Learning English in a Multi-User Virtual Environment: Exploring Factors Affecting Participation

Airong Wang

Faculty of Human Sciences
Thesis for Doctoral degree in English
Mid Sweden University
Sundsvall, September 12, 2017
Akademisk avhandling som med tillstånd av Mittuniversitetet i Sundsvall framläggs till offentlig granskning för avläggnings av filosofie doktorsexamen, tisdagen den 12 september 2017, klockan 14.15 i N109 (Fälldinsalen), Mittuniversitetet, campus Sundsvall. Seminariet kommer att hållas på engelska.

Learning English in a Multi-User Virtual Environment: Exploring Factors Affecting Participation

© Airong Wang, September 12, 2017
Printed by Mid Sweden University, Sundsvall
ISSN: 1652-893X

Faculty of Human Sciences
Mid Sweden University, 85170 Sundsvall
Phone: +46 (0)10 142 80 00
Mid Sweden University Doctoral Thesis 266, 2017
To my family and friends
Abstract
Online language learning and teaching is a field that has received a significant amount of research attention. What factors could affect student participation in simpler online learning environments has been investigated by researchers, but there has been limited study of factors affecting participation in complex Multi-User Virtual Environments.

By using the typical Multi-User Virtual Environment Second Life, three English courses offered by Swedish universities were examined in this thesis. The courses were video-recorded, and selected parts of the recordings were transcribed. The transcribed recordings were complemented by author(s)’ observation, participants’ reflection, an online questionnaire and an online interview. Participation from the courses was measured both quantitatively and qualitatively. Quantitative methods were used to measure, for example, floor space, number of utterances, turn length, number of turns; the qualitative analysis centered on, for instance, utterance functions, discourse analysis, and Conversational Analysis.

The results were published in five papers that focused on different central factors affecting participation in Second Life. In this thesis, the findings from those articles are synthesized. Furthermore, on the basis of the findings, a general model of factors affecting participation is presented and discussed to highlight that different factors interrelate and that some factors are particularly important in terms of affecting participation in Multi-User Virtual Environments. These are students’ technical skills, task design, course design, technical support, and Second Life technology. The complex technology also places critical demands on teachers’ technical skills, teaching strategies, and roles that teachers should play. Finally, this thesis argues that it is important to choose a suitable technology for an English course.

Keywords: Activity theory, Conversational Analysis, Discourse analysis, Ecology of language learning, Model of factors affecting participation, Multi-User Virtual Environment, Participation, Second Life, The sociocultural perspective on learning, Technology adoption
TABLE OF CONTENTS

Acknowledgments .................................................................................. vi
List of articles ......................................................................................... vii

1. INTRODUCTION ..................................................................................... 0
   1.1 Aims and contributions of this study .................................................. 0
   1.2 Defining participation ........................................................................ 1
       1.2.1 Definitions from previous studies .............................................. 1
       1.2.2 Participation in the context of this thesis - limitations and practical constraints ...................................................... 2
   1.3 Outline .................................................................................................. 3

2. THEORETICAL FRAMEWORK .................................................................. 4
   2.1 The sociocultural perspective on learning ........................................... 4
       2.1.1 Mediation .................................................................................... 4
       2.1.2 Social learning ............................................................................. 5
       2.1.3 Zone of Proximal Development and scaffolding ......................... 6
           2.1.3.1 Zone of Proximal Development ........................................... 6
           2.1.3.2 Scaffolding ........................................................................... 7
       2.1.4 Collaborative learning .................................................................... 8
           2.1.4.1 Collaboration ......................................................................... 8
           2.1.4.2 Telecollaboration ................................................................... 8
           2.1.4.3 Salmon’s five stages of teaching and learning online .............. 9
       2.1.5 The sociocultural perspective on motivation .................................. 11
       2.1.6 Summary ...................................................................................... 12
   2.2 The ecology of language learning ....................................................... 12
       2.2.1 Affordance .................................................................................. 13
       2.2.2 An ecological perspective on scaffolding .................................... 14
       2.2.3 Summary .................................................................................... 15
   2.3 Activity theory ................................................................................... 16
   2.4 Theoretical frameworks of the method ................................................ 17
       2.4.1 Conversational Analysis .............................................................. 17
           2.4.1.1 Turn-taking ........................................................................... 18
           2.4.1.2 CA in institutional settings ................................................... 19
           2.4.1.3 Summary ............................................................................. 19
       2.4.2 Discourse analysis ........................................................................ 20
   2.5 Technology adoption ........................................................................... 21
   2.6 Summary ............................................................................................ 22
3. COMPUTER ASSISTED LANGUAGE LEARNING, COMPUTER MEDIATED COMMUNICATION, AND SECOND LIFE ............. 23
  3.1 Computer Assisted Language Learning ............................................. 23
  3.2 Computer Mediated Communication ................................................. 26
  3.3 Multi-User Virtual Environments and Second Life .............................. 27
    3.3.1 An overview of Multi-User Virtual Environments ......................... 27
    3.3.2 Second Life ............................................................................. 27
    3.3.2.1 The affordances of Second Life .......................................... 28
    3.3.2.2 Open language communities and social networks ...................... 30
  3.4 Summary ...................................................................................... 30
4. PREVIOUS RESEARCH ..................................................................... 31
  4.1 Previous research of using Second Life in language education ............. 31
    4.1.1 The contributions of Second Life in language education ............ 31
    4.1.2 Problems of using Second Life in language education ............. 33
  4.2 Factors affecting online participation ........................................... 34
    4.2.1 Demographic factors ............................................................... 35
    4.2.2 Behavioral factors ................................................................. 37
    4.2.3 Contextual factors ................................................................. 40
  4.3 Summary ...................................................................................... 42
5. METHODOLOGY ........................................................................... 43
  5.1 Methods of collecting the material .................................................. 43
  5.2 Methods of analyzing the material .................................................. 46
  5.3 Summary ...................................................................................... 48
6. ARTICLE SUMMARIES ................................................................. 49
  6.1 Article 1: “Towards a model for mapping participation: Exploring factors affecting participation in a telecollaborative learning scenario in Second Life” (Wang et al., 2013) .................................................. 50
  6.2 Article 2: “Who owns the floor? Examining participation in a collaborative learning scenario between student teachers and active professionals in Second Life” (Wang et al., 2014) ...................... 51
  6.3 Article 3: “Facilitating participation: Teacher roles in a multi-user virtual learning environment” (Wang, 2015) .............................................. 52
  6.4 Article 4: “Managing student participation: Teacher strategies in a virtual EFL course” (Wang, 2014) .................................................. 54
  6.6 Summary ...................................................................................... 56
7. DISCUSSION .................................................................................................... 57
  7.1 Student-related factors in SL ....................................................................... 58
    7.1.1 Power relations ..................................................................................... 59
    7.1.2 Students’ attitudes ................................................................................ 60
  7.2 Teacher-related factors in SL ....................................................................... 61
  7.3 Task/course-related factors in SL .................................................................. 63
  7.4 Analysis in relation to existing theories ....................................................... 65
    7.4.1 Ecology of language learning ............................................................... 65
    7.4.2 Activity theory ...................................................................................... 67
    7.4.3 System acceptability ............................................................................. 69
  7.5 Conclusion .................................................................................................... 72

8. CONCLUSION .................................................................................................. 75
  8.1 Results .......................................................................................................... 75
  8.2 Implications, limitations, and future research ............................................. 75

REFERENCES ...................................................................................................... 77
Acknowledgments

Writing a doctoral thesis is a challenging and difficult process, and fortunately I went through it with the help of encouraging and sympathetic friends. My deepest and most sincere thanks are given to my supervisors, Professor Mats Deutschmann and Professor Terry Walker. Without their consistent and constructive feedback, I would never have found the confidence and determination to finish my thesis. Their academic attitudes, knowledge, and diligence have encouraged me to overcome difficulties in the writing process. What I have learned from them provides a solid foundation for my future research and career. In addition, I am also sincerely appreciative of the support I received from my former deputy supervisors: Docent Anders Olsson and Docent Anders Steinvall. Thanks also go to Dr. Rachel Allan for valuable feedback on the first draft of this thesis.

I am grateful for receiving funding for my doctoral research from the Department of Humanities at Mid-Sweden University, and support from the department heads, Dr. Tomas Berglund and Docent Jonas Harvard, and former head of the English section, Docent Hedda Friberg-Harnesk.

I would also like to express my deep sense of gratitude to one of the kindest people in the world: David Richardson. His openness, helpfulness, and patience contributed significantly to the successful collection of my research data.

I thank my friends and colleagues: Dr. Irina Frisk and Dr. Martin Shaw. Without their help, company, and encouragement, academic life in a foreign country would have been more difficult. I have benefitted from their academic advice and our discussion of academic issues.

Finally and most importantly, my deepest love is given to my parents, who pushed me to finish this study. I express my genuine regret to my late grandma: may you find peace and happiness in Heaven.
List of articles


Permission has been given to me to reprint Articles 1 and 4 by the editor-in-chief of the JALT CALL Journal. I have also been granted permission by IGI Global to reprint Articles 2 and 4. For Article 3, I hold the copyright.
1. INTRODUCTION

Learning a foreign language requires active participation, as learning and participation are inseparable. It has been suggested that participation is an intrinsic part of learning and a radical challenge for online learning (e.g. Hrastinski, 2006, 2008a; Ma & Yuen, 2011; Diep, Cocquyt, Zhu, & Vanwing, 2016). With the development of technology, Multi-User Virtual Environments (MUVEs), such as Second Life (SL), have been used in language teaching and learning. However, the investigation into factors affecting participation in MUVEs is a relatively new field (see, for example, Panichi, 2014), although there are some studies of factors affecting participation in the traditional face-to-face classroom (e.g. Green, 2008), and in comparatively simpler online learning environments (e.g. Vonderwell & Zachariah, 2005; McLinden, McCall, Hinton, & Weston, 2006; Hrastinski, 2007; Ma & Yuen, 2011; Diep et al., 2016).

In this thesis, factors that impact participation in MUVEs are explored using the most popular MUVE, SL. To do this, I have studied three courses in SL and completed five articles (see Articles 1–5 at the end of the thesis). Findings from these articles are used and discussed in this thesis to answer the research questions illustrated below.

1.1 Aims and contributions of this study

The current study includes three research aims. The first two aims are to answer:

1. What factors affect participation in complex MUVEs?
2. What factors are particularly important?

Based on these aims, the third, more general aim, is to contribute to a model that may be applied to studying and predicting participation in MUVEs, a model which may be of use when designing courses, for example. In the exploration of these aspects, the thesis makes two main contributions to the field as described below.

One contribution is that the current study is a study of actual courses. The purpose of this is to get a realistic representation of typical factors affecting participation in authentic learning scenarios. To do so, I have used materials collected from three English courses conducted by Swedish universities in SL.

Another contribution of the current research is that it focuses on synchronous communication and investigates both audio and text communication in a MUVE. Based on a review of publications with the word “participation” or “participate” in the titles, Hrastinski (2008a) found that the majority of the publications examined “text-based media” (p. 1758), and that most of the studies examined asynchronous communication. Only marginal studies researched synchronous communication or mixed (asynchronous and synchronous) communication (Hrastinski, 2008a). However, whether research focus has been shifted from asynchronous communication to synchronous communication in recent years is open to contention. For instance, Golonka, Bowles, Frank, Richardson, and Freynik (2014) examined 350 studies that focused on using a single technology in teaching and learning foreign languages. Among those studies, only seven papers investigate synchronous communication. Lin (2014) conducted a similar review of 25 studies, which included 15 articles that were published between 2000 and 2012 in journals related to
language and technology (e.g. *Language Learning & Technology, Computer Assisted Language Learning, ReCALL*, and *JALT CALL Journal*), dissertations (seven), and theses (three). Lin (2014) finds that 60 percent of those studies investigated synchronous Computer Mediated Communication (CMC), and only about one fifth considered asynchronous CMC. The contradictory findings from the two reviews may largely result from their different foci: Golonka et al. (2014) had a broader focus, i.e. on foreign language learning and teaching, while Lin (2014) narrowed the research down to L2 oral proficiency development. In addition to these, Lin (2014) also reports that among the 25 studies, 56 percent investigated voice chat, compared with 36 percent studying text-chat. In this thesis, in order to represent the dynamics of real-time interactions in the MUVE, SL, synchronous CMC is focused on, and both audio and text communication is examined.

1.2 Defining participation
1.2.1 Definitions from previous studies

There are different definitions of participation. Studying a traditional English classroom, Green (2008) says that class participation is “the act of being involved in the class” (p. 17). Green (2008) further explains that involvement can be constructed by students in two ways: An active intervention by providing either spontaneous or unsolicited contributions, such as giving opinions, answering questions, making comments, talking about a topic, participating in group discussions, reading, and asking questions; and a second type of involvement consisting in showing interest, following classes with attention, and listening to others. (p. 17)

Another definition of participation with a common usage is from Wenger (1998). According to Wenger (1998), participation refers to “a process of taking part and […] the relations with others that affect this process” (p. 55). Wenger (1998) illustrates the importance of participation by relating it to community of practice and negotiation of meaning. Note that community of practice is a core concept in the sociocultural perspective on learning, which is the major theoretical framework in this thesis (see Chapter 2). Community of practice refers to a group of individuals with shared goals who engage implicitly and explicitly in a continuous collaborative activity (Bronack, Riedl, & Tashner, 2006, p. 223). According to Wenger (1998), participation in social communities does not only shape learning experience, but also forms social learning communities. In terms of negotiation of meaning, Wenger (1998) clarifies that meaning is situated in a process: although sometimes people repeat what they have done and said, they construct unique meanings in every new context until they reach a clear understanding of each other. The prerequisite of negotiation of meaning is to participate in social communities.

Outside the classroom, the importance of social interactions to learning has also been stressed by Firth and Wagner (2007). By studying L2 talk-based interactions outside the classroom, they tried to explain “how participants engage in meaningful activities by using an L2” (Firth & Wagner, 2007, p.812). After analyzing excerpts, Firth and Wagner (2007) argue that learning is an intrinsic part of social activities; it is located and happens in social interactions and practices, hence “language learning as a social accomplishment” (p. 807). They also maintain that language learning and use, which are “afforded by topics and
tasks” (p. 812), constitute the basic elements of social interactions among people with varied identities, who may form new behaviors during the process of learning (Firth & Wagner, 2007). Although learning outside the classroom is not the concern of this current study, Firth and Wagner’s (2007) emphasis on social interactions and language learning being a process is in line with the previous studies in traditional classrooms and with the definition of participation adopted in this thesis.

Apart from the definitions of participation in traditional classrooms and outside the classroom, definitions of online participation, the context of this thesis, should be introduced. Vonderwell and Zachariah (2005) define it as “taking part and joining in a dialogue for engaged and active learning” (p. 214). Studying asynchronous text-based communication, Vonderwell and Zachariah (2005) emphasize that online participation is “more than the total number of student postings in a discussion forum” (p. 214). Similarly, Hrastinski (2008a) argues that online participation has complex dimensions, and that learning occurs both online and offline, for example, when learners read course literature. According to Hrastinski (2008a), online participation is “a process of learning by taking part and maintaining relations with others. It is “a complex process comprising doing, communicating, thinking, feeling and belonging, which occurs both online and offline” (p. 1761). Therefore, Hrastinski’s (2009) definition of online participation is not “synonymous with talking or writing” (p. 81), but includes “all kinds of engaging activities” (p. 81). Hrastinski (2008a) stresses further that his definition of online participation is not confined to text-based communication, and can be applied to the study of participation in audio and video applications.

1.2.2 Participation in the context of this thesis - limitations and practical constraints

From the above definitions, whether in traditional classrooms, outside the classroom, or online environments, participation involves taking part actively or attempting to take part actively in learning. It also involves maintaining social relations (Wenger, 1998; Hrastinski, 2008a). In Article 1 included in the thesis, Wang, Deutschmann, and Steinvall (2013) give a definition of participation in MUVEs: “students not only listen and observe, but also contribute (in speech, in writing or through actions) to the interaction” (p. 4). This definition is used in this thesis, and four points need clarifying.

Firstly, participation in Wang et al’s (2013) definition refers to participants’ taking part actively in all course tasks, that is, language learning tasks as well as tasks concerning learning how to use SL. This leads to the second point that needs clarification: interactions studied in the thesis are not confined to interactions concerning learning the target language, but also involve social interactions and technical interactions. In addition, how participants participate collaboratively by using the public text and voice chat in SL is of special interest in this thesis. Participants’ actions, or more specifically actions performed by their avatars, are only mentioned in terms of what is measurable in SL technology. In other words, participation in this thesis is limited to production in public audio and text contributions for practical reasons, given the complexity of multiple communication modes in SL. For example, recall tests would have been needed to investigate whether active listening and observing was taking place, and communication using the private text and voice chat in SL.
could not be captured. Consequently, activities using the private communication modes of SL or in offline activities are excluded. Finally, as SL technology has an important influence on participation, this thesis also considers hindered participation caused by technical problems, for example, a participant who tries to participate but cannot due to technical issues.

1.3 Outline
This thesis is structured as follows. Chapter 2 introduces the overall theoretical frameworks of the current study and includes the sociocultural perspective on learning, the ecology of language learning and Activity Theory, as well as the theoretical basis for some of the methodological choices made such as Conversational Analysis (CA), discourse analysis, and technology adoption. Chapter 3 outlines the general research field of the thesis: Computer Assisted Language Learning (CALL) and CMC, and describes SL. Chapter 4 presents previous studies of using SL in language education and previous studies of factors affecting online participation. Chapter 5 introduces the methods of collecting material from the three English courses and the methods of analyzing the material. Chapter 6 provides summaries of the five articles. Chapter 7 discusses factors that influence participation in SL in terms of the findings in the five articles and presents contributions to a general model that can be applied to studying participation in this type of environment. Chapter 8 addresses the research aims and introduces the implications and limitations of the current study as well as suggestions for future research. The five articles are included at the end of the thesis.
2. THEORETICAL FRAMEWORK

This chapter elaborates on the theoretical framework used in this thesis, which includes the sociocultural perspective on learning (2.1), the ecology of language learning (2.2), Activity Theory (2.3), Conversational Analysis and discourse analysis (2.4), and technology adoption (2.5). I will apply these theories, which have been used in analyzing simpler online language teaching and learning, to analyzing complex Multi-User Virtual Environments (MUVEs).

2.1 The sociocultural perspective on learning

The sociocultural perspective on learning, which has developed largely from the works of Lev Semenovič Vygotsky (1896–1934), has characterized current research in language education in virtual worlds (e.g. Molkà-Danielsen, Richardson, Deutschmann, & Carter, 2007; Wang, Song, Stone, & Yan, 2009; Wang, Song, Xia, & Yan, 2009; Blasing, 2010; Peterson, 2009, 2010a, 2012a, 2012b; Nocchi, 2014). The popularity of the theory is partly due to the fact that it places emphasis on learner participation, active collaborations mediated by tools and language and also advocates scaffolding. These features are in line with the recent development of online teaching and learning, which emphasizes social communicative contexts (see Chapter 3 for details). The following sections introduce the core concepts in Vygotsky’s theories: mediation, social learning, Zone of Proximal Development (ZPD), scaffolding, collaborative learning, and the sociocultural perspective on motivation.

2.1.1 Mediation

The first cornerstone of the sociocultural perspective on learning is the concept of mediation, i.e., learning activities are mediated by signs and tools. Vygotsky’s concept of social mediation is commonly expressed as a triangular relationship between the subject, the mediating artifact, and the object as illustrated below.

