher in the SL setting did alter the settings' virtual materiality, but only the human entities' (i.e. students') positions. The virtual materiality in terms of chairs and screens and so forth, was not altered. This study does not answer the question of whether the teacher needed a reconfigured arrangement, but some indications point in this direction (e.g. permission to use screens). This suggests that teaching online is not always a practice without restrictions, even if virtual worlds are often considered as environments where almost everything is possible.

How sociomateriality matter in online teaching practices

So how does sociomateriality matter in online teaching practices? The overall result of this study suggests that technology does not determine the teaching in a specific way. Instead, this study suggests that technology and teaching should be seen as relational. As a consequence of the relational status of technology and teaching, online teaching practices could be understood as emergent; they unfold in situ. A methodological consequence is that it take an ethnographic approach, or any other approach where observation is crucial, to scrutinise the role of technology in educational settings. Understanding online teaching practices as emergent could help to counteract deterministic attitudes towards technology. But vigilance is needed in order to avoid adopting a social deterministic attitude by which technology becomes totally neutral or is shoved onto the periphery.

As seen in this study, different kind of ICTs in combination with teachers and students (that are also unique) produce very different practices and very different online settings. As seen in this study, these online settings have very different material characteristics. This suggests that the view of online settings has to be pluralised. As a consequence, the view of online teaching and therefore also online pedagogy needs to be pluralised. The results of this study suggest that online pedagogy could be understood as follows:

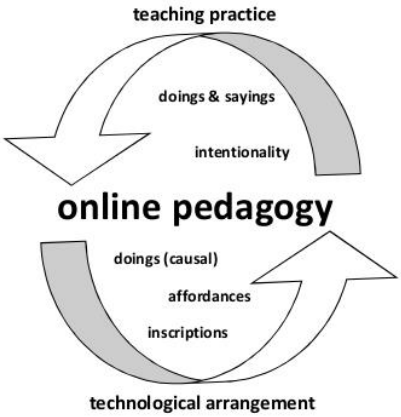

Figure 7. Online pedagogy model.

Online pedagogy could be understood as a co-constitution of a teaching practice in which teachers do and say things with an intentional purpose, and a technological arrangement that does things by causing and affording certain activities. I would also like to suggest that a technological arrangement could be understood to have inscriptions. However, what the technological arrangement does is heavily dependent on activities in practice. Some examples from this study can exemplify this intertwined relation between teaching practice and technological arrangements.

The conclusion in paper II was that teachers' interventions could be understood as relational to both technology in terms of the virtual material arrangement, and pedagogy in terms of a teaching practice. Teachers in both settings strived to make the online arrangement intelligible and giving it meaning for the students. The project of making the online arrangement intelligible was linked to both the characteristics of the arrangement but also to the teacher's beliefs regarding how education should be carried out. To make the arrangement intelligible for students involves the activities of interacting with and modifying materiality (see papers III and IV). That materiality was modified suggests that an arrangement is plastic, mutable. Even if an arrangement is not possible to adjust materially, it is possible to adjust the meaning or intelligibility of the materiality.

Furthermore, the results of paper III suggest that the actual use of online arrangements is not pre-determined, but emerges in the situation. Teachers have an intentional design when arranging the settings. Students perform activities in line with this intentional design, but other activities also emerge, which for instance cause blurring and empty spaces (i.e. activities take place across online spaces, and activities that were not anticipated emerge in situ).

This indicates that it is not possible for teachers to fully plan or anticipate forthcoming activities and the use of arrangements. The practice and actual use of an arrangement emerges, and teachers have to be responsive to this.

One point made in paper IV was that the technology does not impose a requirement that all features in a setting should be used or that features should be used in a certain way. The actual use (and non-use) could be understood as relational to teacher intentionality, students' activities and doings of technology (i.e. causal relations).

In sum, the argumentation above suggests that online pedagogy is not a homogeneous concept, but has instead to be perceived as pluralised. Since doings in online teaching practices are so varied and also so tied up with materiality, and the characteristics of materiality are so qualitatively different across platforms such as asynchronous text-based discussion forums and synchronous virtual worlds, it suggests that online pedagogy should be understood as a multifaceted concept.