Figure 1. A common reformulation of Vygotsky’s model (Engeström, 2001, p. 134; reproduced by kind permission of the author)

Mediating artifacts, i.e., tools (computers) and signs (symbolic signs), do not only simply facilitate a subject in realizing the object of actions, serving as the bridge between the intended action and the outcome, but also affect human mental processes and transform...
human activities. Vygotsky (1978) emphasizes that subjects, objects, and mediating artifacts cannot be understood without their cultural contexts. The term “culture” within the sociocultural approach is employed to “describe knowledge and other resources that exist within the individual, in social interaction and in tools” (Säljö, 1999, as cited in Hrastinski, Keller, & Carlsson, 2010, p. 655). It is worth noting that object and mediating artifact may be interchangeable in some cases. For example, in an online English course, text chat can function as a mediating artifact in facilitating and enriching learners’ interactions; however, if this is the first time that some learners are using text chat, it will initially be a learning object that learners have to master.

Vygotsky considers language to be the most important psychological tool in mediated activities. According to Vygotsky (1986), speech is “as important as the role of action in attaining a goal” (p. 25). Speech is both a tool for learners to master their surroundings and describe their actions, and an important psychological tool to solve problems (Vygotsky, 1986, 1978). The importance of speech in complex tasks has been highlighted by Vygotsky (1978):

The more complex the action demanded by the situation and the less direct its solution, the greater the importance played by speech in the operation as a whole. Sometimes speech becomes of such vital importance that, if not permitted to use it, young children cannot accomplish the given task. (p. 25–26)

Therefore, Vygotsky (1978) maintains, “children solve practical tasks with the help of their speech, as well as their eyes and hands” [italics in original]” (p. 26). Vygotsky (1986) also reiterates that speech undergoes development during sociocultural interactions.

Vygotsky’s concept of mediation is of importance to this current study. In terms of mediating tools and signs, learning activities in Second Life (SL) are mediated by two tools: SL and the target language. SL can influence how the target language is used, and the target language, as the method of interpersonal communication, can influence how learners learn to use SL. As regards the cultural contexts, learners’ language and technical knowledge, and the resources offered by SL, can affect how a learning object is realized.

2.1.2 Social learning

Social learning, i.e., knowledge is constructed in social interactions, is another core concept in Vygotsky’s works. Knowledge, in this theoretical framework, is considered as “embodied in the physical artefacts that are constructed and used by communities, and in the tools (e.g. signs, theories, models, and methods) that have enabled the constructions of these artefacts” (Blin, 2005, p. 6).

According to Vygotsky (1978), learning occurs on two planes. It is constructed between people on the social plane, and later it is internalized by individuals on the individual plane. For example, in a scenario, none of the learners has prior experience of using the chat function in SL, and they start to discuss and test the chat function together. Gradually, they collaboratively work out how to operate this function. In this way, the knowledge of using the chat function is constructed by the learners during their social interactions. The knowledge is later internalized by them, and they will know how to use
this function in the future. Therefore, the concept of knowledge construction presupposes that knowledge internalization happens if knowledge is socially constructed first.

Consequently, social learning happens in a community of practice. Although a community of practice has a potential participatory nature, its value as a medium for learning can only be realized when learners actively participate in such a community. Hence, learning can also be interpreted as a process of participating “in a social process of knowledge construction” (Lipponen, 2002, p. 74). Similarly, Wenger (1998, p. 4) maintains that social participation is a process of acquiring knowledge in a community of practice.

Social learning is closely related to another important concept in learning theories: authentic learning. Authentic learning consists of tasks that have “some connection to the real-life problems and situations that students will face outside the classroom, both now and in the future” (Woolfolk, 2004, p. 376). For example, one typical example of authentic tasks is problem-based learning. As Lombardi (2007) argues, any authentic learning in face-to-face classrooms or in online learning may not happen without consideration of the key factor “community participation” (p. 6). Consequently, within Computer Assisted Language Learning (CALL) contexts, designing authentic tasks to encourage participation has been a significant concern (e.g. Molka-Danielsen et al., 2007; Jauregi & Bañados, 2008; Peterson, 2012a). For instance, in an English course in SL reported by Peterson (2012a), Japanese learners of English collaborated in different tasks: the learners made a decision on the SL location that was to be used in their course after the learners had visited several locations, the learners exchanged opinions such as on how to improve language education in Japan, or the learners presented articles that they had read. Peterson (2012a) found that the authenticity of the tasks maintained the learners’ active participation in the course and elicited their collaboration in learning the target language. For example, some peers who were at a more advanced English level corrected other peers’ language errors.

As discussed in Chapter 1, participation is closely related to social interactions, and the concept of social learning is thus central to this thesis, where one of the foci of investigation is the analysis of how social activities support learning and participation in SL.

2.1.3 Zone of Proximal Development and scaffolding

Regarding community of practice, learning usually does not happen among learners who have the same level of knowledge, but it is engendered collaboratively by “more and less experienced members” (Bronack et al., 2006, p. 223). This idea points to two other major components in the sociocultural perspective on learning, namely Zone of Proximal Development (ZPD) and scaffolding.

2.1.3.1 Zone of Proximal Development

ZPD is a key concept in Vygotsky’s works. The term refers to “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86). The definition of ZPD shows that learning happens or knowledge is constructed under the guidance of teachers and capable peers. In other words, learning is a process of transformation: “a transfer of
competence – or the transfer of strategic responsibility – from expert to novice” (Wertsch, 2011, p. 44). The definition of ZPD also indicates the “inequality of skills and maturity” among different members (van Lier, 2004, p. 142).

Additionally, it is commonly considered that ZPD promotes the teacher role. As Levy and Stockwell (2006) claim, teachers are “a support to help the student until the time comes when he or she is able to operate independently” (p. 116), so “[t]he teacher is regarded as an active, communicative participant in the learning process” (p. 116). In concrete terms, teachers’ support can deal with students’ cognitive understanding of learning tasks, reducing students’ anxiety over difficult tasks or new technologies, teaching students appropriate strategies for completing tasks, or establishing a social collaborative environment.

2.1.3.2 Scaffolding

Closely related to ZPD is scaffolding. It is through scaffolding that a learning context of ZPD is realized. Scaffolding is a process of “giving information, prompts, reminders, and encouragement at the right time and in the right amounts, and gradually allowing students to do more and more on their own” (Woolfolk, 2004, p. 60), or “is the process by which one learner helps another grasp words and ideas by providing and building upon partial information” (Beatty, 2003, p. 235). From the two definitions, it can be seen that scaffolding is not confined to teacher support, but also includes capable peers’ assistance.

According to a sociocultural perspective, scaffolding is provided on condition that tasks are not “simplified”, but rather “amplified” (van Lier, 2004, p. 150). For example, in an English course within SL, where students are supposed to do a role-play, the role-play task and the complex 3D environment are not simplified; instead, students’ access to approach the task is improved when teachers introduce what a role-play is and what students are expected to do during a virtual role-play, and when teachers guide students through a rehearsal for the role-play and an initiation session on using SL technology. Thus, scaffolding is a process of “providing means of access to an activity or text that is unaltered” (van Lier, 2004, p. 150). Walqui also suggests that “to improve access and to stimulate engagement while keeping the content constant” are the primary considerations in scaffolding (as cited in van Lier, 2004, p. 150).

Scaffolding requires active participation. In order for the transformation of competence or responsibility to happen, “both the learner (novice) and the teacher (expert) must be active partners in the dialog surrounding a task” (Wertsch, 2011, p. 44). To motivate participation, it is vital to acknowledge contributions of both teachers and learners, and consider them as “active participants in the co-construction of conversation and activity” (Wertsch, 2011, p. 44). The idea of co-construction from this quote highlights another important concept in sociocultural perspective on learning, namely collaboration.

As the English courses under examination involve learners who are from different parts of the world and have different levels of English knowledge and technical knowledge, it is believed that ZPD and scaffolding are particularly important to this thesis with regard to analyzing student participation in relation to teachers’ support and/or capable peers’ support.
2.1.4 Collaborative learning

2.1.4.1 Collaboration
Knowledge construction, community of practice, ZPD, and scaffolding are all closely related to another key term in the sociocultural perspective on learning, namely collaboration. Collaboration is the starting point of analyzing participation in this thesis because the tasks analyzed in the five articles are mostly collaborative tasks (e.g. group discussion in Article 1 and role-plays in Articles 3–4). Collaboration is also the prerequisite for participation as defined in 1.2.

Collaboration is “a process in which two or more learners need to work together to achieve a common goal, usually the completion of a task or the answering of a question” (Beatty, 2003, p. 102). The concept of collaboration indicates that learning is not an individual effort but “a matter of participation in a social process of knowledge construction” (Lipponen, 2002, p. 74). The emphasis of collaboration is on knowledge co-construction and mutual engagement. In this narrow sense, collaboration can be interpreted as “a special form of interaction” (Lipponen, 2002, p. 73). When collaboration is related to community of practice it can be considered as “a process of participating in knowledge communities” (Lipponen, 2002, p. 73). Researchers argue that collaboration in language learning, which involves co-construction of the target language in “collaborative dialogue” (Peterson, 2009, p. 74), should emphasize the importance of interaction and learner-centered social practices (e.g. Nunan, 1992; Dooly, 2011).

2.1.4.2 Telecollaboration
Collaboration is essential to experience what education is within online environments (Palloff & Pratt, 2005). Telecollaboration exploits the affordances (see 2.2.1) of technology tools to bring language learners from different countries together in order to develop language skills and intercultural awareness in authentic collaborative events (O’Dowd & Ritter, 2006; Lombardi, 2007; Guth & Helm, 2010). Guth and Helm (2010) maintain that even though telecollaboration usually involves language students, telecollaboration can also be extended to include other groups of students such as students of media, communication or even student teachers. Student teachers are one of the groups of participants studied in Articles 1, 2, and 5.

Although affordances of technical tools in bringing cross-cultural learners together to create communities of practice is particularly valuable in telecollaboration (Warschauer, 1997, p. 477), Palloff and Pratt (2005) argue that an online community has many elements. These elements include people, a shared purpose, guidelines, technology, collaborative learning, and reflective practice. The term people in online communities does not only refer to students, but also includes institutional faculties and staff involved in an online course. A shared goal is what people aim at by conducting online collaboration. Guidelines are “the ground rules for interaction and participation” (Palloff & Pratt, 2005, p. 8). Although technology is a tool for “delivery of the course and a place where everyone involved can meet” (p. 8), Palloff and Pratt (2005) warn that technology can potentially affect
participation negatively, which is explored in Article 5. Collaborative learning consists of student-to-student interactions during which knowledge is constructed (Palloff & Pratt, 2005, p. 8). Reflective practice stimulates transformative learning, i.e., knowledge is transformed from capable peers to novices (Palloff & Pratt, 2005, p. 8). According to Palloff and Pratt (2005), a sense of social presence, which is “a feeling of community and connection among learners” (p. 7), is conducive to generating “learning outcomes and learner satisfaction with online courses” (p. 7). The teacher role is of importance in online collaboration (Palloff & Pratt, 2005), a factor which is investigated in Articles 3 and 4.

However, as Kreijns, Kirschner, and Jochems (2003) state, it should not be taken for granted that social interactions between participants happen simply because a telecollaborative environment makes social interactions possible. Instead, tasks or courses need to be designed in such a way that collaboration is encouraged and motivated, and teachers need to pay attention to encouraging collaboration. According to Kreijns et al. (2003), building social interactions in telecollaboration is a process of “getting to know each other, committing to social relationships, developing trust and belonging, and building a sense of on-line community” (p. 342).

2.1.4.3 *Salmon’s five stages of teaching and learning online*  
A relevant model for analyzing the social dynamics of an online learning course is the five-stage model of teaching and learning online developed by Salmon (2004), in which the nature and intensity of collaboration during different online stages are discussed (see Figure 2). This model was based on the experiences of teaching Master of Business Administration courses in online conferences given by the Open University, UK.

![Figure 2. Model of teaching and learning online (Salmon, 2004, p. 29; reproduced by kind permission of the author)](image-url)
The bottom left space of each stage stands for “technical skills” (p. 29) that participants should have; the right top space of each stage signifies “e-moderating skills” (p. 29) required at the stage; the “amount of interactivity” (p. 29) bar at the very right of this model represents the interaction intensity among participants at each stage (Salmon, 2004). As Salmon (2004) explains, “at stage one, they [participants] interact only with one or two others. After stage two, the numbers of others with whom they interact, and the frequency, gradually increase, although stage five often results in a return to more individual pursuits” (p. 29–30).

The foci and main activities are different at the five stages. At the first stage, the key issues are providing participants with the access to get online and motivating participants to spend time and effort on learning online. The purpose of this stage is to expose participants to a technology and to make sure that they have appropriate technical skills. During this stage, individual technical support is usually needed and provided as participants often encounter more specific problems such as “a particular configuration of hardware, software and network access” (Salmon, 2004, p. 31). When participants start to send each other messages or to communicate in other channels (e.g. chat and voice), the first stage ends and the second stage begins. At the second stage, Salmon (2004) suggests that e-moderators, that is, online teachers, should pay special attention to “enabling and promoting all aspects of online socialization” (p. 34) in order to develop an online social community of practice. At the same time, it is common that some participants do not concentrate on tasks at the beginning, and an e-moderator should be aware of this and encourage these students to read and respect other participants’ contributions in the course.

After socialization, participants at the third stage start to see their online system as a dynamic social network. During the third stage, with free and equal access to large amounts of information, participants exchange information, smoothly working towards achieving learning tasks. In order to promote active participation, e-moderators should provide support regarding course materials so that participants can grasp the most relevant and useful information (Salmon, 2004, p. 39). At the fourth stage, participants usually interact with each other more actively and read and respond to others’ contributions more frequently. Moreover, participants’ understanding of concepts and theories is enhanced “through the debate and by examples advanced by other participants” (Salmon, 2004, p. 41). It is during this stage that participants understand that knowledge can be transferred from one person to another (Salmon, 2004, p. 42). Even though Salmon (2004) maintains that “there is much less of a hierarchy” (p. 45) between students and e-moderators at this stage, as participants can voice their own understanding of knowledge and can construct knowledge collaboratively, the teacher role at this stage is still important to advance participants’ learning. For example, e-moderators can collect participants’ discussions and relate them to course theories, suggest new topics when participants go off-task, or suggest alternative solutions to certain problems (Salmon, 2004, p. 42). Therefore, it is important for e-moderators to keep participants on task and maintain participants’ interest at this stage.

The last stage, development, is a stage of critical thinking and reflection. Participants at this stage “reflect on and discuss how they are networking and […] evaluate the technology and its impact on their learning process” (Salmon, 2004, p. 48).
According to Salmon (2004), during online learning, participants do not only construct knowledge of a learning topic, but also construct their “understanding of the processes of using the software and of the experience of learning in new ways” (p. 48). Salmon (2004) also reiterates that stages three and five are “more productive and constructive for learning and teaching purposes” (p. 49). Moreover, as suggested in the model, e-moderators play a significant role in providing scaffolding during students’ collaborations online. Salmon (2004) maintains that the major role of an e-moderator is “to engage the participants so that the knowledge they construct is usable in new and different situations” (p. 52). Only when technical and moderating assistance is offered suitably at each stage do participants have more opportunities to move up to stages three to five “comfortably and happily” (Salmon, 2004, p. 49).

Salmon’s model is particularly useful when analyzing participation in online learning environments since it recognizes this as a dynamic process. Specifically, Salmon (2004) acknowledges that the amount and type of communication that is going on in a course is not static, but changes as the course progresses. In SL contexts, it is a particularly useful model since it points to the importance of students’ need to familiarize themselves with the technology, and how this should be an integral part of the course design. One example of this is technical initiation, which is discussed in relation to all the courses studied in this thesis.

2.1.5 The sociocultural perspective on motivation

Vygotsky’s works have been studied in relation to motivation, and motivation is an important factor affecting participation. For example, Thomas (2011, p. 240) perceives that self-motivation for involvement in virtual communities is of importance to participation.

Motivation usually falls into two categories, intrinsic motivation and extrinsic motivation. The intrinsically motivated students work for the feeling of satisfaction while extrinsically motivated students aim at a desired score or an external reward (e.g. Walker, Greene, & Mansell, 2006). Sociocultural researchers try to explain how motivation emerges, is constructed, and is developed in social collaborations (Walker, Pressick-Kilborn, Sainsbury, & MacCallum, 2010). Aspects of interest are exemplified below, i.e., a sociocultural view of motivation addresses the affective interpersonal relationships, and individual identities are maintained and/or constructed during knowledge construction processes such as in ZPD.

Firstly, “the nature and quality of interpersonal relationships” (p. 20) between students and teachers are important to motivation, and can decide the realization of ZPD and learning transformation (Walker et al., 2010). ZPD in the classroom is realized by student-student interactions and student-teacher interactions, and “the tone of interaction”, “the sense of caring”, and “the emotional quality” (p. 19) have an important influence on motivating learners to engage in learning activities and on building learner’s confidence (Walker et al., 2010). In addition, a sociocultural view of motivation stresses participation in communities of practice (Woolfolk, 2004, p. 356). Apart from building interpersonal relationships, participants are motivated to learn the standards and norms built within their community so that they can maintain their individual identities as community members.
(Woolfolk, 2004, p. 357). According to Bronack et al. (2006), a sociocultural learning environment should “support participants as each becomes part of a community of practice through communication and co-construction” (p. 221). It is participation in a community that links “the identities of the novice and the expert” (Woolfolk, 2004, p. 357). Walker et al. (2010) acknowledge that a sense of belonging in a community is a contributing factor that motivates participation. Furthermore, ZPD has a potential motivational nature in that it involves transfer of learning control from teachers or capable peers to other learners. The transfer signals the student mastery of a learning task and raises student interest in knowledge construction when teachers or capable peers value their knowledge contribution (Walker et al., 2010, p. 19).

Consequently, analysis of motivation in sociocultural contexts addresses “complex issues concerning the relationship between the social world and the world of the individual” (Walker et al., 2010, p. 16), which provides a way of approaching the study of participation in this thesis.

2.1.6 Summary
To summarize, within the sociocultural perspective on language learning, online learning takes place in social activities mediated by online tools and a target language. During the social activities, knowledge is constructed with scaffolding in ZPD and in online communities of practice through telecollaboration. The different stages of online learning and teaching means that participants have different technical skills at different stages of a course and that online teachers have to apply different moderating skills depending on which stage the students are at. The key factor in constructing knowledge in social interactions is active participation (Vygotsky, 1978). The sociocultural perspective suggests that motivation for participation should be examined in terms of interpersonal relations in social communities, for example, whether perceived interpersonal relations in real life influence participation in a virtual language course. Interpersonal relations are explored in Article 1.

2.2 The ecology of language learning
This section introduces the ecological approach to language education developed by van Lier (2004). The approach involves the central concept of affordance, which is a key term in the present study. Affordance “is dynamically related to mediation or tool/sign use” (van Lier, 2004, p. 18), and has “[extended] the ideas of Vygotsky in the light of present-day needs and knowledge” (van Lier, 2004, p. 20). As van Lier (2004) writes, the ecological of language learning is,

a way of thinking about teaching and learning that should be applicable in all situations, and as a way of working that takes the engaged and active learner as a starting point. It is not a finished system or theory, nor is it a method of teaching. It is just a way of thinking about teaching and learning in all its complexity, a way of looking at language as a tool of many uses, and as a key component of all human meaning-making activity. It envisions classrooms as busy workshops with lots of activity and learners who have things they want to accomplish, and who,
with the help of teachers, fellow learners, and other sources of assistance, find the tools they need to achieve their goals. (p. 224)

The following sections explain more about the ecological approach by discussing the notion of affordances and van Lier’s further development of the concept of scaffolding.

2.2.1 Affordance
Affordance, according to van Lier (2004), is a central concept in the ecology of language learning as this notion is “at the roots of the relationship between the person and the physical, social and symbolic world” (p. 79). Affordance refers to “what is available to the person to do something with. Some things clearly and directly signal their relevance for a person in a particular situation” (van Lier, 2004, p. 91). In other words, affordances “are the visual clues that an object gives to its use as well as what it is capable of doing in terms of both intended and unintended functions” (Beatty, 2003, p. 44). An object can signal different affordances for different people. For example, synchronous chat may indicate to some foreign language learners that it can be used to communicate with native speakers in a real-time context or a way of getting instant task support from teachers; for other learners who do not know what synchronous chat is, this communication mode may mean nothing. Zheng (2012) claims that only the language students who can perceive potential affordances of SL among a large amount of resources, have the potential of using the affordances. Studying affordance from a teacher point of view, Haines (2015) defines affordance as “the potential that teachers perceive in a particular technology tool that will support learning and teaching activities in their educational contexts” (p. 166). After having followed two teachers’ use of wikis and blogs for two years, Haines (2015) found that teacher perceptions of the two tools developed over time, but their insights were characterized by previous teaching experience and specific teaching purposes for classes.

Affordance, in van Lier’s ecological approach, is a dynamic relationship between a person and an environment, which is illustrated in Figure 3.

![Figure 3. Affordance in context (adapted from van Lier, 2004, p. 96)](image)

Firstly, affordance functions between environment and agent. In an environment, there are many resources for a learner (the agent in the diagram) to explore, especially when this
environment contains “a rich semiotic budget” (van Lier, 2004, p. 96), which is mainly
language. Moreover, agents have different abilities in, attitudes towards, and effectiveness
in using the resources. Affordance is then a relationship that “[provides] a ‘match’ between
something in the environment […] and the learner” (van Lier, 2004, p. 96). Secondly, with
regard to the three terms in the vertical lines of the model (perception, affordance, and
activity), the perception of a potential affordance is acted upon during an activity.
According to van Lier (2004), the affordance “fuels” (p. 96) perception and activity and
stimulates “further affordances and signs, and further higher-level activity as well as more
differentiated perception” (p. 96). Similarly, Beatty (2003, p. 44) argues that affordances
can be obvious and learned. Given the example above, the affordances of synchronous chat,
for example, a channel for getting immediate teacher help, can be learned by learners who
have no online learning experience. After that, learners may develop a further perception
that synchronous chat can also afford immediate group discussions. When the learners start
to organize synchronous discussions, they have practiced a higher level of activity. As van
Lier (2004) stresses, activity and perception are central within the ecology of language
learning. In an activity-centered learning context, learners will use all resources, including
language and interactions with teachers and other learners, to accomplish their learning

Van Lier (2004) emphasizes the key role of active participation in ‘activating’
affordances during language learning. According to van Lier (2004), language learning is
“a combination of access and engagement” (p. 97). It is insufficient that language can be
accessed around a learning environment: language learners have to pick up useful resources
and/or information actively from the environment and engage in meaningful activities (van
Lier, 2004). In other words, language learning is not static but actively situated in the
contexts of meaningful activities (van Lier, 2004, p. 223). Apart from engaging in
meaningful activities, learners are also encouraged to take responsibility, cope with
challenges, think critically, and control their own learning (van Lier, 2004, p. 223). Within
the ecology of language learning, developing learners’ skills and interests are the driving
forces of language learning. Therefore, from an ecological perspective, a learner is
perceived as “a whole person, not a grammar production unit” (van Lier, 2004, p. 223).

When using complex technology such as SL, the technology of the learning
environment becomes a decisive factor in the learning experience, and something which
can affect the nature and the extent of participation both negatively and positively. Van
Lier’s model is thus of particular interest when dealing with studies in SL as the
affordances and the access thereof are central to activity and participation.

2.2.2 An ecological perspective on scaffolding
Van Lier has added three points to scaffolding. Van Lier (2004) emphasizes that
scaffolding in educational contexts is “dynamic and flexible” (p. 147). Scaffolding
facilitates the movement of pedagogical activity towards achieving the pedagogical goals
by providing “efficient and quick access” (van Lier, 2004, p. 147). Scaffolding, in an
educational context, is also temporary, as it disappears when it is not needed any more. Van
Lier (2004) also expands scaffolding in ZPD to include “not only an expert-novice
relationship, but also an equal peer one, a peer to lower-level peer one, and a self-access, self-regulated on [sic]” (p. 162), so an ecological ZPD involves “interlocutors of different kinds” (p. 162). Scaffolding can happen when peers with different and/or the same levels of knowledge and experience support each other in collaborative knowledge construction. Scaffolding can also occur when learners work alone, assisted by knowledge, experience, and other resources that have been internalized during previous learning. In addition to these, van Lier (2004) argues that scaffolding is not “deliberately planned or ritual parts” (p. 162) of pedagogical activities; instead, scaffolding occurs “in the interstices between the planned and the unpredictable, that is, when something new and unexpected happens” (p. 162). The interstice nature of scaffolding requires that teachers or peers offer scaffolding in a well-organized and familiar context and be alert to opportunities to hand over the task back to other learners so that learners can take initiatives in their learning (van Lier, 2004). Consequently, van Lier (2004) maintains that scaffolding is “assisted performance” (p. 147) and “assisted participation” (p. 147).

As mentioned in 2.1.3, scaffolding is of importance for studying participation in this thesis. However, scaffolding as examined in this thesis is not only confined to the structured assistance that participants received from teachers and technicians, but also from capable or equal peers. Van Lier’s model, which takes a more flexible view of scaffolding that includes the ‘unexpected’ and ‘unpredictable’, is of particular interest when studying learning in SL. For example, there were several examples of peer support which did not only relate to language, but also concerned unexpected technology-related issues where learners helped each other to overcome problems on the spur of a moment, a good example of unplanned scaffolding.

2.2.3 Summary

In sum, the ecology of language learning takes participants in a community of practice as constitutes of a complex and dynamic learning environment and emphasizes the active participation from all participants whether in terms of scaffolding or in employing affordances. Given the emphasis on the dynamics and complexity of learning activities and on active participation, the ecology of language learning is applicable when studying factors affecting participation in a complex 3D environment.
2.3 Activity theory

Cultural-historical Activity Theory or Activity Theory draws on Vygotsky’s (1978) concept of mediated action (see 2.1.1 and Figure 1) and Leont’ev’s (1978, 1981) Activity Theory. While Vygotsky’s work centers on the interpretation of mediation at an individual level, Leont’ev has expanded the concept of mediation to individual and collective levels. According to Leont’ev (1978), an activity consists of subject, object, and tools. Subjects (e.g. language learners or a group of language learners) carry out a number of actions mediated by tools (e.g. technical tools and a foreign language) towards an object (goal or motive) (e.g. learning some new words). A significant feature of Leont’ev’s model is that individual or collective actions are goal-oriented, i.e., transforming an object into an outcome (Blin, 2004).

Arguing that the triadic model developed by Leont’ev does not fully address the “societal and collaborative nature” (Engeström, 2012, p. 30) of actions and that Leont’ev “never graphically expanded Vygotsky’s original model into a model of a collective activity system” (Engeström, 2001, p. 134), Engeström (1987) has developed the model of Leont’ev into a complex model of an activity system (see Figure 4). Engeström (1987) claims that the new model approaches “dialogue, multiple perspectives and voices, and networks of interacting activity systems” (p. 6). There are six constitutes in this model: subject, object, tools, community, rules, and division of labor.

As Engeström (1987) argues, activity “must be analyzable in its dynamics and transformations […] as a contextual or ecological phenomenon” (p. 61). In Engeström’s model, subjects are not isolated but members in a community, who share a same object or goal (Blin, 2004). Within a community of practice, there are “multiple points of view, traditions and interests” (Engeström, 2001, p. 136). The relationship between a subject and an object is mediated by tools and by community conventions and rules (Blin, 2004). The

Figure 4. The structure of a human activity system (Engeström, 1987, p. 78; reproduced by kind permission of the author)
relationship between a community and an object is mediated by division of labor, which is
the “horizontal distribution of tasks between peers and the vertical distribution of power
between participants” (Blin, 2004, p. 383). In an activity, the division of labor allocates
participants into different positions (Engeström, 2001, p. 136). Engeström (2007) states the
central issue in this model is “what connects […] individual actions to the collective
activity” (p. 31). Outcome (e.g. new patterns of collaboration) is the result of all these
factors interacting with each other (Engeström, 2007, p. 31). Consequently, the activity
system as a basic unit of analysis makes it possible to study the dynamic process of a
language learning activity, from the learner level to the sociocultural context level (Levy &
Stockwell, 2006), and is thus applicable in this thesis. Specifically, by using this theory,
other actors (e.g. administrative staff) and factors (e.g. technical and financial factors)
outside the specific course context could be taken into account in the analysis.

2.4 Theoretical frameworks of the method
Having introduced the theoretical frameworks used in this thesis, this section focuses on
methodological frameworks that are adopted to conduct in-depth qualitative analysis of
interactions in SL. These two frameworks are Conversational Analysis (CA) and discourse
analysis. Reasons for using them are provided in the corresponding sections.

2.4.1 Conversational Analysis
The role of conversation in language learning is central. The importance of studying
conversation in interactions can be highlighted by a quote from Vygotsky (1986):

In conversation, every sentence is prompted by a motive. Desire or need lead to
request, question to answer, bewilderment to explanation. The changing motives
of the interlocutors determine at every moment the turn oral speech will take. It
does not have to be consciously directed — the dynamic situation takes care of
that. (p. 181)

Van Lier (2004) also reiterates “language learning, if it is to be at all meaningful, and if it is
to be tied to the self and the formation of identities, must therefore be embedded in
conversation” (p. 145). Online conversation is considered as a useful tool to conceptualize
online instructional processes (Meskill & Sadykova, 2011).

Although CA is “the systematic analysis of the talk produced in everyday
situations of human interaction: talk-in-interaction” (Hutchby & Wooffitt, 2008, p. 11), CA
has been used to study teacher and student interactions in classrooms, for example, teacher
scaffolding (e.g. Mori & Zuengler, 2008). CA methodology has also been used when
studying interactions and participation in a complex 3D environment as a method for
studying the linguistic strategies teachers use to motivate and/or facilitate student
participation (e.g. Deutschmann & Panichi, 2009). It is worth noting that unlike previous
studies of conversational interactions over telephones or in physical classrooms, this current
study analyzes both synchronous spoken and written interactions in a 3D environment. CA,
especially turn-taking, is of particular relevance to this thesis. Note that turns were used as a
means of analyzing participation in Articles 1–4.
2.4.1.1 Turn-taking

Turn-taking is the basic unit of organizing conversations because it permits a systematic alternation of the floor between participants (Cameron, 2001, p. 94). According to Sacks, Schegloff, and Jefferson (1974), when a turn transition-relevance place occurs, the turn can be allocated to the next speaker by the current speaker selecting the next speaker or the next speaker self-selecting the turn. If these two mechanisms do not occur, the current speaker may continue. The current speaker selecting the next speaker takes priority over the other alternatives (Cameron, 2001, p. 91). Hutchby and Wooffitt (2008) highlight the transitions between turns by stating “the relationship between turns reveals how the participants themselves actively analyze the ongoing production of talk in order to negotiate their own, situated participation in it” (p. 41). The next turn is a place for the next speaker to display their understanding of the prior turn (Hutchby & Wooffitt, 2008).

In a face-to-face classroom, the current speaker can select the next speaker by, for instance, looking at the next speaker, but this strategy may not work in most cases of online language education, as there is a lack of visible body language. However, the affordances of multiple communication channels such as chat, audio, and a yes/no button in a conferencing system, can result in a participant self-selecting a turn by switching from one mode to another (Lamy, 2012). Deutschmann and Panichi (2009) found that at the beginning of an oral proficiency course in SL the learners relied heavily on the teacher initiating their turns. This resulted in a type of teacher-student communication rather than student-student communication, but as the course progressed, the students became more active in coordinating their own turns. Turn-allocation mechanisms are of particular relevance when studying how turns are taken in virtual English courses. In this way, teacher power in organizing turn-taking in institutional settings, i.e., how teachers control students’ turns, can be examined (Wooffitt, 2005). For example, given that using questions to initiate student turns are prominent in traditional classrooms (Mori & Zuengler, 2008), it is of interest to see how teachers use questions to initiate student turns (see Articles 3 and 4).

The overarching rule in a turn-taking system is that one speaker speaks at a time; otherwise, the turn-taking rule is violated. When one speaker gets a turn, he/she has the exclusive right to speak before signaling a transition-relevance place. If the next speaker fails to project accurately such a transition-relevance place and starts to speak simultaneously with the current speaker, an overlap happens. Although turn-transitions with slight overlaps are common, Sacks et al. (1974) suggest that one of the speakers should stop prematurely to repair the problem. Overlaps are usually not considered as rule-breaking as they are unintentionally made at a point close to a transition-relevance place (Cameron, 2001, p. 92). However, the turn-taking rule is violated if the next speaker starts to speak within the current speaker’s utterance and there is no sign that the current speaker is close to a transition-relevance place: this is called interruption (Cameron, 2001, p. 92). Interruption is regarded as a strategy for grabbing the floor (Coates, 2004). As reviewed by Mori and Zuengler (2008), even occasional teacher intervention can transform student participation patterns in student group work, when students stop group work to address the teacher interruption. In this thesis, floor space, i.e., the time a certain speaker holds the floor by talking, and number of turns, were quantified to map a general picture of participation.
(see Articles 1 and 2, and Article 3 respectively), and teacher interventions in student conversations were analyzed (see Articles 3 and 4).

Related to the turn-taking system, or more specifically, to the current-speaker selecting the next speaker, is silence. According to McLaughlin and Cody (1982, p. 301), silence of three seconds or more is long enough to affect the conversational structure significantly. In SL, especially concerning the text chat, communication is usually delayed and conversational flow is interrupted as it takes time for participants to type and to ponder over their responses, which results in responses to a certain question often appearing in chat after the conversation has moved on (e.g. Baker, Wentz, & Woods, 2009; Edirisingha, Nie, Pluciennik, & Young, 2009). Moreover, signaling the completion of a turn and picking up a turn online may also be delayed due to technical hindrances or the lack of visible body language. This points to the necessity for online teachers to set up some ground rules for students so that conversations can flow smoothly. For example, in Edirisingha et al.’s (2009) study, the teachers suggested that the students who used SL type their messages first and wait for their turns to submit them. In this thesis, silences have been examined and relevant reasons have been discussed in terms of student familiarity of a learning type (see Article 1), technical problems (see Articles 1 and 2), a potential breakdown of a task (see Articles 3 and 4), or the teacher’s pausing for students to formulate responses (see Articles 3 and 4).

2.4.1.2 CA in institutional settings

As shown above, CA is applicable to studying interactions in institutional settings. As Hutchby (1996) argues, CA provides an account of power in institutional settings by examining “the relationships between turns (as actions) in sequences” (p. 494). Studying a British radio talk show by using CA, Hutchby (1996) maintains that the host had power during arguments, for example, re-establishing the agenda back to an earlier question that a caller had shifted away from. Power relations in institutional settings point to the asymmetries between participants such as different distribution of knowledge, different access to conversational resources and to participation in interactions, or different institutional roles (Wooffitt, 2005). Mori and Zuengler (2008) also argue that using a CA methodology, how interactional power is negotiated between students and teachers can be studied.

Recent studies using CA to investigate institutional talk has expanded resources used in analyses, for example, combining talk in recordings with participants’ ethnographic information and visual data (Mori & Zuengler, 2008). Moreover, to address learning issues, recent research has tried to use microanalyses of classroom talk aided by CA and learning theories such as ZPD and scaffolding (Mori & Zuengler, 2008).

The above discussions show that the CA methodology provides a means of studying power relations, especially teacher power and the dynamics of language learning interactions, in this thesis.

2.4.1.3 Summary

To summarize, conversations play a central role in language learning. By using a CA methodology, how turns are initiated and allocated between teachers and students, silences
in conversations, and interactional powers between students and teachers can be investigated. By using CA, combining in-depth qualitative analyses of institutional conversations and learning theories can be achieved.

2.4.2 Discourse analysis
Discourse analysis studies spoken or written texts above the sentence level. The main aim of discourse analysis is to “look at the ways in which words and phrases function in context” (Walsh, 2011, p. 81). Discourse analysis offers a different perspective for analyzing participation, especially in relation to what functions are realized by utterances produced by different groups (teachers, students, or other participants) during participation. Thus, it provides a method for examining the roles participants or teachers played as well as the contributions they made to the interactive activities in the courses under investigation. In this thesis, Sotillo’s (2000) definition of discourse functions, i.e., “categories of behavior in electronic discourse such as requests, responses, apologies, greetings, complaints, and reprimands”, is used. Discourse functions used in the thesis (Articles 2–4) are reviewed below. Note that discourse functions in these two articles were used as a method of analyzing participation.

In Article 2, the discourse functions used are related to the discourse marker categories in lectures, i.e., starter, elicitation, accept, attitudinal, metastatement and conclusion, in Bellés-Fortuño’s (2006) study. However, Article 2 focused on who had power in institutional conversations in the teacher trainee course in SL, and three types of discourse functions, support, management, and content contribution, were studied. Support concerns giving “agreements and compliments” or “acknowledging what is being said” (Wang, Steinvall, & Deutschmann, 2014). Management refers to “starting the task, suggesting topics for discussion, directing questions to others in order to elicit responses, closing topics, metastatements, summaries and conclusions” (Wang et al., 2014). Content contribution deals with “[adding] substance to the conversation” (Wang et al., 2014). For examples of each function, see Article 2.

The discourse functions used in Article 3 and 4 are from several studies (Sotillo, 2000; Peterson, 2006, 2010a, 2012a, 2012b; Deutschmann & Panichi, 2009). Sotillo (2000), motivated by a sociocultural perspective, compared discourse functions used in synchronous and asynchronous written discussions in university English academic writing classes. Sotillo (2000) coded 14 different discourse functions during student-centered active exchanges in which teachers were also involved, which include “greetings, topic initiation moves, assertions and/or imperatives, requests, responses, adversarial moves, off topic moves, topic shifts, humor, requests for information, floor holding moves, corrective feedback, reprimands, and closings” (p. 95). Sotillo’s (2000) results show that the discourse functions used in the synchronous and asynchronous discussions are quantitatively and qualitatively different. All 14 discourse functions were used in synchronous discussions while only four were used in the asynchronous discussions. This implies that synchronous student-centered exchanges are more complex. The study has provided a framework for analyzing discourse functions in Article 3, which is summarized in Chapter 5 in this thesis.
For other studies that employ discourse analysis, especially in virtual worlds, see Articles 2–4.

2.5 Technology adoption

As stated in Chapter 1, the relationship between participation and the complexity of technology is one area focused on in this thesis.

Researchers (e.g., Rogers, 2003; Venkatesh, Morris, Davis, & Davis, 2003) suggest that technology adoption depends on the complexity of a technology and the perceived advantages of the technology. According to Rogers (2003), a technology that is easy to learn and to use is adopted more rapidly than a technology that is complex and has critical demands on technical skills. In this section, Nielsen’s (1993) model of the attributes of system acceptability, which is illustrated in Figure 5, is introduced.