Concluding remarks

As mentioned in the introduction of this thesis, distance education grew considerably during the early 2000s and will probably continue to have an important role in education. A number of reasons for conducting teaching and learning with ICT were also presented in the introduction chapter, among them hopes that ICT could improve teaching and learning. Regardless of whether teaching with ICT improves or makes the teaching and learning process more efficient, it could be argued that other factors necessitate teaching and learning with ICT. One of these factors is the aspect of globalisation. Today, many people work in an increasingly global context and with colleagues around the world. It is not uncommon to travel and whilst doing so to remotely carry out work or study-related assignments. Hence, there are both teachers and students who could be understood to be geographically mobile. Education in more flexible forms in terms of geographical location could meet these mobile lifestyles. However, distance education could also cater for those who are not that mobile for various reasons (health, place of residence, family circumstances etc.).

Another line of thought concerning why teaching and learning with ICT is needed is that teaching and learning with ICT could facilitate the process of becoming wiser together across national and continental borders. Connecting both teachers and students across nations has the potential to spread excellence in subject areas which might otherwise be very local. It

could also be a way to provide education in subjects that do not exist in a certain local area.

The global aspect concerns other resources as well as human ones. To travel in order to meet requires both time and money. Travelling also has environmental aspects that should be taken into consideration, especially when travelling longer distances. As long as fuel is harmful to nature it ought to be desirable to contribute to reduced emissions. Therefore, we need to learn how to communicate across geographical distance. Becoming comfortable and proficient in online communication is ultimately about taking part in a digital society, and education on all levels ought to be part of this. Moreover, digital competence is one of the eight key competences for lifelong learning (EU, 2006). My point here is that the view that ICT is a poor way to meet is an insufficient argument when it comes to ignoring what ICT enables. To meet online is not inferior to meeting offline – it is just different. To stop meeting online would be to throw the baby out with the bathwater since it is ultimately about connecting people, and connecting people is fundamental since humans are social beings. Therefore, the project of making online teaching intelligible must continue in order to create favourable conditions for the future. This study has contributed to the project by giving examples on how sociomaterial matters are important in online pedagogy, and more specifically how online pedagogy can be understood.

The implications of this study are of both theoretical and practical character. The theoretical implications could be useful for researchers and other academics in their efforts to understand the relation between technology and teaching. This study suggests that this relation should be understood as a case of residual humanism in which an artefactual agency also plays an important part. In sum, this study suggests that an asymmetrical relation prevails between teachers and ICT. The practical implications of this could be useful for practitioners such as university teachers. This study suggests that technology and pedagogy must be handled relationally. When teaching takes place online it is not fruitful to solely focus on pedagogy since technology is so entwined with the practice of online teaching and also *does* something (has agency) in the online teaching practice that unfolds. Nor is it fruitful to only focus on technology (such as what the technology offers or provides), since what is done with technology considerably determines its intelligibility in practice. This interweaving of practices and arrangements suggests that teachers need to handle pedagogy and technology relationally since they cannot be separated. It should, however, be possible to have one of them in the foreground and the other in the background when discussing aspects of online teaching, since an analytical separation of them is possible. Concretely, this suggests that online pedagogy in courses of teaching and

learning in higher education should consider the possibility of not separating technological and pedagogical discussions. Even if it could be fruitful in some occasions to discuss technology only (such as hands-on experiences of a new ICT), or pedagogy only (such as classical pedagogical theories), but in order to achieve meaningful online pedagogical discussions, technology and pedagogy need to be seen as related to each other.

Further research

In this section some suggestions on areas for further research will be presented. To start with, further research could examine the similarities, differences and relations among theoretical concepts such as inscription, affordance, built-in-intentionality, and prefiguration. These concepts seem to revolve around a similar area of interest, namely the character of artefacts' agency – their doings. A second step could be to carry through empirical analysis with the purpose of finding out if these concepts contribute any further understandings of the non-human agency in sociomaterial practices.

Another area for further research concerns teacher bodies online and how the online teacher uses the body instrumentally to create a certain teaching and learning situation. Further research could elucidate what it means to be a professional body online in other online contexts. More research is needed to find out if a customised body (in comparison to a default one) contributes to an increased sense of presence and co-presence. Further research is also needed to find out if students' learning processes are affected by how teachers embody and position themselves online. Teachers' own reflections on how they embody themselves could also contribute a deeper understanding of embodiment in online teaching practices.

A third area for further research could concern the influence of surrogate nature in educational practices online. Does, for instance, surrogate nature contribute a relaxing state (for both students and teachers) when performing orally online? It is likely that research on simulation (both in virtual worlds and elsewhere) and game studies (such as Sundén, 2012) has insights to contribute.