![Figure 5. Model of the attributes of system acceptability (adapted from Nielsen, 1993, p. 25)](image)

According to Nielsen (1993), if a system is socially acceptable, it can be further analyzed in terms of practical acceptability. Apart from how much a system costs, whether or not it is compatible with existing systems, and whether or not it is reliable, the acceptability mainly depends on its usefulness. *Usefulness* refers to “whether the system can be used to achieve some desired goal” (Nielsen, 1993, p. 24). *Usefulness* is decided by *utility* and especially by *usability*. *utility* addresses “whether the functionality of the system in principle can do what is needed” (Nielsen, 1993, p. 25). Nielsen (1993) stresses that education software has a high degree of utility if students learn by using it. *Usability* concerns how well users can exploit functions of a system, and it refers to “all aspects of a system with which a human might interact” (p. 25) such as installation and maintenance (Nielsen, 1993). Concerning *usability*, Nielsen (1993, p. 26) has these suggestions: a system should be easy to learn; the system should be efficient to use and a high degree of productivity should be possible after users have learned how to use it; the system should be easy for users to remember so that the users can return to the system after a period during which they have not used it without needing to learn how to use it again; the system should have a low error rate so that users
make few errors when using the system; finally, the system should be pleasant to use so that users are subjectively satisfied when using it.

Apart from these considerations, Nielsen (1993) emphasizes that users have different technical skills that may also influence adoption of a technology. Technical skills include both knowledge about computers in general and knowledge about using a specific system. Users differ in terms of minimal computer experience, extensive computer experience, and whether they are novice users of a system, or expert users of a system. According to Nielsen (1993), a system with high usability should allow users to become expert users easily. However, Nielsen (1993) also highlights that if a system, for example, has an interface that is only intended for novice users, users may lose interest in using it after a few times.

Technology adoption is referred to in Article 5, when discussing technical problems affecting participation in the teacher trainee course. In this thesis, technology adoption is the framework for analyzing how technical challenges affect student participation in the three English courses under investigation. It also provides a framework for evaluating when the pros and cons of SL outweigh each other, and thus the model becomes an important tool in formulating recommendations for when SL should or should not be used.

2.6 Summary
In sum, the sociocultural perspective on learning, the ecology of language learning, and Activity Theory are the key theories adopted in this thesis. Taking these theories as the theoretical basis, CA and discourse analysis are used as the specific methodologies to analyze teacher and participant interaction in the 3D environment of SL by highlighting teacher strategies. Moreover, technology adoption serves as a framework for analyzing attributes and problems of using SL in collaborative language learning.
3. COMPUTER ASSISTED LANGUAGE LEARNING, COMPUTER MEDIATED COMMUNICATION, AND SECOND LIFE

In this chapter, I will explain two important concepts in this thesis: Computer Assisted Language Learning (CALL), which is the broad field that this thesis is situated in, and Computer Mediated Communication (CMC), which is of particular importance when discussing affordances in SL. After these, I will introduce Second Life, focusing on its affordances.

3.1 Computer Assisted Language Learning

CALL refers to “any process in which a learner uses a computer and, as a result, improves his or her language” (Beatty, 2003, p. 7). According to Stockwell (2012), any theories of CALL need to consider two aspects: “the learning of the language, and the interaction between the learner and the technology through which they are learning” (p. 6). Researchers have tried to map the development, learning theories, and technologies in different CALL phases or approaches. Among these, the frequently cited frameworks are the chronological CALL stages proposed by Warschauer (2000, 2004) and the CALL approaches suggested by Bax (2003).

Warschauer (2000, 2004) classified CALL, which emerged in the 1960s, into three chronological stages: Behavioristic CALL, Communicative CALL, and Integrative CALL. This framework addresses technology, the English teaching paradigm, what view of language is expressed, principal use of computers, and the main objective of teaching English in each of the three stages (see Table 1).

Table 1. Three stages of CALL (based on Warschauer, 2000, 2004)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Mainframe</td>
<td>PCs</td>
<td>Multimedia and Internet</td>
</tr>
<tr>
<td>English teaching paradigm</td>
<td>Grammar translation and audio-lingual</td>
<td>Communicate language teaching</td>
<td>Content-based, English for Specific Purposes /English for Academic Purposes</td>
</tr>
<tr>
<td>View of language</td>
<td>Structural (a formal structural system)</td>
<td>Cognitive (a mentally constructed system)</td>
<td>Sociocognitive (developed in social interaction)</td>
</tr>
<tr>
<td>Principal use of computers</td>
<td>Drill and practice</td>
<td>Communicative exercises</td>
<td>Authentic discourse</td>
</tr>
<tr>
<td>Principal objective</td>
<td>Accuracy</td>
<td>Fluency</td>
<td>Agency</td>
</tr>
</tbody>
</table>
It is worth noting that the three stages overlap. As shown in Table 1, technologies used in CALL have dramatically changed, from mainframe to PCs (personal computers) and to multimedia and the Internet. The foci of language learning models have also changed from behavioristic models of drill and practice to sociocultural models that stress authentic discourse in social interactions. As Warschauer (2004) explains:

"The current paradigm of integrative CALL is based on a sociocognitive view of language learning. From this viewpoint, learning a second or foreign language involves apprenticing into new discourse communities. The purpose of interaction is seen as helping students enter these new communities and familiarize themselves with new genres and discourses, so the content of the interaction and the nature of the community are extremely important. It is no longer sufficient to engage in communication merely to practice language skills. (p. 22)"

Consequently, one feature of Integrative CALL is that learners solve real-life problems with peers and/or teachers online in a community (Warschauer, 2004, p. 23). Thus the sociocultural perspective on language learning, which includes community of practice and authentic learning (see 2.1), has an increased influence on CALL in this CALL stage compared to other CALL stages.

Bax (2003) has made a critical analysis of Warschauer’s CALL stages, especially the stages-Communicative CALL and Integrative CALL. According to Bax (2003), language teaching nowadays is still within the communicative framework, which also leads to doubts whether Integrative CALL is distinguishable from Communicative CALL. Bax (2003) reclassified CALL into three approaches: Restricted CALL, Open CALL, and Integrated CALL, in terms of key dimensions such as software, feedback that students receive, and teacher roles. According to Bax (2003), Restricted CALL predominated from the 1960s until the 1980s, Open CALL is where CALL is now (i.e., 2003, when the paper was published), and Integrated CALL is what CALL aims at. Table 2 provides the details.

Table 2. Approaches of CALL (based on Bax, 2003, p. 21)

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Restricted CALL</th>
<th>Open CALL</th>
<th>Integrated CALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of task</td>
<td>• Closed drills&lt;br&gt;• Quizzes</td>
<td>• Simulations&lt;br&gt;• Games&lt;br&gt;• Computer Mediated Communication</td>
<td>• Computer Mediated Communication&lt;br&gt; • Windows Phone&lt;br&gt; • Email</td>
</tr>
<tr>
<td>Type of student activity</td>
<td>• Text reconstruction&lt;br&gt;• Answering closed questions&lt;br&gt;• Minimal interaction with other students</td>
<td>• Interacting with the computer&lt;br&gt; • Occasional interaction with other students</td>
<td>• Frequent interaction with other students&lt;br&gt; • Some interaction with computer through the lesson</td>
</tr>
<tr>
<td>Type of feedback</td>
<td>• Correct/incorrect</td>
<td>• Focus of linguistic skills development&lt;br&gt; • Open, flexible</td>
<td>• Interpreting, evaluating, commenting, stimulating thought</td>
</tr>
</tbody>
</table>
As Table 2 shows, CALL tasks have changed from closed drills and quizzes to communicative tasks with increased student-student interactions. Particularly relevant to this thesis is Bax’s interpretations of teacher roles, teacher feedback, and the position of CALL in the curriculum.

Arguably, the teacher role in CALL has changed from that of monitor to those of facilitator and manager. This is supported by research in MUVEs which reports that teachers are facilitators while students have ownership of their learning tasks (e.g., Good, Howland, & Thackray, 2008; Peterson, 2006, 2008, 2010a). According to Bax (2003), teacher feedback has changed from merely being corrective to productive and flexible comments and evaluations to stimulate student reflections. Bax (2003) also argues that teachers’ attitudes towards using a technology or software have a critical influence on the successful implementation of CALL. Moreover, Table 2 also illustrates that CALL is now a model for learning and has increasingly been integrated into the syllabus to address learners’ needs. This is the case with the English courses studied in the thesis, which are university credit courses with different foci of language learning, but where learning goals related to the technology itself are included (see Chapter 5 for details).

Although the two conceptualizations of CALL have different components, they all stress that technology has changed the methods of language learning and that language learning has modified how technology is used. According to Levy and Stockwell (2006), many of the most penetrating technologies introduced in the last 30 years have extended our ability to communicate with people at a distance, or at times when they are not immediately available. Language is intrinsically a part of these developments, because the attributes (or affordances) of each technology help shape how interactions take place and how language is used in each setting. This is just as true for non-native speakers of a language as it is for native speakers. (p. 2)

However, recently some researchers have begun to challenge the firmly formulated concept that CALL is effective for language learning. For example, Cerezo, Baralt, Suh, and Leow (2014) reviewed empirical studies of CALL and report that these studies seem to argue that CALL is more beneficial for learning a foreign language than face-to-face teaching, for example, in terms of grammar. However, by further investigating 16 recent studies, Cerezo et al. (2014) claim that there is no valid proof that medium
matters, and thus more research comparing CALL and face-to-face teaching, for instance, with regard to “type of task, time on task, or modality” (p. 370), are needed. Similarly, Golonka et al. (2014), after having examined over 300 CALL studies, maintain that the majority of technologies used in CALL (e.g. virtual worlds, blog, chat, bulletin board, cell phone, Wiki, Interactive whiteboard) appear to be inefficient in teaching a foreign language although these technologies have a profound impact on language learning and teaching.

3.2 Computer Mediated Communication

CMC refers to “communication between humans that is mediated by computer technology” (Levy & Stockwell, 2006, p. 24). Researchers (e.g. Warschauer & Kern, 2000; Beatty, 2003; Levy & Stockwell, 2006; Blasing, 2010) reflect that CMC inherently involves learning, especially when it brings together language learners with native and non-native speakers. CMC falls into different types.

The two major forms of CMC are asynchronous and synchronous. In asynchronous CMC, there are time intervals during communication. Participants have control over when and where they read and respond to others’ postings, and they can log on to computers at their convenience. Asynchronous CMC encompasses communication, for example, using emails, mailing lists (e-mail based), blogs, or bulletin boards. The ‘any time’ (asynchronous) and ‘any place’ (distance) nature of asynchronous CMC give language learners time to reflect on their language input before sending it off. Therefore, it is suggested that asynchronous CMC is suitable for learners to collaborate on complex problems (Weinberger, Reiserer, Erl, Fischer, & Mandl, 2005; Hrastinski, 2008b) although the time waiting for a response may affect the conversational flow (Levy & Stockwell, 2006).

In synchronous CMC, participants log on to computers simultaneously and conduct real-time communication. Synchronous CMC comprises communication such as using chat rooms or the audio communication in SL (see details in 3.3). As immediate responses are the prerequisite of communication, the real-time and immediate nature of synchronous communication may generate high language output (Levy & Stockwell, 2006). Studying participants who had experienced both asynchronous and synchronous settings in two online courses, Hrastinski (2008b) found that there was increased participation and motivation when students used synchronous CMC, especially in small groups. Nevertheless, synchronous CMC challenges language learners’ abilities to produce language output quickly as there is limited time for them to process information, plan, and edit responses. As a result, language learners’ language output in synchronous CMC is “highly fragmented, abbreviated, and frequently contains spelling errors” (Levy & Stockwell, 2006, p. 103). Lin (2014) claims that synchronous communication is not beneficial for improving students’ language proficiency as students have little time and chance to plan their responses.

CMC can be classified into written and spoken depending on the channel. In written CMC, communication is conducted in text, for example, e-mails, instant messaging, or a mailing list. In spoken CMC, communication is done in audio, using the audio chat in e.g. SL or Skype.
Apart from these, CMC also constitutes public, group, and private forms, depending on whether communication is public or private. Exchanges in public CMC, for example, using the public audio in SL, can be accessed by all users who are within a certain location in SL. Group CMC is only available to the members of a group. For example, messages in a mailing list (e.g. SLED list, see 3.3) are only sent to the email addresses of group members. Private CMC such as using emails or the private text chat in SL, is only accessible to the two people who are involved in the communication.

It is worth mentioning that a technology can potentially offer all the types of CMC described above, and that users can also use different types of CMC simultaneously. For example, synchronous, asynchronous, text, audio, public, group, and private CMC are all offered in SL. These different types of CMC also affect participation differently. Section 3.3 below details the CMC affordances of SL.

### 3.3 Multi-User Virtual Environments and Second Life

This section gives an overview of CMC in Multi-User Virtual Environments (MUVEs). The focus, however, is on the affordances of SL.

#### 3.3.1 An overview of Multi-User Virtual Environments

Virtual worlds emerged in the 1970s from synchronous text-based “simulations of quests or role-play adventures” (Panichi, Deutschmann, & Molka-Danielsen, 2010, p. 170), so-called MOOs (Multi-User Domain Object-Oriented). With the development of 3D technology, MOOs started to offer a visual 3D interface. The graphically-interfaced 3D MOOs are generally known as MUVEs. Interface, in the pedagogical context, refers to “the aspects of a computer that allow the user to have visual interaction with a program […] by a mouse cursor or by keyboard commands” (Beatty, 2003, p. 45). Many MUVEs also provide users with so-called avatars. In this context, an avatar “is an online personality that might resemble a person or almost anything else” (p. 230), who can interact with the environment and other participants’ avatars (Beatty, 2003). Additionally, in MUVEs there are usually multiple modes of CMC, which are elaborated on using SL as an example in 3.3.2.

#### 3.3.2 Second Life

SL, a social networking 3D space, was released by Linden Lab in 2003. An audio communication channel was embedded in 2007. A user who wants to take part in this 3D world can start using it after four steps: choosing an avatar and creating an account on the home page of SL, and then downloading and installing the software. When users log into SL for the first time, they are brought to the ‘mainland’, a space that is open to all users by default. SL is spatially organized around the mainland and surrounded by various virtual islands. There is a search engine where users can find other islands by typing in relevant key words, and they can access these islands by simply clicking on a so-called teleport button.

SL is one of the most well-established virtual learning environments. According to Gamage, Tretiakov, and Crump (2011) SL “attracts most attention of educators as a potential teaching tool” (p. 2407). Panichi (2014, p. 329) argues that SL, as a virtual
platform, “compared to non-graphic online learning platforms such as video-conferencing or to non-immersive platforms” (audiographic conferencing systems, for example), offers a powerful way of approaching “the dynamics of teaching and learning” visually. The affordances of SL, open language communities in SL, and social networks about SL contribute to its popularity in language education.

3.3.2.1 The affordances of Second Life

SL offers a number of affordances, described below. These include the 3D space that can be manipulated by users, avatars that can be modified and controlled by users, and multiple communication modes, coupled with other communication tools.

Users can manipulate the 3D space of SL. Users who have bought an island (i.e. paid Linden Lab for virtual space which they themselves can manipulate) can build objects in it. Language teachers can use this affordance to build desired teaching and learning environments for different course activities such as a virtual classroom for teacher lectures, a campfire for a group discussion, or special chairs floating in the air for entertainment. Chen (2016) argues that, building activities in SL themselves can be conducive to English acquisition, as learners need to read and follow the instructions for building tasks. During the building process, students who are more experienced in building help the less experienced ones, thus providing the experienced students “an opportunity to practice how to communicate meanings with their peers in English” (p. 159) and helping “less-proficient students to learn from doing and following directions by asking questions in English” (p. 159).

SL offers a range of modifiable avatars ranging from representations of human beings to animals, which can be controlled by users. Users can modify their avatars with regard to characteristics such as height, clothing, and facial and body features in accordance with their personal preferences. Consequently, modifiable avatars afford a means of creative self-expression and a means of achieving anonymity, that is, users can change their race, appearance, gender, age, or even species in SL. Apart from being modifiable, avatars in SL can animate limited non-verbal communication. Some actions are predefined by the software, for example, if an avatar remains inactive in voice and text chat for several minutes, the avatar automatically lapses into a status of ‘falling asleep’; some actions are performed by users, for example, orientating avatars towards other avatars; other actions can be activated by clicking on an options list such as running, laughing, crying, and sitting. Considering that avatars can perform some non-verbal communication, Blasing (2010) argues that non-verbal communication in SL gives language learners a sense of learning a target language in real life. However, it should be noted that the non-verbal communication offered by SL is limited, and thus is not as expressive as body language in real life communication.

SL also offers users multiple modes of CMC, as mentioned in 3.2. The two primary channels in SL are text chat and audio chat (also called voice chat). The text chat falls into public, group, and private modes. The public text chat (called local chat) can be used among all participants usually within 20 in-world meters. The private chat (called instant messaging (IM)) can be used both synchronously and asynchronously by two users.
Focusing on the text chat in SL, Liou (2011) found that chatting in SL enabled the learners to perform “meaningful exchanges and task completion” (p. 13), and the English learners also reported that the immersive environment and the text chat were conducive to their English learning. As the chat mode could be used by all the participants simultaneously, Berger, Jucker, and Locher (2016) found that natural turns were interrupted in group discussions when greetings appeared in the on-going discussion text chat window.

The voice chat in SL constitutes the public audio, which is available to avatars within 60 in-world meters, the group audio, and the private audio. For the group and private audio, there are no geographical limitations other than that the participants have to be logged into SL. The public audio is ‘spatial’ (Wadley & Gibbs, 2010), that is, one can hear a user who is nearby more loudly than someone who is further away. According to Wigham and Chanier (2015), the public audio in SL is also half-duplex, that is overlapping is possible and participants do not have to wait for a turn and can intervene directly. SL also offers voice-morphing, but people need to pay to use it. Voice-morphing refers to voice transformation using a specific technology whereby a feminine voice can be morphed into a masculine voice and vice versa. Note that all the different types of the text and audio communication in SL can be used simultaneously. According to Chen (2016), the multiple modes in SL provided an easy way for English learners to switch between different communicate channels, thus being time-efficient.

Apart from the text chat and the voice chat, SL also offers other communication tools such as an inventory where users can save digital items (clothing, note cards, course syllabus, and conference information). There are also public boards in SL, which can be used to introduce an island or a conference in a specific location. Other possibilities in SL, particularly in relation to language learning, include incorporating external sources from other media such as PowerPoint slides into a virtual screen, recordings, images, and films, all of which can be shown in public or shared only by two participants. Table 3 provides an overview of the major communication affordances of SL.

Table 3. The major communication affordances of SL

<table>
<thead>
<tr>
<th>CMC</th>
<th>Text</th>
<th>Voice</th>
<th>Other tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synchronous</td>
<td>Local chat, group chat, IM</td>
<td>Public audio, group audio, private audio</td>
<td>Body language</td>
</tr>
<tr>
<td>Asynchronous</td>
<td>IM</td>
<td>-</td>
<td>Note cards, recordings, images, films, among others</td>
</tr>
<tr>
<td>Public</td>
<td>Local chat</td>
<td>Public audio</td>
<td>Public boards, recordings, images, films, among others</td>
</tr>
<tr>
<td>Private</td>
<td>Group chat, IM</td>
<td>Group audio, private audio</td>
<td>Note cards, recordings, images, films, among others</td>
</tr>
</tbody>
</table>
In sum, SL offers a range of complex affordances. Furthermore, open language communities in SL and social networks about SL also contribute to the popularity of SL in educational contexts.

3.3.2.2 Open language communities and social networks
Although some islands in SL require membership, there are many islands that are open to all users. What attracts language learners is that there are many islands in SL “predominantly populated by native speakers of a variety of languages” (Cooke-Plagwitz, 2008, p. 550).

Moreover, there are extensive communities of educators that operate within the SL domain. Such social networks include, for example, the SLED list (Educators – SL Educators, n.d.), which is a mailing list created particularly for educators using SL, the Avalon NING (2014), the Euroversity NING (2014), and the Eurocall/Calico Virtual World SIG NING (2014) that all connect language educators who want to exchange experiences and ideas and find partners for collaborative projects. The invited professionals in Articles 2 and 5 were recruited using these social networks.

3.4 Summary
This chapter shows that CALL currently emphasizes social and communicative language learning, and there are different types of CMC: asynchronous and synchronous, written and spoken, public, group, and private. This chapter also shows that SL offers multiple communication affordances and opportunities for language education.
4. PREVIOUS RESEARCH

In 4.1, I introduce previous research on using Second Life (SL) in language education. In 4.2, I focus on previous studies of factors affecting online participation.

4.1 Previous research of using Second Life in language education

Previous studies have reported on the contribution of SL in language education and on problems of using this type of environment. A selection of these studies is summarized in the sections below.

4.1.1 The contributions of Second Life in language education

The benefits of using SL in the language education context comprise opportunities to access a target language, to illustrate linguistic concepts, to use authentic language communication, to support social collaborative learning, to implement student-centered collaborative learning, and to design identity-related tasks, as expanded upon below.

SL offers learners several opportunities to access a target language. As mentioned in 3.3.2, there are open language communities with native speakers that language learners can explore. Moreover, SL can be used to bring together native and non-native speakers in a language course due to the non-geographical requirements for participation. By doing so, Canto, Jauregi, and van den Bergh (2013) compared a control group whose members, in a traditional classroom, did not collaborate with native speakers, with a treatment group, in SL, who had this opportunity. Canto et al. (2013) found that oral proficiency of the treatment group was significantly improved compared to the control group after the treatment. The treatment group also became more confident and more active in participation (Canto et al., 2013). Chen (2016) maintains that compared to grammar-focused English learning, SL provides learners with an opportunity for immersive and collaborative language learning experiences in collaboration with English native speakers, hence providing opportunities for improving their communication skills.

In addition, the 3D nature of SL can be used to illustrate linguistic concepts that may be difficult for language learners to learn in other online contexts. Deutschmann and Panichi (2013) illustrate the use of this affordance in an Italian course for beginners, where the learners were taught the language of ‘asking for’ and ‘giving directions’ which they then put into practice making use of the 3D nature of SL. These types of practical exercises engaged students in the immersive environment and created a sense of community, according to Deutschmann and Panichi (2013). Moreover, as reported by Sadler, Nurmukhamedov, and Fassler (2008), the visual 3D nature of SL can be used for English learners to learn prepositions such as “on”, “in”, or “below”, when learners describe positions of 3D objects. The 3D nature of SL thus provides an immersive learning environment that can be used in the design of language learning tasks (Chen, 2016).

SL offers opportunities for authentic language communication (e.g. Cooke-Plagwitz, 2008; Gamage et al., 2011; Liou, 2011; Deutschmann & Panichi, 2013; Wigham & Chanier, 2013; Chen, 2014). According to Shih and Yang (2008), the most effective way of learning a language is to “participate in a community in which the target language is
used to communicate in a real context” (p. 56). For instance, using the building affordance of SL, language learners practiced oral skills and developed communication skills in authentic contexts, where they collaboratively constructed objects in an English and French course (Wigham & Chanier, 2013). Liou (2011) suggests that a tour task in-world is a contextualized authentic task and generates authentic language communication. By exploring islands in SL, English learners had opportunities to use what they encountered in the world, for example, a Ferris wheel, as a topic of discussion. This type of authentic communication helped English learners learn new words and also enhanced their understanding of the virtual environment. Another example of using SL in learning L2 in an authentic context was presented in an architecture course. Studying students’ building activities in SL, Rodrigues, Wigham, Foucher, and Chanier (2015) found that teaching architecture and learning an L2 could be integrated, and students learned skills form both disciplines, in this case architectural design and communication skills in the L2. Integrating content and language in SL can thus motivate students to participate (Rodrigues et al., 2015).

Furthermore, it is suggested that SL supports social collaborative learning (e.g. Deutschmann & Panichi, 2009; Edirisingha et al., 2009; Inman, Wright, & Hartman, 2010; Peterson, 2012a; Chen, 2014; Chen, 2016). According to Peterson (2012a) and Chen (2014), the 3D environment coupled with the use of user-controlled avatars creates an increased sense of presence and co-presence among participants, which can be exploited in collaborative language learning. Focusing on socialization in learning, Edirisingha et al. (2009) found that socialization occurred smoothly during student collaboration in SL. Edirisingha et al. (2009) maintain that the immediacy of the communication reduces the sense of distance, and that the 3D nature of SL creates a sense of social presence. Similarly, Inman et al. (2010) argue that SL allows “students to communicate, collaborate, and interact socially” (p. 54). Studying task-based language learning in SL, Chen (2016) found that students “established a bond by supporting, collaborating with, and learning from each other” (p. 160) when performing tasks that replicated real-life scenarios such as ordering food in a restaurant.

Some researchers maintain that student-centered learning can be implemented in SL (e.g. Cooke-Plagwitz, 2008; Peterson, 2008; Inman et al. 2010; Peterson, 2012a; Nocchi, 2014). Cooke-Plagwitz (2008) argues that SL provides a ‘safe’ collaborative environment for students to conduct discussion and construct knowledge, due to the anonymity provided by modifiable avatars. Inman et al. (2010) report that there is a tendency for language courses to use SL for student-centered collaborative learning rather than teacher-centered learning. Similarly, Peterson (2008) argues that student-centered learning in MUVEs helps develop student autonomy. Autonomy refers to the “ability to take charge of one’s own learning” (Holec, 1981, p. 3). Investigating an Italian course in SL, Nocchi (2014) states that a student-centered task is one type of task that could trigger the largest amount of student language output.

Additionally, SL offers opportunities for designing specific tasks related to identity issues such as role-play and gender switching. These two types of tasks were also used in the English courses examined in this thesis. Firstly, as avatars can take new
identities in the simulated environment, SL is a potentially powerful environment for language learning through role-playing (Good et al., 2008; Gamage et al, 2011). Reviewing previous studies, Inman et al. (2010) claim that role-play in SL may be as effective as those in real-life since communication in SL follows real-life norms and conventions. Role-play in MUVEs is also conducive to language learning and can encourage participation (Peterson, 2010b). For example, Nocchi (2014) found that in the Italian course mentioned above, students participated actively and interacted most in role-playing tasks. Secondly, SL is a potential environment for exploring gender issues largely due to the affordance of voice-morphing and modifiable avatars. Deutschmann, Steinvall, and Lagerström (2011) used voice-morphing in a sociolinguistics course to raise English learners’ gender awareness. However, this field has not yet been fully explored.

The above discussions show that MUVEs can create new possibilities for language education. As Inman et al. (2010) infer, a MUVE such as SL is a potential tool for distance education as “it allows for synchronous virtual experiences and information seeking as well as meeting opportunities” (p. 54). Chen (2014) also comments very positively on using SL in English learning.

The immersive participation and augmented reality afforded by SL enabled them to interact with peers or other native English speakers in real time, without the burden and expenses of physical travelling. Being able to “teleport” to different life-like places in SL also allowed them to simulate various real-life scenarios and make learning more fun and meaningful. As such, their engagement, motivation, and sense of autonomy were enhanced. (p.50)

However, there is criticism of using SL in the language education context, as described below.

4.1.2 Problems of using Second Life in language education

In their review of different types of technologies that are being used in foreign language education (e.g. virtual words, Web 2.0, and mobile devices), Golonka et al. (2014) maintain that using a virtual world may not be “more effective than traditional forms of classroom learning or other forms of distance learning” (p. 82). Other studies have also reported on problems in using SL in language education, as detailed in what follows.

Many researchers (e.g. Omale, Hung, Luetkehans, & Cook-Plagwitz, 2009; Wang, Song, Xia, & Yan, 2009; Inman et al., 2010) have pointed to the distractive nature of SL. For example, the use of avatars and the comings and goings of the same, a variety of objects and islands to explore, and inventories, among other things, offer possibilities when designing courses but can also be confusing and distracting for learners. In 4.2.2., I discuss this issue further with special focus on the multiple communication modes.

Moreover, the 3D space may also cause problems, especially concerning describing objects. SL offers three different views to users: front view, side view, and rear view. It is thus confusing when people do not have a shared visual access. In Wadley and Gibbs’ (2010) study, users reflected that some expressions such as ‘over here’ did not work in SL. Wigham and Chanier (2013) found that language learners in their course had to describe the objects that they referred to instead of using verbal deictic expressions such as
The limited body language in SL caused some problems. For instance, in Wigham and Chanier’s (2013) study, teachers needed to attract students’ attention by addressing the learners by the avatars’ names due to the limited body language in SL, such as the difficulty in signaling for a student to speak by looking at the addressee, as eye contact may not be perceived as easily as it is in real life. How teachers addressed students in this 3D space is mentioned in Article 4. According to Berger, Jucker, and Locher (2016), participants in their study seldom used body language or eye contact especially when they were engaged in chat discussion in SL. To compensate for this, they used other strategies, such as addressing each other by name in the chat window. The lack of efficient real-life paralinguistic features in SL, such as changes of facial expressions and flexible use of hand gestures, could lead to confusion and even negative connotation in SL when English learners try to build a virtual community by exchanging meanings with interlocutors (Chen, 2016).

Finally, the introduction of audio communication has been a topic of criticism. For example, Wadley and Gibbs (2010) found that some users had a negative attitude towards using the audio communication in SL. Some users complained that they did not have time to consider the implications of their output when using audio, which might be a general problem when using audio CMC; some users complained that it was difficult to associate voices with avatars, especially when they communicated in a large group (Wadley & Gibbs, 2010). Other studies have reported that the audio communication in SL is unstable, which is explored in 4.2 in terms of how SL technology affects participation.

4.2 Factors affecting online participation
As mentioned in Chapter 1, there are studies of factors affecting participation in the traditional classroom (e.g. Green, 2008) and in simpler online learning environments (e.g. Vonderwell & Zachariah, 2005; McLinden et al., 2006; Hrastinski, 2007). However, Panichi (2014) explores the nature of language-learner participation in SL and how participation manifests itself through the aspects of avatars, artefacts, and transient spaces of SL, and some findings from this study concern factors affecting participation in SL (see below).

According to Green (2008), significant factors affecting student participation in the traditional classroom comprise, for example, subject knowledge, class size, task type, language competence, and learning style. The factors influencing asynchronous text-based online participation, which are identified in Vonderwell and Zachariah’s (2005) study, include, for example, technology and interface characteristics, student roles and instructional roles, and information overload. The factors, which may be potential barriers to participation in asynchronous and synchronous text-based communication in WebCT, mainly concern accessibility of a medium, student technical skills, and technical problems (McLinden et al., 2006). Compared with these studies, Hrastinski (2007) has included a range of factors affecting online participation in synchronous text-based communication via IM or chat in a learning management system (LMS). LMS, such as Blackboard, is “a Web-
based software application that provides the teacher with an integrated system for distributing course materials, communicating with students, instigating student-student discussions, presenting quizzes, and managing a range of administrative tasks” (Levy & Stockwell, 2006, p. 3). Hrastinski’s (2007) model of factors affecting online participation, which are clearly classified into three categories, is shown in Figure 6.

Figure 6. Factors affecting online student participation (adapted from Hrastinski, 2007, p. 106)

The following sections use the three categories (demographic factors, behavioral factors, and contextual factors) in Hrastinski’s (2007) model, in order to organize various factors and to present previous research on factors affecting participation in different learning environments, particularly in MUVEs.

4.2.1 Demographic factors
Under the category of demographic factors, Hrastinski (2007) includes the following factors: education level, residence type, gender, age, group size, and learning style. Since
residence type is not a concern in this thesis, I focus on presenting previous research on the other factors.

Education level, whether participants have university degrees, is a significant influencing factor in Hrastinski’s (2007) study. Similarly, Diep et al. (2016) reported that in their study, participants with a higher educational level, i.e., a higher education degree, participated significantly less than people with only upper secondary education during online discussion. The reason why the latter participated more was because that they lacked resources and the discussion provided them with a good opportunity to learn.

There are different findings regarding whether or not language proficiency influences online participation. Hauck (2007) found that language proficiency was an influencing factor in a French course where video-conferencing was used and that participants with lower proficiency in the target language contributed less. According to Peterson (2012a), English learners with lower language proficiency and limited typing skills encountered difficulties in using the text chat in SL, which even led to communication breakdown in an English course. In contrast, Deutschmann and Panichi (2009) reported that in an English course in SL proficiency did not seem to be a decisive factor given that the most proficient speaker occupied the least floor space while two of the least proficient speakers were among the most active participants in terms of floor space.

Regarding gender, there are also contradictory findings in previous research. According to Hrastinski (2007), no correlation seems to exist between gender and participation. In an oral English course in SL, Deutschmann and Panichi (2009) did not find “systematic patterns of distribution” (p. 318) in terms of gender and participation either. However, other researchers argue that gender is a factor affecting online participation (Ross, 1998; Arbaugh, 2000; Hakkarainen & Palonen, 2003; Carr, Cox, Eden, & Hanslo, 2004; Diep et al., 2016). Hakkarainen and Palonen (2003) compared two groups’ participation in online peer interactions, and found that female students dominated interactions in group A in which the majority of students were female and that male students dominated interactions in group B in which the majority were male. Hakkarainen and Palonen (2003) proposed that the biased gender population resulted in the active participation of the gender that formed the majority in each group. Moreover, Hakkarainen and Palonen (2003) also found that group A engaged in “more advanced processes of inquiry” (p. 336) than group B. On the basis of the findings, Hakkarainen and Palonen (2003) suggested that online collaborative tasks could encourage female students’ participation while male students might prefer to pursue learning tasks in the traditional classroom. Similarly, Arbaugh (2000) and Diep et al. (2016) argue that, online collaborative tasks encourage female students to participate more actively in social interactions than male participants. However, according to Ross (1998), although the majority of the students in a text-based online course were female, the female students had less productive output and contributed less to the advancement of group discussion compared with the male students.

Keller and Hrastinski (2006) maintain that age affects online participation significantly. In a study of text-based online discussion, Keller and Hrastinski (2006) found that older students participated less actively than the younger students. The reason was that the older students had a negative perception of online discussion and online social
interaction, although older students were not less experienced in using computers than younger students (Keller & Hrastinski, 2006). Nonetheless, Diep et al. (2016) find that age does not have any influence on participation during online discussion, collaboration, and social interactions.

Previous research suggests that small groups facilitate online participation (Palloff & Pratt, 1999; McLinden et al., 2006; Hrastinski, 2007; Blasing, 2010). According to Palloff and Pratt (1999), the ideal online group size is fewer than ten students. A large number of students leads to confusion in online synchronous communication (Hrastinski, 2007, p. 107). Blasing (2010) also suggests that a small group with non-native speakers and native speakers stimulates successful interactions in SL. According to Green (2008), in the traditional classroom, class size is also a significant factor affecting participation. It seems that a small class facilitates student participation, as students have more opportunities and a sense of intimacy and confidence to speak (Green, 2008).

Hrastinski (2007) draws a tentative conclusion that there is no clear correlation between learning style and online participation due to the small population in his study. Learning style refers to “individual learner’s preferences for different types of learning and instruction” (Keller & Hrastinski, 2006, p. 200). However, Keller and Hrastinski (2006) found that students with a pragmatic learning style, who took opportunities to practice new ideas, felt comfortable in collaborating in synchronous online discussions. Green (2008) also maintains that learning style is a significant factor affecting student participation: specifically, learning style decides whether or not a student actively participates in classroom interaction.

### 4.2.2 Behavioral factors

Under the categories of behavioral factors in Hrastinski’s (2007) model, there are student attitudes towards online participation, teaching strategies and tasks, and sense of community.

Hrastinski (2007) argues that student attitudes towards online participation have no correlation with participation. This contradicts Sun, Tsai, Finger, Chen, and Yeh (2008), who found that learner attitudes and anxiety towards computers are critical factors affecting learners’ satisfaction in online learning. Hrastinski’s (2007) finding also contradicts Deutschmann’s (2011) speculation that students’ positive attitudes towards the learning environment may motivate student participation. According to Barr (2013), “the extent to which users feel comfortable using technology” (p. 297) is a factor that contributes to the successful integration of technology into language education.

It is suggested that SL has the potential to reduce learners’ anxiety and enhance their participation (Gamage et al., 2001; Peterson, 2012b; Stockwell and Tanaka-Ellis, 2012; Rodrigues et al., 2015). Anxiety has been considered as a central factor that can influence the quality of task performance and the efforts learners invest to complete tasks (MacIntyre, 1995). Comparing a group of students who communicated with native speakers in real life and a group of students who communicated with native speaker in SL, Wehner, Gump, and Downey (2011) found that the students in SL were less anxious when using the target language and that they were more motivated. According to Newstead and Hoskins (1999),
motivation is critical to active and effective language learning. Gamage et al. (2011) maintain that, due to a sense of security engendered by the fact that communication was mediated by avatars and the sense of anonymity this offered, teachers or shy students participated more actively than in the face-to-face classroom. Similarly, Chen (2014) argues that due to the “masked identities through avatars” (p. 50) in SL, participants are less shy than they would be when speaking English in real life and are likely to be more engaged and motivated to participate in communicative activities.

However, studies also show that students have negative attitudes towards using SL in collaboration. For example, Deutschmann and Panichi (2009) discuss that sometimes SL is confused with a gaming environment, so it is challenging for some students to take a learning event seriously. Similarly, Paillat (2014) reported that L2 speakers of French, Spanish, and Italian used L1 in SL interactions as they “tended to dissociate having fun with actual learning” (p. 249). Inman et al. (2010) also maintain that some students do not see the value of using SL and/or do not take SL seriously and that the open structure of SL and the freedom of movement students have in SL can also distract students from participating in course activities. Similarly, Lim, Nonis, and Hedberg (2006) found that some students failed to concentrate on course tasks but spent course time exploring the 3D space.

Apart from student attitudes, teachers have been considered as an important factor affecting participation in the traditional classroom (Green, 2008), in online language learning (e.g. Soong, Chan, Chua, & Loh, 2001; Jung, Choi, Lim, & Leem, 2002; Salmon, 2004; Dennen, 2005; Pollow & Pratt, 2005; Hrastinski, 2007; Hew & Cheung, 2008) and in MUVEs (e.g. Deutschmann & Panichi, 2009; Edirisingha et al., 2009; Kozlova & Priven, 2015; Panichi, 2014). Green (2008) claims that teachers’ positive feedback and a relaxed atmosphere may encourage student participation. According to Deutschmann and Panichi (2009), the teacher’s role in facilitating and coordinating courses at the beginning of an English course in SL was especially important. However, the students became more active as the course progressed and during the later stages they assisted each other (Deutschmann & Panichi, 2009). This suggests that the teacher support should be modified as a course progresses (Deutschmann & Panichi, 2009). Soong et al. (2001) also recommend that teachers motivate students constantly to use online course resources, and that motivating participation at the beginning of an online course is particularly important. Regarding teacher presence, Dennen (2005) suggests that the presence of teachers, moderating students’ message postings in asynchronous discussions, lets students know that their messages are being read without teachers taking over the discussions. However, Mazzolini and Maddison (2007) report that in asynchronous postings, the teachers’ frequent postings interrupted student participation, and some students suggested that their teachers should “hold off answering students’ questions for a few days, or even till the second week of each forum, to give other students a chance to provide answers first” (p. 200). According to Panichi (2014), teachers’ or course designers’ beliefs and understandings about teaching and learning could influence participation as well, although indirectly. For example, their “building skills, the resources (time and money) at their disposal and the mandate or aim of the learning and teaching event” (p. 324) affect how they use the affordances of SL to
design, for instance, artefacts for the course, which, as part of the learning environment, would in turn influence participation.