Only two settings were analysed in this study. Further research could focus on other settings within the same technology studied here, but also other technologies, in order to elucidate and pluralise the relational character of online teaching practices. Furthermore, the students' perspective was largely left out in this study, so further studies could incorporate a student perspective on online practices.

7. References

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Appendix A: Interview guide A

I figured we would start by talking about the content and the design of the course...

1. I wonder if you could start by telling me about what it is that students should learn by taking this course?
2. How are the students going to learn these things you just mentioned?
3. How do you find out what students have learned?
4. What were your thoughts when you planned the course, I mean, why did you choose this particular design for the course?
5. What do you do when you teach? How does it work?

Wow! Exciting! I am thinking that we could move on and talk a little more about the design of the course and about ICT…

6. Could you tell me about why the course is web-based?
7. You told me that you were using <particular ICT> in the course. Please tell me more about what you and the students are using it for during the course.
8. Do you and your students use any other ICTs during the course?
    a. What do you use it/them for?
9. How are the students introduced to the technology that is used in the course?
10. How come these ICTs are used?
    a. How do you think it worked?
    b. Would any other ICT support have worked better, do you think?
11. Is there any kind of support for you as a teacher, when it comes to teaching with ICT?

Okay, I was thinking that we could move on with some questions regarding course development…

12. Has the course been changed in some way since its first launch?
13. I am wondering if you would like to run the course in a different way compared to how it is run at the moment?
14. Could you tell me about something that has worked really well in previous rounds of the course?
    a. Why do you think it went so well?
15. Could you tell me about something that did not go that well in previous rounds of the course?
    a. Why do you think it did not work out that well?

…and some final questions about teaching online…

16. What is your opinion of teaching online?
17. What are the greatest challenges when teaching online, in your opinion?
18. I was wondering if you have taught or are teaching in other online courses?
    a. What kind of ICT did you use?
19. Finally, I wonder if there is anything that has come to your mind and that you would like to add?

Ask for 15 more minutes if the interview lasts one and a half hours…

I was thinking about what you said about xxx. Could you tell me a bit more about that?

Appendix B: Interview guide B

The programme as a whole

1. I wonder if you could start by telling me generally about the programme as a whole?
   a) What should the students learn when they are taking part in this programme?
   b) How are the students going to learn these things you just mentioned?
   c) What do you do to find out what students have learned?

2. What were your thoughts when you planned the programme, I mean, why did you choose this particular design for the programme?

3. What expectations do the students have of the programme, concerning its form?
   a) Do their expectations correspond to how you are carrying through the programme?
   b) If No: What are the consequences for the teaching when students have expectations that do not correspond to how the programme is carried through?

4. Could you tell me concretely about what you do when you teach in the programme?
   a) When do you intervene (and not) as a teacher in discussions on itslearning?

5. Could you tell me why the programme is web-based?
   a) What are the consequences for the form of the programme of having students geographically scattered?
   b) What are the consequences for the form of the programme of having teachers geographically scattered?

6. The programme has been active for about 10 years now, right? Could you tell me a bit more about the thoughts you had when you planned the programme back at the beginning of the 2000s, concerning the choice of ICT?

7. Are you using the same ICT tools today?
   a) Why/Why not?

8. What different ICT tools are used in the programme?
   a) Could you tell me why you are using that particular technology for that particular purpose?

9. How do you think it has worked, using those tools?

10. Would you like to use other ICT tools instead of the ones you are using now?
    a) Why/Why not?

11. How are the students introduced to the ICT that is used in the programme?
    a) After the introduction, does all go well? Do students have any problems using the technology?
    b) Do teachers have any problems using it?

12. What do the students say about the way you communicate in the programme and in the courses?

13. Do students use other ICT tools alongside those provided in the programme?
    a) If yes: What do they use that technology for?
    b) If yes: Why do you think they use that technology?

c) What do you think about their usage of that technology?

14. Is there any support for you as a teacher when it comes to teaching online?

a) If yes: What kind of support is it?

b) If no: Is there a need for support? What kind?

15. Would you like to conduct the programme in other ways, compared to how it is done today? (In a technical way?)

16. Could you tell me about something that has worked really well, from an ICT perspective, in this programme?

a) Why do you think it went so well?

17. Could you tell me about something that did not work out that well?

a) Why do you think it did not work out that well?

18. I wonder how long you have been a university teacher?

19. And for how long have you been teaching online?

20. What is your opinion of teaching online?

21. What are the major challenges of teaching online, in your opinion?

22. What are the major challenges of teaching in this particular programme, do you think?

23. Are there any consequences from teachers and students having different mother tongues?

24. Have you taught in other online courses apart from the X programme?

a) What kind of ICT tools did you use in those courses?