Learner-centered online language learning has brought challenges for teachers (Gamage et al., 2011). For example, it is difficult for learners to “interact emotionally in a meaningful way” (p. 2109) in SL, and there are more risks of misunderstandings in SL than in face-to-face communication (Gamage et al., 2011). This may also apply to other online learning environments in which there is no or limited body language. According to Edirisingha et al. (2009), students found that the limited gestures in SL were not sufficient to convey their intentions during communication, compared with communication in real life. Technical problems in SL can also affect participation negatively or even prevent students from participating (see 4.2.3). According to Good et al. (2008), teachers must be experts on all aspects in SL in order to give students practical suggestions to gain proper technical skills in and knowledge of this environment, as well as having all the knowledge of subject matter. Hampel (2006) also suggests that online teachers, as facilitators, help students to learn and complete online tasks. In addition, Kozlova and Priven (2015) highlight challenges related to teacher skills from four aspects, i.e., teacher skills of managing students’ collaboration, of providing input, of giving instructions, and of providing feedback in MUVEs. For example, as teachers might not manage to take notes “during their class sessions because they would be overwhelmed with other things such as controlling their avatars, managing the classroom, using communication tools, and, possibly, troubleshooting technical problems” (p. 94), they could provide feedback to students when students ask for it, so that teachers would not interrupt students’ collaboration (Kozlova & Priven, 2015). In this type of complex environment, teachers can also write clear instructions beforehand and present them in a structured way to students; teachers can assign a student the role of “scribe” to motivate collaboration, and design activities, such as presentations, in which the input language could be used collaboratively (Kozlova & Priven, 2015). Kozlova and Priven (2015) also emphasize that as teachers usually do not have much experience of teaching in MUVEs, collaborative teacher training to integrate their technical and pedagogical skills is extremely important.

Tasks and task design are key factors affecting participation both in Hrastinski’s (2007) study and in SL. The importance of online tasks is emphasized by Dooley (2011): a carefully designed task or activity that requires off- and online co-construction of knowledge not only provides opportunities for target language practice, it also helps integrate language use as the means for shared knowledge-building, thus further enhancing purposeful communication. (p. 69) Vonderwell and Zachariah (2005) found that when students took on coordinating and facilitating roles in tasks, they participated actively online. Studying asynchronous online learning, Swan (2001) reports that clarity of course design significantly influenced student satisfaction and learning. Student-centered, open-ended collaborative tasks are considered to motivate participation in SL (Deutschmann et al., 2009). Studying a debating course in SL, Deutschmann (2012) found that taking participants’ different goals into consideration in the task design was a critical factor that contributed to the course success, especially when the participants were from different institutional settings in different countries.
According to Good et al. (2008), tasks that have a “high relevance to students” (p. 170), such as problem-based learning tasks, and that give students a sense of accomplishment, can motivate student participation in social collaboration. After having conducted a case study of intercultural communication in a 3D VE, namely OpenSim, Hoffstaedter and Kohn (2014) stress that posters focusing on a specific theme, especially those that students favored, such as fashion, could motivate participation. However, these tasks were “supported by preparatory and follow-up activities in face-to-face and forum/blog/wiki modes” (p. 149).

According to Hrastinski (2007), a strong sense of community might affect participation negatively. However, from the sociocultural point of view (see 2.1.5), a sense of community can potentially motivate participation. The reason is that social interaction with teachers and peers is important in enhancing collaborative learning and motivating active participation in the traditional classroom (Green, 2008), in online discussions (Jung et al., 2002) and in SL (e.g. Edirisingha et al., 2009; Gamage et al., 2011; Peterson, 2012a). As Ma and Yuen (2011) claim, to develop and maintain social relationships with peers is a major motive for learners to participate online. In Jung et al.’s (2002) study, two groups, who had social and collaborative interactions with peers and the teacher, participated more actively online than a group who only had content-related interactions with the teacher and peers. Green (2008) also reports that students knowing their peers and having “good rapport with teacher and/or peers” (p. 20) are significant factors affecting student participation positively in a traditional English classroom, as participants feel confident to speak and “lose their sense of shame” (p. 20). In a survey of 121 SL users, who were mostly university students (at Bachelor’s, Master’s, or doctoral level), respondents reflected that SL to a large extent did not actually help to maintain interpersonal relationships (Gallego, Bueno, & Noyes, 2016). The explanation was that “[p]erhaps socialising in Second Life is not crucial to this aspect” (Gallego et al., 2016, p. 89).

4.2.3 Contextual factors

Under the category of contextual factors, the two factors relevant to this thesis are geographical dispersion of participants and physical accessibility of the media. Hrastinski (2007) argues that geographical dispersion of participants could motivate a high level of online participation because participants who are geographically co-located may prefer face-to-face meetings. The physical accessibility of the media in Hrastinski’s (2007) study mainly deals with the fact that a medium may not be perceived as accessible by participants, due to technical problems. In other words, technical problems are potential barriers to online participation (McLinden et al., 2006; Hrastinski, 2007). SL technology is also a significant factor affecting participation, as discussed below.

The 3D nature of SL places high demands on hardware (e.g. computer processors, memory cards, screen resolution, and graphic cards) and software. If these requirements are not met, it is difficult to run SL. For example, computers with a low capacity and a slow Internet connection can cause technical issues such as “slow download time of the virtual environment, software freezing up, and software crashes” (Inman et al., 2010, p. 52–53), which affect student participation negatively (Inman et al., 2010). Similar situations of
computer crashing and difficulties in logging back into SL are also reported by Chen (2016). In another study, a slow Internet connection accounted for more than half of student frustrations (Liou, 2011). During a longitudinal project of two and half years, Paillat (2014) studied L2 speakers of French, Spanish, and Italian and found that due to the bandwidth and firewall settings, students on campus could only use chat in SL some of the time during interactions. Students who participated in SL from home, however, had hardware problems and their participation was thus not maximized.

The quality of audio is another frequently reported problem (e.g. Deutschmann, 2012; Wadley & Gibbs, 2010; Chen, 2016). According to Deutschmann (2012), SL is especially unstable in terms of audio. In Wadley and Gibbs’s (2010) study, participants commented that it took time for them to get the audio to work and that minor problems occurred constantly in audio, such as poor sound, the volume being too high or too low, and background noise being transmitted. Moreover, some participants complained that due to the spatial nature of audio in SL, it was difficult to find a location where they could hear everyone clearly in a large group (Wadley & Gibbs, 2010). Wadley and Gibbs (2010) thus state:

A successful voice conversation depends on all members of a group being able to send and receive audio successfully, and the larger the group, the more likely a member would be unable to use voice, forcing the group to fall back to text or split into voice and text subgroups. (p. 195)

This indicates that a small group is of particular importance in using audio communication in SL. Similarly, Panichi (2014) points out that ‘proximity’ is of importance for participation: all group members’ avatars should be close enough to conduct group discussions, while they should move away or keep a distance from the group when they do pair work. Moreover, Chen (2016) claims that the poor audio quality prevented English learners from completing tasks, especially when they “were too embarrassed to speak for fear of not being understood” (p. 161).

In addition to the technical issues mentioned above, students’ technical skills also affect their online participation (Vonderwell & Zachariah, 2005) and participation in MUVEs (Jones, Morales, & Knezek, 2005; Deutschmann, 2012; Panichi, 2014). As reported by Deutschmann (2012), some students did not know how to solve volume problems in SL. Although users needed the skills to handle their avatars’ “basic gestures, movements and camera skills” (Salmon, 2009, p. 527), in Edirisingha et al.’s (2009) study of the text communication in SL, students complained that they had to make their avatars show appropriate gestures while they had to type quickly and read other students’ texts. Panichi (2014) argues that only when students have the required technical skills of conducting a specific task, can they interact with the SL learning environment. Nonetheless, Panichi (2014) also reminds us that students can only acquire these skills when they have intentions to do so. Similarly, in terms of simpler online learning environments, Sun et al. (2008) maintain that learners’ skills in using computers can affect their online learning, and McLinden et al. (2006) argue that participants’ limited experience of using WebCT is a significant factor affecting participation in WebCT. As Stockwell (2012) stresses:
“While technologies possess inherent affordances, the manifestation of these affordances will differ depending on the user. The same technology used by two people will not necessarily be used in the same way, and depending on experience, skills, and knowledge of what the technology can do may lead to very different results”. (p. 7)

In view of the above, researchers maintain that training and preparing students to use the complex environment of SL are of importance (e.g. Cooke-Plagwitz, 2008; Edirisingha et al., 2009; Wang, Song, Xia, and Yan, 2009; Blasing, 2010; Molk-Danielsen, Panichi, & Deutschmann, 2010; Panichi, 2014). For example, Cooke-Plagwitz (2008) suggests that “at least one class period” (p. 553) is required to familiarize the students with SL before any actual teaching begins. Although teachers can suggest that students explore the environment by themselves, it is more fruitful if students are guided by an SL-experienced user to explore the environment, especially “if students’ initial SL experience is confusing or even frightening” (Cooke-Plagwitz, 2008, p. 553). Cooke-Plagwitz (2008) also states that familiarization with different functions in SL takes time. Therefore, it is suggested that technical support during the course is necessary (Panichi & Deutschmann, 2009; Wang, Song, Stone, & Yan, 2009). According to Panichi (2014), it was only after the compulsory technical training and with the ongoing technical support online and at the lab (in real life) throughout the business English course investigated, that the course could run smoothly in SL. A contingency course plan is also beneficial when unexpected technical problems happen in SL (Baker et al., 2009, p. 62). For example, emails can be used when there are technical problems in SL, or the group can come back to SL after technical problems are solved (Baker et al., 2009). It is also suggested that language teachers should have the skills of operating SL technology in order to support students (e.g. Baker et al., 2009; Panichi & Deutschmann, 2009), and be aware of the potential technical problems and limitations of avatars’ gestures in SL (Edirisingha et al., 2009). Deutschmann and Panichi (2009) found that language learners relied heavily on the teacher to provide technical support, especially at the initial stage of the English course.

4.3 Summary

In this chapter, benefits and problems of using MUVEs in language education have been discussed. Previous studies of factors affecting participation in the traditional classroom, in simpler online learning, and particularly in SL have been presented. The next chapter focuses on the methodology of the thesis.
5. METHODOLOGY

In this study, the five articles constitute the basis of analysis of factors affecting participation in Second Life (SL). The material used in the five articles was collected from three English courses at university level in SL. The material is naturalistic, because scenarios in the courses dealt with authentic learning events. This section introduces the methods used for collecting the material from the three courses and the methods of analyzing the material. Relevant ethical considerations are also discussed.

5.1 Methods of collecting the material

The three English courses include a Master’s course in English sociolinguistics, a teacher trainee course on the theme of gender, sociolinguistics, and second language education, and a spoken business English course. The three courses were given by Swedish universities, and the participants in the three courses were geographically dispersed, primarily across Europe.

I received consent from all the participants and the course staff (course teachers and technical assistants) to screen-record the courses in SL. The participants and the teachers were informed of the purpose of collecting the material in general terms, i.e., I would study participation. In the spoken business English course, I informed the course teacher and the students that the focus of my study was on the teacher. Moreover, the ethical guidelines suggested by the Association of Internet Researchers (Ess & the AoIR ethics working committee, 2002) were followed. The participants and the course staff were informed that their personal information and their avatars’ information would not be disclosed in any academic publication or presentation. The fact that there was no access to the private communication in SL also contributed to the protection of privacy.

With the approval of the course participants and the course staff, I recorded the courses using screen-recording software in order to capture course activities within the 3D environment. Table 4 below demonstrates the demographics of each course, the course sessions, the recording software, and all the material collected from the three courses. Note that the demographics and tasks in course sessions are presented in detail in Table 4 and in the five articles.
As Table 4 shows, two types of recording software were used: Camtasia Studio (n.d.) and ScreenFlow (n.d.). Camtasia Studio was developed by TechSmith for both PCs and Macintosh computers. ScreenFlow is a product developed by Telestream and can only be installed on Macintosh computers. Both software can also be used to edit videos. In the screen recordings of the three courses, the public audio material and the local text chat material were captured. In the teacher trainee course, the chat logs from the local text chat were saved separately. The lengths of the recordings and the number of words in the saved chat logs are given in Table 4.

Table 4 also illustrates that two web-based questionnaire tools, SurveyMonkey (n.d.) and kwiksurveys (n.d.), were used. In a review of previous research on online participation, Hrastinski (2008a) found that examining learner perspectives was a common strategy for studying online participation. As Sheehan and Hoy (2004) argue, by using online surveys, material can be collected quickly from different parts of the world. Because participants in the three courses are geographically dispersed, anonymity in responses is allowed as participants can choose to give their names or not (in real life, participants’ identities may be revealed if an interviewer is present when participants answer questionnaires), and the absence of an interviewer eliminates possible bias caused by the
presence of an interviewer. In the three courses, all the online questionnaires contained open and closed questions, and the participants responded to them on a voluntary basis. In this context, open questions are questions that do not have any proposed answers, and closed questions are questions that have a list of answers for participants to choose from. The questionnaires concerned the participants’ evaluations of the course and the course staff, the participants’ background information such as age and gender, and issues related to participation such as technology. The methods used to collect the material from the three courses are specified below.

When I made the recordings of the Master’s course, I used my own avatar when logging into SL. In order to reduce the influence of the presence of my avatar on participation, my avatar maintained a physical distance in SL from the participants’ and the course staff’s avatars. Moreover, SurveyMonkey was used for the online participant questionnaires. The course staff from Umeå University (Sweden) and I designed the questionnaire together. The questionnaire concerned participants’ personal information, such as age and gender, general evaluation of the course activities, and factors that may have affected their participation. To complement the recordings and the online questionnaire material, observation of their participation by myself and my co-authors of Article 1 also constituted part of the material.

The teacher trainee course was part of a project conducted by Umeå University. During the two workshops, I used separate invisible avatars, a default item in the inventory of SL, which allowed for simultaneous recordings of each sound-insulated parcel: these sound-insulated ‘rooms’ were designed so that groups could sit together and conduct discussions without disturbance from ongoing conversations in other groups. See Figure 1 in Article 5 (Wang, 2017) for a screenshot of the parcels. For the technical and social initiation sessions and the debriefing session in the course, I used my own avatar, which either hovered in the sky or stood apart from the course participants, when making the recordings. All informants were advised that they were being recorded. SurveyMonkey was also used for the online student questionnaires (students’ individual reflections) that were designed together with the course staff from Umeå University. Participants’ group reflections were collected on the wiki site, i.e., PBWORKS (n.d.). PBWORKS is a web application that is for online team collaboration and allows users to edit, delete, and modify web contents. The PBWORKS was adopted to record their group reflections on using SL and collaboration with the invited professionals. All the participants gave me permission to use their postings on the wiki site.

With regard to the spoken business English course, my avatar hovered in the sky above the avatars of the students and the teacher in SL. Again all participants were informed that they were being recorded. Kwiksurveys was used for the online student

---

1 See https://www.surveymonkey.com/s/TD7XXMQ, which is given in Article 1, for the questionnaire.
questionnaire\(^3\), which I designed myself. I interviewed the teacher in SL. The interview was structured around 10 open questions\(^4\), which mainly concerned the teacher’s evaluation of student participation and the roles the teacher played in the course. The interview was recorded with the teacher’s consent using ScreenFlow and was about 45 minutes long.

5.2 Methods of analyzing the material

After examining the recorded material, I selected and noted parts of the recordings collected from the three courses in accordance with the research purposes of each of the five articles. The notes were about, for example, the interlocutors’ names and identities, the start and end time of utterances, and the topics of the utterances. The transcriptions, on the other hand, focused on a word-by-word representation of the utterances.

The material from the Master’s course was made up of two parts: the audio and the text chat communication, with notes (see Article 1). In the teacher trainee course, a selection of the recorded audio material (with notes and transcripts) and the chat logs were used (see Articles 2 and 5). In the spoken business English course, the local text chat was seldom used and was therefore excluded from the study, because the focus of the course was on practicing speaking (see Article 3). Parts of the audio material collected in the pre-task phase, during-task phase, and post-task phase of the course were transcribed (see Articles 3 and 4). The time an utterance started and ended was measured to the exact second and interlocutors’ names were noted, as was the topic of the utterance (e.g. whether an utterance concerned technology or not). For transcribing the material used in Articles 3–5, the transcription conventions developed by Gail Jefferson (Hutchby & Wooffitt, 2008) were used (for transcription glossaries, see Appendix B in Article 3, Appendix A in Article 4, and Appendix Figure 2 in Article 5). Table 5 outlines the research purposes, the course sessions, the material, and the approaches to analyzing the material in each of the five articles.

\(^3\) See Appendix B in Article 4.
\(^4\) See Appendix A in Article 3.
### Table 5. Overview of research purposes, studied material, and research methods

<table>
<thead>
<tr>
<th>Article</th>
<th>Purpose of study</th>
<th>Studied course sessions</th>
<th>Material</th>
<th>Quantitative methods</th>
<th>Qualitative methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mapping factors affecting participation in telecollaboration in SL</td>
<td>The two group discussions, the debriefing discussion session</td>
<td>Public audio of about six hours (with notes), local text chat (with notes), the online participant questionnaire</td>
<td>Audio material: floor space, silences, number of utterances, utterance length; Text chat material: number of chat turns, number of words; proportions of conversations dealing with technical problems</td>
<td>The online questionnaire, the authors’ observation</td>
</tr>
<tr>
<td>2</td>
<td>Investigating participation in terms of unequal power relations</td>
<td>Two workshops</td>
<td>Transcribed public audio of 2 hours and 23 minutes, saved chat logs of 2841 words, the group reflections, the online student questionnaire</td>
<td>Audio material: floor space, turn length; Chat logs: number of words</td>
<td>Utterance functions, the group reflections, the online questionnaire</td>
</tr>
<tr>
<td>3</td>
<td>Investigating participation in terms of teacher roles in different task phases</td>
<td>Pre-task, during-task, and post-task phases</td>
<td>Transcribed public audio of 85 minutes and five seconds, the teacher interview of 45 minutes</td>
<td>Number of turns, frequency of utterance functions, frequency of teacher roles</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Investigating participation in terms of teacher strategies</td>
<td>Pre-task, during-task, and post-task phases</td>
<td>Transcribed public audio of 85 minutes and five seconds, the online student questionnaire</td>
<td>Teacher initiated student turns</td>
<td>A Conversational Analysis methodology</td>
</tr>
<tr>
<td>5</td>
<td>Investigating participation in terms of SL technology</td>
<td>All of the course sessions recorded</td>
<td>Public audio of 33 hours and 2 minutes (with notes), chat logs of 8315 words</td>
<td>Proportions of technical problems in audio and in text chat</td>
<td>Types of technical problems, strategies for preventing and solving technical problems</td>
</tr>
</tbody>
</table>

As Table 5 demonstrates, different parts of the material collected from the three courses were used in the five articles. In Article 1, three sessions of the Master’s course, that is the two group discussion sessions and the debriefing session, were studied with the aim to map factors affecting participation in telecollaboration in SL. In Article 2, only the audio and text material of the two workshops in the teacher trainee course were studied together with the online questionnaire and the group reflections. In Article 5, the audio and
text material of all the recorded sessions in the teacher trainee course were studied in order to investigate how SL technology influenced participation throughout an English course. In Articles 3 and 4, the transcribed audio material was examined quantitatively and qualitatively. In Article 3 the teacher interview was used while in Article 4 the student questionnaire was used.

Table 5 also illustrates that the material (transcribed and/or with notes) from the three courses was studied both quantitatively and qualitatively: analyzing online participation is complex and needs to be studied using both quantitative and qualitative methods (cf. Hrastinski, 2008a, 2009). As presented in Table 5, quantitative methods included measuring floor space, silences, turn length, number of utterances/turns/words, frequencies of discourse functions and teacher roles, and proportions of technical problems. The qualitative methods were mainly used to study discourse functions and conversational strategies (see 2.4, 2.5, Chapter 6, and the corresponding articles for the types of conversational strategies and discourse functions studied).

5.3 Summary
This chapter has illustrated the methods of collecting the material from the three English courses in SL, and briefly describes the quantitative and qualitative approaches adopted for analyzing synchronous communication in audio and text in SL. Note that more comprehensive descriptions of the methods are included in each of the five articles in this thesis. The next chapter summarizes the five articles, providing more information on the courses, the participants, and the material used, focusing on the key findings of each article.
6. ARTICLE SUMMARIES

Following a general introduction of the methods of collecting and analyzing the material in the five articles, this chapter summarizes each article and highlights different foci and key findings in each article. Note that Articles 1 and 2 were co-written, and Articles 3, 4, and 5 were written by me alone. For the co-written articles, I collected the material, noted down relevant details of the material (see 5.2), and calculated participation in voice and in text chat. I was also active in writing different parts of the articles together with the other authors, Mats Deutschmann and Anders Steinvall.

The links between the five articles are presented in Figure 7.

![Figure 7. Links between the five articles included in the thesis](image)

As Figure 7 shows, in Article 1, a tentative model of factors affecting participation was presented. In the article, Wang et al. (2013) found some important factors that affect participation: unequal power relations in terms of education level, the teacher role, and SL technology. These factors were thus further investigated in Articles 2–5. In the following sections, I summarize each article in turn.
6.1 Article 1: “Towards a model for mapping participation: Exploring factors affecting participation in a telecollaborative learning scenario in Second Life” (Wang et al., 2013)

In order to map a model of factors affecting participation in a complex Multi-User Virtual Environment (MUVE), namely Second Life (SL), the article aims to answer one research question: What are the important factors affecting participation in telecollaboration in SL?

The article reports on three task sessions in the Master’s course (see Table 5 in 5.2). Task 1 was a teacher-led task, and the participants were asked to discuss gender-related language issues in their cultures. Task 2 was a student-led task, and the participants were asked to explore the reasons for gender differences in language. In Task 3, the participants were asked to evaluate the course activities. The participants were classified into two smaller groups in the first two tasks, and one course teacher participated in the tasks.

The participants (see Table 4 in 5.1) were all female, with the exception of two teachers. The course had three distinct groups of participants: Master’s students from Sweden, professionals from a Chilean university, and teacher trainee students from the same Chilean university. The course rewards and motivation for joining the course of the different groups of participants were quite different: The Swedish students were motivated by course credits, while the Chilean professionals (mainly teachers) who participated were motivated by developing their professional skills in using CMC technology, and the Chilean student teachers were encouraged to join the course on a purely voluntary basis.

The results reveal that in Task 1, the teacher-led task, the course teacher coordinated the conversations and most students did not take the initiative in the conversation. In Task 2, the student-led task where the participants were encouraged to coordinate the conversations by themselves, the percentage of silences in the task was the highest compared with those in Tasks 1 and 3. In Task 2, the number of silences longer than three seconds (cf. McLaughlin & Cody, 1982) was also the highest compared to those in Tasks 1 and 3. Further, in Task 2, the coordinating of the conversations was mainly done by a few individuals, more specifically two Swedish female students.

When the three tasks were combined, the voice participation results showed that individual participation during the three tasks varied in terms of the average floor time. The most active participants were the Swedish students. The Chilean teachers were less active, and the Chilean student teachers were the least active group. On the basis of the participation results, it was found that four factors were central influencing factors.

Unequal power relations among the participants in terms of education level, i.e., an imbalance in academic levels and roles, were important. Specifically, the Chilean student teachers, who were undergraduates, had less power compared with the Chilean teachers, who were professional foreign language teachers, and the Swedish students, who were Master’s or PhD students. Five out of 11 students who answered the questionnaire stated that their language proficiency had little or no influence on their participation. Two Swedish students who were among the most active participants rated themselves as slightly
less proficient. It was also found that students who described themselves as ‘shy’ were quite talkative in SL.

Teaching strategies and the teacher role also affected participation significantly. For example, the presence of a teacher seemed to balance the effects of unequal power relations on participation between the participants, as the teacher directed questions to each one present.

Article 1 also shows that task design was an important factor affecting participation, especially in terms of the participants’ rewards. It was speculated that getting course grades might have motivated the Swedish students to participate more actively.

SL technology affected participation considerably: 16 percent of voice turns and 23 percent of chat turns during the three tasks dealt with issues related to technology. In the questionnaire, some participants commented that using SL was quite confusing and affected their participation negatively. Technology could also explain the observed differences in participation between the different groups: The Chilean student teachers, the least active group, had access to neither technical assistants nor institutional computers, unlike the other two groups.

Apart from these factors, some other factors may also have affected participation. Learning style, i.e., Chilean student teachers’ unfamiliarity with the student-led task, could have also resulted in their limited participation, and conversely the Swedish students’ greater familiarity with student-led tasks could have facilitated their active participation. It was inferred that interpersonal relationships in real life, i.e., the Swedish students knowing some peers, the teacher, and the technical assistants on a face-to-face basis, might also be a reason for their more active participation.

Based on these findings, a tentative model of factors affecting participation in telecollaboration in SL was proposed, and the fact that different factors could affect each other was also stressed.

6.2 Article 2: “Who owns the floor? Examining participation in a collaborative learning scenario between student teachers and active professionals in Second Life” (Wang et al., 2014)

In this article, the focus is on one critical factor affecting participation in telecollaboration in SL, namely unequal power relations between participants. The aim was to investigate how the unequal power relations may have affected participation both quantitatively and qualitatively. The unequal power relations studied in the article included institutional roles, language proficiency, and subject knowledge between the invited professionals and the Swedish student teachers. A gender perspective was also included.

The context of the course was telecollaborative activities whereby third-term student teachers of English were given the opportunity to collaborate with professionals who were active in language teaching and research in SL, in order to find out more about online language learning methods. Tasks included discussions on online language learning and the solving of problem-based tasks together during two workshops. The invited professionals (or ‘expert peers’ as they were called in the course) were recruited using
network sites in the domain of SL and language education. They were specifically informed that they had the role of conversational partners rather than the role of teachers. Each group had one invited professional and three or four Swedish student teachers (one male and the others female). The average age of the invited professionals was 40, and that of the Swedish student teachers was 24. Note, however, that age is not the focus of study in Article 2.

The general results show that there was marginal variation in the average floor space occupied by the three groupings: professionals, female students and male students. The average floor space occupied by the invited professionals’ group was slightly longer than that of the female students’ group, and the average floor space of the female students’ group was longer than that of the male students’ group. The average utterance length of the invited professionals’ group, however, was considerably longer than that of the female students’ group, and the average utterance length of the male students’ group was longer than that of the female students’ group. Regarding the utterance functions (support, management, and content contribution), the invited professionals in general produced more conversational management speech acts than the Swedish student teachers, and the male student teachers produced more supportive speech acts. However, individual participation varied, for example, two invited professionals were not active in Workshop 2.

Overall, the Swedish student teachers evaluated the invited professionals positively, for instance, in terms of motivating their participation and providing insightful technical and task support. Some Swedish student teachers reflected on the fact that they had experienced the invited professionals as skilled conversation managers.

One group was critical towards using SL due to technical problems, especially concerning overlapping turns caused by the lack of body language in SL.

In conclusion, the unequal power relations did not seem to affect participation negatively, leading to the speculation that SL technology may reduce the potential negative impacts of asymmetrical power on participation. It was also speculated that the relative inactivity of the male students’ group might be due to the unbalanced ratio of male to female students in the groups.


In this article, I focused on one major factor affecting participation in telecollaboration in SL, namely the teacher role. The article is a quantitative study of a teacher’s oral language output in a task-based spoken business English course. To examine how the teacher facilitated student participation, the article had two aims: to explore discourse functions in the teacher’s language output in the three task phases (see Table 5 in 5.2) and, on the basis of this to explore teacher roles in these phases.

As shown in Table 5 in the previous chapter, the material consisted of 85 minutes and five seconds of recorded voice communication and a 45-minute teacher interview. The lengths of the three task phases (pre-, during- and post-task phases) differed: The during-task phase was the longest and the post-task phase was the shortest. Note that the pre-task phase mainly concerns the language and task preparation for the during-task phase, the
during-task is the student output phase, and the post-task phase is the teacher feedback phase (Willis, 1996). Some pre-task phase activities studied in the article included, for example, practicing useful language for showing agreement, disagreement, and changing a subject, activities in the during-task phase were mainly role-plays, and the post-task activities focused on teacher feedback on role-plays. In the activities, the number of students in different groups varied from three to seven, and all students’ spoken proficiency was either at B2 CEFR level or at C1 CEFR level (CEFR refers to Common European Framework of Reference for Languages (n.d.)).

The teacher’s language output in those activities mentioned above was classified into 19 discourse functions within 13 main categories. The 19 discourse functions were: greeting, topic initiation, directive (general and directed), question (general and directed), response (elaboration, explanation, apology, agreement, and back-channeling), off topic, topic shift, correction, closing, extensive pausing, and leave-taking. ‘General’ means addressed to all students, and ‘directed’ means addressed to a specific student. Topic shift denotes changing a topic under discussion, and leave-taking concerns utterances of saying goodbye (for more examples of the 19 discourse functions, see Table 2 in Article 3).

In addition to those discourse functions, the teacher role realized in each token of a discourse function in a specific context was classified into one of six categories: monitor, motivator, language guide, task supporter, technical role, or social role. Monitor role is about, for instance, setting up tasks and keeping students on task, motivator role points to the role of motivating students to participate, language guide role concerns how the teacher provided language input and commented on students’ language output, task supporter role means providing support to facilitate the progress of tasks, and social role is discussed in terms of what the teacher did to establish a social interactive atmosphere in the class (see Article 3 for examples and details of these roles and relevant discourse functions realizing the roles).

The results show that the teacher and the students had nearly the same number of turns in the pre-task and post-task phases, while the number of teacher turns was significantly less than that of the students in the during-task phase. This indicates that the during-task phase was a student output-oriented phase. The study of discourse functions in the teacher language output shows that the prominent discourse functions in each task phase differ. No correlation was found between the length of the task phases and the number of tokens of discourse functions.

The analysis of teacher roles reveals that these changed during the three task phases. In the pre-task phase, the teacher had a prominent technical and social role, pointing to the specific requirements of a teacher teaching in SL, i.e., to remedy the negative impact of technology on participation and to create a social learning environment. In the during-task phase, the prominent teacher roles changed to those of motivator, monitor, and task supporter. In this task phase, the teacher focused on motivating specific inactive students to participate. In the post-task phase, the teacher had a prominent role as language guide. Apart from the changing teacher roles, the teacher played four roles consistently during the three task phases: monitor role, motivator role, language guide, and social role. The teacher interview supported the above findings.
The article reveals that the teacher used different discourse functions to facilitate student participation and adapted his role to the complex environment of SL. In general, the teacher was a facilitator who helped the students complete the course activities in the different task phases in SL.

6.4 Article 4: “Managing student participation: Teacher strategies in a virtual EFL course” (Wang, 2014)

Article 4 is a qualitative study of teacher strategies with the aim of examining how the teacher managed student participation in the course. A CA methodology was used to analyze teacher strategies emerging from the teacher’s verbal language output in the recordings. These strategies deal with latching turns (“no interval between the end of a prior and start of a next piece of talk” (Sacks, Schegloff, & Jefferson, 1974, p. 731)), turn initiation, controlling and shifting topics, using the imperative mood and questions, ‘taking a back seat’ and intervening, using social formulas, and providing feedback.

The article shows that there were many latching turns in the course. The teacher used more output to provide task support in the pre-task phase while in most cases the teacher used minimal responses to signal interest. The teacher initiated most of the student turns in the pre- and post-task phases to allocate equal participation or feedback opportunities. The article also explains that the teacher used more referential questions than display questions, and both of those types of questions were used more in the pre-task and during-task phases than in the post-task phase. Referential questions are questions used by teachers to seek information, and display questions are questions used by teachers that encourage students to display knowledge (Luu & Nguyen, 2010, p. 33). Moreover, the teacher gave students opportunities to manage their activities in the during-task phase and intervened when there was a need to encourage participation. In terms of feedback, the teacher seldom corrected student language errors in the pre-task and during-task phases, but provided detailed feedback in the post-task phase.

These findings suggest that the teacher used different strategies in different task phases, but the teacher also adapted strategies to the specific nature of SL. The teacher used directed imperatives and directed questions, pointing to a specific student, to compensate for the ambiguity caused by the lack of body language in SL. The teacher used social formulas, such as greetings, leave-takings, farewells, and polite address forms, to build a social communicative learning environment. The teacher also used the imperative mood, display questions, and greetings to provide technical assistance, for example, using greetings as a sound check to see whether or not students could hear him. Moreover, the teacher used topic shift, imperatives, and questions to encourage specific inactive students and the whole class to participate. Probably to prevent students from being distracted by SL and/or using private voice or chat communication modes, the teacher controlled the topics by initiating and closing all the topics to keep the students on task (for examples and detailed analysis of these strategies, see Article 4).

In general, students commented positively on the teacher’s influence on their participation, especially concerning the teacher’s technical support and feedback. An
inactive student with a low level of spoken proficiency claimed that her spoken proficiency affected her participation negatively, and one student commented that there were many overlapping turns in SL.

In sum, the teacher adapted teaching strategies to the different task phases and the specific nature of SL.


This article focuses on how SL technology affected participation by investigating all four course sessions in the teacher trainee course (see Table 5 in 5.2). The study was guided by three research questions: What proportion of the course time was spent dealing with technical challenges? What types of technical challenges affected participation in this course? How were technological challenges avoided or dealt with in this course?

In the course, the male teacher used three avatars, and two of them were voice-morphed into feminine and masculine voices respectively. The time devoted to technical challenges in the recordings was noted, and the number of words related to technical matters in the chat logs was counted. All the technical challenges were then grouped into different themes: software complexity, unreliable functionality of the software, and hardware and connectivity.

The results show that 10.8 percent of the course sessions in the voice material and 69.2 percent of words in the chat logs dealt with technical challenges. The high percentage in the chat logs was caused by the fact that the participants were encouraged to use the local chat to solve technical problems. Regarding the three course sessions, i.e., the initiation session, the two workshops, and the debriefing session, the proportions of technical challenges in audio were 41.1 percent (initiation), 7.8 percent (workshops), and 7.7 percent (debriefing) respectively, and the proportions of technical challenges in the text chat were 57 percent, 76 percent, and 48 percent respectively.

Software complexity mainly concerned student unfamiliarity with the communication modes such as adjusting volume and using sound-insulated parcels, and complex basic functions of SL such as orienting the avatars. The unreliable functionality of SL was related to the sound parcels, the voice chat, the text chat, avatars, and different viewers (different SL viewers had to be used for Mac and PC users which caused confusion when technical facilitators tried to help students). The hardware and connectivity issues involved computers with low capacity, students not using headsets, and slow Internet connections.

To deal with software and complexity, the participants were given opportunities to familiarize themselves with SL in the initiation session: they were taught to adjust the volume, turn off the talk button when not speaking, and orient avatars; they were also instructed how to make the borderlines between sound parcels visible, and to use back-channeling to signal when they could hear each other. In order to address the unreliable functionality of SL, the volume of the voice-morphed avatars had to be adjusted every time such an avatar entered a sound parcel. In many cases, the students had to log out of SL and
back in again and also used text chat to compensate for sound problems. To deal with hardware and connectivity, the course provided students who were on campus with advanced computers, headsets, and a fast Internet connection. To avoid and solve technical problems, the teacher and the two technical facilitators provided most of the assistance, but SL-experienced peers also gave their peers support.

On the basis of the findings, the article brings practical recommendations at three levels. At the course level, being aware of the insufficiency of a single technical initiation session and providing continual technical assistance are necessary. Flexibility in switching between different communication modes (i.e., chat, audio, public or group modes) in SL is recommended, and the employment of sound-insulated parcels (and voice-morphing) needs careful planning. At the participant level, it is suggested that students have advanced computers and a fast Internet connection. They also need adequate digital literacy and peer-support. At the program level, it is recommended that SL developers be made aware of the potential technical problems of SL and encouraged to find solutions to deal with them.

The article concludes that even though there are perceived advantages in using SL, SL is not easy to learn to use, and technical problems can hinder student participation.

6.6 Summary
To further examine the important factors reported in Article 1, Articles 2–5 have focused on each of these factors, as summarized in this chapter. In the next chapter, the findings from all the five articles are synthesized and discussed. A general model based on the tentative model presented in Article 1 is given to illustrate the synthesized results in terms of participation in a complex MUVE: SL.
7. DISCUSSION

As the results of the five articles show, analyzing participation in complex online environments, such as Second Life (SL), presents a challenge. Participation/lack of participation is the result of a complex interplay of various factors, where some are more central than others. In addition to more general factors, such as student motivation, language proficiency, task design, and teacher roles, i.e., factors that operate in any learning context be it online or face-to-face, the technology itself also creates new prerequisites that can complicate the dynamics within a course.

For example, it is not enough to consider students’ language skills when designing a course in SL and deciding on group set-ups. The participants’ technical skills have to be taken into account too. As indicated in all five articles, whether or not students were competent at operating SL had a significant impact on their participation. As for the teacher role in motivating student participation, the technology also places new demands on the teacher. It may not be sufficient to encourage inactive students in a technically challenging environment by directing questions and tasks selectively. Providing technical support, for instance, constitutes a critical factor in balancing out participation between active and passive students. Similarly, when designing the task, the teacher has to take technology into account. While it is true that SL opens up new opportunities, i.e., many tasks would be impossible in less complex online environments, this comes at a price. As the five articles have shown, technical initiation and assistance have to be worked into the course syllabus. Moreover, participants’ access to, and/or the availability of, facilities, such as a university computer lab, and technical assistants throughout the course, often constitute key factors that affect participation in SL. Therefore, when analyzing participation in a complex online environment, we have to consider how categories of ‘traditional’ factors, for instance, related to the students, the teacher, and the course/task structure, interact with the technology itself, in this case SL.

A generalized model that can be applied to studying participation in a Multi-User Virtual Environment (MUVE) is given in Figure 8. It builds on the model introduced in Article 1: “A tentative model of factors affecting participation in cross-cultural telecollaboration in Second Life” (see Article 1, p. 20, Figure 7).
As Figure 8 shows, the generalized model is structured around four variable categories introduced above: *students, teachers, course and task, and technology*. Technology, i.e., SL in this thesis, constitutes a “filter” between participation and the other three categories of factors. What is suggested is that SL technology functions as a medium that can increase or decrease the impact on participation of the factors within the other three categories, or indeed change the prerequisites entirely.