OK, that was part one of the interview. Is there anything you would like to add concerning the programme in general?

About course X

25. What is it the students should learn when they are taking part in this course?

26. How are the students going to learn these things you just mentioned?

27. What do you do to find out what students have learned?

28. What were your thoughts when you planned the course, I mean, why did you choose this particular design for the course?

29. What ICT tools are used in this particular course?

a) What do you use them for?

30. Do students use other ICT tools alongside those provided in the course?

a) If yes: Why do you think they are using that technology?

b) What do you think about their usage of that technology?

c) Could you tell me about why you want to keep the students' communication within the selected platform?

31. Why are those ICT tools used in this particular course?

a) How do you think it has worked, using those tools?

b) Do you think that other ICT tools would have worked better?

32. What are the consequences for the form of the course of having students geographically scattered?

33. What are the consequences for the form of the course of having teachers geographically scattered?

34. Has the course been changed in any way since it first started?

35. Would you like to conduct the course in another way, compared to how it is done today? (In a technical way?)

36. Could you tell me about something that has worked really well, from an ICT perspective, in this course?

a) Why do you think it went so well?

37. Would you like to tell me about something that did not work out that well?

a) Why do you think it did not work out that well?

38. Did the informant mention structure, openness or clarity during the interview? If so: Ask her/him to explain what s/he means by this.

39. OK, we are close to the end of the interview and I have only some short final questions concerning your employment and age and such...

a) Shall we start with the easiest one? May I ask your age?

b) OK, and what are your responsibilities in your employment?

c) Have you taken any university teaching course?

40. OK, we have reached the end of this interview and I wonder if there is anything that has come to your mind that you would like to add to our conversation?

Ask for 15 more minutes if the interview lasts one and a half hours…

I was thinking about what you said about xxx. Could you tell me a bit more about that?

Appendix C: Information and consent form

Month Date, Year

Linköping University

Request regarding participation in a research study

This letter is to request your participation in a higher education research study concerning teaching using information and communication technology (ICT). You use a type of ICT in your teaching that is of interest to the study, and is why you have been asked to participate.

Background and purpose of the study

Teaching in higher education is conducted in many different ways, including the various forms of online environments such as text-based conferencing systems, video conferencing, virtual worlds, and with the support of social media. The purpose of this study is to examine how teaching in online environments is carried out in higher education. The aim is to gain a better understanding of what it means to teach online.

Procedures

The study includes three case studies, each one focusing on a particular type of ICT. If you participate I will follow your teaching in your course XXX. Data collection will be performed through observations and interviews. Two interviews, one initial and a follow-up, approximately one to one and a half hours each, will be conducted with teachers who teach the course. The interviews can, based on your preferences, be carried out either offline or online with the support of an e-meeting tool, such as Adobe Connect. Data collection will also include observations of the teaching in the course. If the course involves many teaching sessions, a selection may be made. Interviews and observations will be video-recorded to facilitate analysis.

Confidentiality

Collected data will be treated confidentially and in such a way that unauthorized persons will not have access to the material. The data will be anonymized and coded to protect your identity. Your name will in all circumstances be replaced by a pseudonym. Other researchers may request access to the source material, e.g. for scientific reviews, but they will undertake to obey the agreements we have reached in this document. The generated data might be used for research that has not yet been scheduled. If this happens you will be contacted again for your renewed consent.

Information concerning the results of the study

The study will be published as a dissertation. When it is published I will send you the summary and a reference by e-mail.

Participant rights

Participation in the study is voluntary and you may at any time and without giving any explanation, cancel your participation.

Responsible for the study

Linköping University (research organization) and Professor Madeleine Abrandt Dahlgren, Unit of Studies in Adult, Popular and Higher Education, Department of Behavioural Sciences and Learning, are responsible for the implementation of the study. Karin Bolldén is the researcher. If you have any questions about the study, please do not hesitate to contact us for further information:

Linköping University
Department of Behavioural Sciences and Learning
S-581 83 Linköping, Sweden

Month Date, Year

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Consent

I hereby give my voluntary consent to participate in the study described above. I also confirm that I have received information about the study and its implementation. I have had the opportunity to ask questions and to receive satisfactory answers.

Location, Date, Name

Linköping University
Department of Behavioural Sciences and Learning
S-581 83 Linköping, Sweden

Papers

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