In the following sections, I will discuss how a complex online environment, such as SL, influences participation from the student perspective (7.1), the teacher perspective (7.2) and the course/task perspective (7.3), using examples from the five articles. Based on the findings summarized in these initial sections, I will then discuss the strengths and weaknesses of SL as a platform for language teaching/learning from three theoretical perspectives: van Lier’s (2004) ecology of language learning, Activity Theory (Engeström, 1987), and Nielsen’s (1993) model of the attributes of system acceptability, in Section 7.4. Finally, in Section 7.5, I will present the conclusions drawn and attempt to provide some recommendations as to whether, and under what circumstances, complex environments, such as SL, can be used as suitable platforms for language learning.

### 7.1 Student-related factors in SL

As mentioned above, students’ technical skills are a prerequisite for them to participate in SL regardless of their language proficiency. Although computer literacy is vital for participation in any online learning environment (cf. Vonderwell & Zachariah, 2005; Sun et
al., 2008; Stockwell, 2012), the complex nature of SL is arguably more demanding and can also affect aspects such as power relations between participants and students’ attitudes towards the learning situation.

7.1.1 Power relations
In a language learning situation, social and psychological factors related to power are likely to influence students’ confidence, which, in turn, is reflected in their levels of participation. Although factors such as one’s language fluency and level of education are of paramount importance here, in complex online environments such as SL, students’ technical proficiency (see Article 2, for example) also has to be taken into account. Further, results from the five articles suggest that the affordances of SL can serve to counter-balance the influences on participation of factors such as language proficiency and education level (see Figure 8).

In a face-to-face situation, a L2 learner of English who speaks the language fluently arguably has more opportunities to participate more actively, which puts him or her in a power position in the language-learning classroom. In contrast, the participant who lacks the necessary language skills and subject knowledge is likely to end up in a lower power position, and/or feel too intimidated to contribute to the discussion at hand. A similar pattern regarding the distribution of participation in relation to power was found during the online discussions in SL in the studies conducted. For instance, the invited ‘professionals’ in Article 2, who both possessed the knowledge of the subject and had higher institutional roles, took charge of the conversations with student teachers (see also 6.2). Similarly, the results in Article 1 (see also 6.1) reveal that postgraduates participated more actively than undergraduates. It should, however, be noted that both these groups’ active participation can also be explained by factors related to technical proficiency/infrastructure: their previous exposure to the environment (invited professionals), and access to the equipment required and technical support from technicians (postgraduates).

However, those participants who were technically proficient in the environment, but who would not necessarily hold power roles in a face-to-face classroom (due to lower levels of education or institutional roles), may have been empowered by the SL environment since their technical skills gave them an expert status they would otherwise not have had, which in turn could lead to more active participation. For instance, in Article 1 (see also 6.1), technically proficient students, i.e., experienced users of SL, participated more actively than other students. Therefore, it may be inferred that technical skills can also redefine power relations between students and teachers. If students are more technically skilled than teachers, for example, the latter may have to seek help from the former rather than the other way around. Further, all those present have less obvious power roles in an avatar-based environment, since all participants, including the students, can customize their avatars to project various identities.

Clearly, SL disadvantages participants with poor technical skills and knowledge of the environment, regardless of how fluent they are in the target language, or knowledgeable of the subject matter. For example, some “newbies” failed to participate, or only participated marginally (see Article 5 and 6.5). The above scenarios indicate that SL could
both work to participants' disadvantage, if they do not possess adequate technical skills, and to their advantage, if they are technically competent. Arguably, language proficiency, education level, learning style, age, and gender (see Figure 8), which are traditionally perceived as power-related factors, can thus be strengthened or weakened by the technical environment, depending on how technically proficient participants are. The impacts of these factors on participation, as illustrated in Figure 8, are thus shaped by the SL technology.

7.1.2 Students' attitudes
The complexity of the SL environment seems to affect students' attitudes (see Figure 8) towards using the technology. This impact is often positive: the anonymity provided by avatars and the multi-dimensional nature of the environment motivate shy students to participate. In an immersive ‘fictional’ environment, students can hide their real identities and take on any new shape they like. Moreover, the teacher’s status, which can be perceived as intimidating by shy students and thus discourage them from participating, is also undermined. In the traditional classroom, a teacher’s superior status is more obvious; for example, teachers tend to be older than the majority of the students and more often than not position themselves in front of the class. Such factors are obviously put out of play in SL as it is impossible to tell a person’s age (apart from the voice, which can actually be manipulated as well), and because avatars can be programmed to acquire different poses or position themselves in different places without it being controversial. As a result, the student who is not talkative in real life may be more inclined to participate more actively in SL (see Articles 1 and 5, and also 6.1 and 6.5).

With reference to the framework given in van Lier’s (2004) ecology of language learning, a positive attitude towards the learning environment is likely to motivate students to further explore the affordances of the learning environment more actively. With a positive attitude, students may thus spend the time required to learn the affordances of SL, and gradually acquire adequate technical skills, which in turn further motivates engagement and participation. However, if participants are discouraged by factors such as the technical instability of SL (see, for example, the technical problems reported during the teacher trainee course in Articles 2 and 5, and also 6.2 and 6.5), they may be reluctant to put much effort into learning the different functions of SL. In such cases, students risk developing more general negative attitudes towards the learning context. For example, they may feel that the aim of taking a language course is to learn the complex technology rather than the target language.

In sum, obtaining sufficient technical skills and maintaining a positive attitude towards the online learning environment chosen for language learning are vital factors for student participation during an English course in SL. Otherwise, the learning of the target language can be compromised.
7.2 Teacher-related factors in SL

SL places additional demands on teachers on top of the traditional language teacher roles. In SL, teachers are still responsible for providing language input, encouraging student participation, and establishing a positive social atmosphere in class. However, these roles are more demanding when complex technology is involved. Moreover, teaching in SL also involves teachers providing preparatory and immediate technical support for students to facilitate their participation.

Monitoring and motivating students’ participation is, therefore, more problematic in SL compared to the face-to-face classroom or using simpler online tools. For example, it can be time-consuming and challenging to identify inactive students when multiple communication modes are used, some of which are actually private. While the challenges involved in teaching or communicating with a class are similar to the traditional classroom, the teacher in SL also needs to be aware of who is contributing to the public communication (typing in the public chat and/or talking in the public audio), to in-group interaction, i.e., typing in the group chat and/or talking in the group audio (cf. Articles 3 and 4, see also 6.3 and 6.4), or using other modes of communication such as gestures. Having identified a passive student, the teacher has to analyze why the student is inactive: it may be a result of insufficient subject knowledge and/or language skills (see Article 3), but could equally well be due to technical problems (see Article 4). To meet these challenges, a combination of teacher strategies is required. As discussed in Articles 1, 3 and 4 (see also 6.1, 6.3, and 6.4), the course instructors used a range of conversational or discourse functions to allocate participation opportunities to all students, especially the inactive ones. By choosing to direct questions at individual students or the whole class (see Article 3 and 6.3), or changing the topic under discussion (see Article 4 and 6.4), the teacher balanced the language output of active and inactive students. Naturally, these teaching strategies can also be used in the face-to-face classroom. However, the frequency of occurrence of some of these strategies in SL was very high. There may be good reasons for this. As there is no eye contact in SL to signal which student is expected to respond, the teacher often has to use a larger number of directed questions or directed imperatives to assign questions (see Articles 3 and 4, and also 6.3 and 6.4). In addition, traditional teaching strategies can be applied with additional functions in this complex online environment: as discussed in Article 4 (see also 6.4), for example, greetings were used not only as a social communicative device, but also to check the participants’ technical readiness, i.e., if their voice chat was working.

Yet another challenge for teachers when it comes to teaching in MUVEs is to stimulate the creation of a social context. SL is possibly more open to establishing a community of practice than simpler online environments because of the 3D space and modifiable avatars (see 3.3.2), which give students a sense of presence and co-presence. However, this does not imply that the creation of such a community is easily achieved. In a virtual 3D environment, inappropriate use of the technology can also cause interference with social processes and create awkward situations such as one avatar bumping into another avatar. Such interference and awkward situations also included problems with the voice chat resulting in echoes, and participants not mastering the movement commands, which resulted in ‘flying avatars’ (see Article 5 and also 6.5). Moreover, SL does not offer
many options to imitate body language, an important mode of communication from a social perspective as it is used to convey people’s emotions during communication. In order for students to use the limited body language offered by SL, such as laughing or nodding, they have to practice these affordances in advance, as the tool is quite complex. Given these circumstances, the use of body language between participants was marginal during the observations. Taking these factors into consideration, teachers in SL probably have to motivate students to interact socially throughout course tasks, as elaborated on in Article 3 (see also 6.3), i.e., the teacher had to facilitate in-group interaction during pre-task, during-task, and post-task phases. To achieve this, a number of communicative strategies were used successfully by teachers to encourage social interaction: namely, discourse functions such as greetings, back-channeling, leave-taking, expressing agreement, and complimenting (see Article 3 and 6.3), and conversation management strategies, such as social formulas, and polite address forms (see Article 4 and 6.4).

Apart from motivating participation and social interaction, the most serious challenge for teachers working in SL is to provide technical support while teaching. As discussed in all five articles, this is an important additional task for teachers. For instance, although there were technicians present during the Master’s course in English sociolinguistics and the teacher-trainee course (see 5.1), the teachers still spent a substantial amount of their teaching time providing technical help (for details, see Articles 1, 2, and 5, and 6.1, 6.2, and 6.5). Teachers in SL also need to check students’ technical readiness. As reported in Article 3 (see also 6.3), the teacher used different conversational and discourse strategies to check students’ audio. Due to the synchronous nature of communication in SL, when providing technical support, teachers have to, on the one hand, notice unexpected technical problems quickly, and on the other, provide immediate technical support through synchronous chat and/or synchronous audio. Otherwise, student participation may be hindered. Naturally, this places heavy demands on teachers’ technical competence.

In addition, offering continuous technical support in SL may result in teachers inadvertently threatening student autonomy. Both Article 1 (see also 6.1) and Article 3 (see also 6.3) reported that the teacher either occupied a large proportion of the floor space or many conversational turns. It was often the case that assisting students technically was the main reason for teachers’ taking over conversations. However, ensuring student autonomy, that is, students’ control of their learning and collaboration, is essential for the successful outcome of language learning activities. As claimed by Wertsch (2011), learning is a process of transferring responsibility from teachers to students (see 2.1.3.1). Although it was shown in Article 3 (see also 6.3) that the teacher gave the floor back to the students after having provided scaffolding, and that the students took initiatives during their collaboration, it is still difficult for teachers in MUVEs to transfer responsibilities to the students at an appropriate stage due to the complexity of the teaching environment. For example, several disruptions to normal turn-taking were found, resulting from students’ inability to identify/activate the appropriate communication modes, such as chat or audio channel, thereby forcing the teacher to keep talking and occupy much of the floor space. Given this, teachers have to observe in-group and class interactions actively, and intervene when students are not able to solve the problem, but avoid doing so when they can. In all,
this requires sophisticated skills based not only on technical know-how, but also practical experience of the environment. Multi-tasking skills, such as providing language input, observing students’ participation, predicting potential technical problems, and giving suitable technical support simultaneously, are also needed. Thus it is postulated that demands that go beyond traditional subject knowledge, such as technical expertise and multi-tasking skills, are less present in the face-to-face classroom or in a simpler online learning environment.

7.3 Task/course-related factors in SL
In this section, I will focus on another variable category given in Figure 8, namely: course and task. More specifically, I will highlight the challenges involved in course and task design in SL, compared with traditional face-to-face classrooms and simpler online learning environments.

Task design is one of the primary concerns in any language course, regardless of whether it is set up in the traditional classroom or online environment. The reason is that the way in which the task is designed has a significant influence on students’ participation and collaboration. The factor task design presented in Figure 8 can thus influence the other factors in the variable category of course and task, such as group size (large or small groups), which has been shown in all five articles, and the relevancy of a course, e.g., the course is likely to be more relevant to those participants who will be awarded course credits, rather than to those whose participation is voluntary (see Article 1 and 6.1). Task design can also affect the variable category students in Figure 8, for example, gender distribution within the group (see Articles 1 and 2, and also 6.1 and 6.2), and students’ learning styles, for example, during a teacher-led as opposed to a student-led task (see Article 1 and 6.1). Apart from its impact on student-related factors, task design also affects the category teacher. Different tasks motivate different teaching strategies and teacher roles (see Articles 3 and 4, and also 6.3 and 6.4 for different strategies the teacher used and roles the teacher played in the spoken business English course). Therefore, the above analysis shows that the variable categories in Figure 8 are interrelated, and that task design can ultimately decide whether or not the learning outcomes of a course will be achieved. Although the significance of task design applies to any type of English classes, designing a language course in SL is arguably more challenging.

The difficulty of designing a course in SL can involve, for example, the fact that the size of the group has to be limited. For practical reasons, group size (see Figure 8) is restricted in SL, compared with traditional classrooms and simpler online environments. In the latter two contexts, both large and small groups can be used and managed. In the traditional classrooms, teachers and students can easily identify the person holding the conversational floor, and they are not disturbed by issues such as ‘echoes’ (caused by several students speaking simultaneously when someone does not have a headset), or limited capacity of a certain environment (many SL spaces underperform when many users are present simultaneously). For reasons explained above, large groups should be avoided in SL, and in addition large groups are more difficult to manage during synchronous online communication, and in synchronous voice chat in particular, as it is often difficult to
identify who is speaking when groups are large, as discussed in all five articles (see also 6.1–6.5). On the other hand, in simpler online environments, especially the asynchronous ones, interactions within a large group are manageable. Students can interact with each other or teachers by using, for example, asynchronous discussion forums. In SL, tasks should thus be designed for small groups to facilitate student participation. All the groups in the three courses investigated in this thesis included fewer than ten participants, suggesting that small groups are beneficial for collaborative language learning (cf. Palloff & Pratt, 1999; McLinden et al., 2006; Hrastinski, 2007; Green, 2008; Blasing, 2010). During the initial and debriefing sessions of the courses studied in Articles 1, 2, and 5 (i.e., the Master’s course in English sociolinguistics, and the teacher trainee course), the participants were not divided into smaller groups. Noticeably, there were a larger number of technology-related issues reported, such as noises and echoes, because several people were speaking at the same time (cf. Wadley & Gibbs, 2010). Even if students use IM (instant messaging), communication may be impeded when several students post messages simultaneously, as they then need to scroll several chat lines back to find the responses to their contributions. Creating tasks which involve smaller groups within a larger class requires resources in terms of teacher time. However, there are ways of creating sound-insulated ‘rooms’ in SL so that many smaller discussion groups can work simultaneously in the same space, and the teacher can then move between these autonomous groups (see Articles 2 and 5, and also 6.2 and 6.5).

Another challenge in terms of designing tasks and courses in SL is assigning course time to teaching students the complex technology together with the target language. As demonstrated in all five articles (see also 6.1–6.5), SL plays a critical role in mediating students’ exchanges and in their achievement of the language-learning goals during an online course. Consequently, instead of simply being a platform for in-course communication, the complex technology per se should be mastered by students first before they can use the tool to learn the target language; otherwise, student participation will be affected negatively or even hindered. For example, pre-course technical initiations had been embedded into the courses examined in Articles 1, 3, and 5 (see also 6.1, 6.3, and 6.5), but, in spite of this, this type of training did not provide enough time for students to master the complex SL affordances and use them to their advantage. This indicates that SL requires a significant amount of course time for students to learn and master the technology itself, and is thus arguably not suited for shorter modules. Successful technical initiation also presupposes that technical facilities and technical assistance can be provided.

In contrast to traditional classrooms and simpler online environments, two factors within the variable category of course and task (see Figure 8) are of critical importance in SL: technical facilities and technical assistance. If these two factors are not taken into consideration during the task planning stage, a task or sometimes a whole course is unlikely to run smoothly, or might collapse altogether. In other words, adequate technical facilities have to be offered to students. For instance, concerning bandwidth problems mentioned in Articles 1 and 5 (see 6.1 and 6.5), a stable and fast Internet connection is required. Moreover, as students’ private computers may not be capable of operating SL (see Articles 1 and 5, and 6.1 and 6.5), universities have to supply computers that have the capacity for
running SL smoothly. However, when students are located in different geographical places, it is difficult to provide everyone with a fast Internet connection and a good computer (see Articles 1 and 5, and also 6.1 and 6.5). Naturally, the cost of the technical facilities required is high, which may be unrealistic given the budget limits of language courses.

*Technical assistance* constitutes another precondition during the course set up in SL. In 7.2, I explained that language teachers need to multitask when teaching in a complex MUVE, such as SL. A part of their task is to provide technical support to students. This takes away teachers’ time from teaching the target language, and it also places high demands on teachers’ technical skills. On the other hand, including technical assistants in a course could reduce the teachers’ burden (see Article 5 and 6.5 for how the technical assistants helped the participants solve technical problems that the course instructor could not, or did not have time to deal with). When technicians focus on solving technical issues, teachers can devote their main efforts to language-related tasks. However, employing technicians means additional costs. Moreover, these technicians need to be selected carefully. It is beneficial if they understand the course aim, and provide technical support as appropriate without interfering with student participation or peer scaffolding. It is also important that the technical assistants are proficient in the target language so that they can use it to give technical support, which can be another opportunity for students to use the target language in an authentic context.

In sum, using only small size groups, including teaching the complex technology among the course goals, and providing technical facilities and technical assistance to participants whenever necessary, constitute major prerequisites for running a language course successfully in SL. SL also presents a challenge for students and teachers, as elaborated on in 7.1 and 7.2. Based on the discussion above, in the next section, I will analyze the impact of SL on student participation by referring to the theories introduced in Chapter 2.

### 7.4 Analysis in relation to existing theories

In this section, I consider the results of the present study in terms of the theories of learning presented in Chapter 2. More specifically, I will further investigate the influences of SL on student participation, and the merits and disadvantages of SL as a platform for language teaching based on van Lier’s (2004) ecology of language learning, Engeström’s (1987) Activity Theory, and Nielsen’s (1993) theory of system acceptability.

#### 7.4.1 Ecology of language learning

According to van Lier (2004), the ecology of language learning refers to all complex factors that are at work during learning and teaching activities. At the beginning of this chapter, I explained that student participation in SL was affected by four variable categories, and that some factors within those categories appeared to be more influential than others. As investigating participation in SL cannot be restricted to studying isolated factors alone, van Lier’s (2004) concept of ecology of language learning is a suitable tool for analyzing the complexity of group dynamics in SL (for details see Chapter 2, and 7.1–7.3).
Another core concept in van Lier’s (2004) ecological approach is that of affordances, i.e., a set of potential options available to users within the environment explored, options which in turn depend on the interplay between the learning tool itself and language learners. According to van Lier (2014), language learners only become aware of the potential uses of a particular tool by actively engaging in meaningful learning activities. All three courses in SL examined in this thesis included technical initiation sessions during which teachers or technical assistants explained the affordances of SL, such as voice and chat functions, and movement commands, to all the learners. Nevertheless, it seemed that the language learners in many cases, did not take initiatives to use these affordances, especially at the beginning of the course. Instead it seemed that whether or not they were able to master SL affordances as the courses progressed depended very much on how much time and effort they spent on exploring the environment of SL.

Articles 1–5 all include examples of students lacking the technical skills required for performing course-related tasks, which in turn arguably was a result of the insufficient amount of time they had spent in SL after the technical initiation session. For example, they were not able to perceive some affordances, such as using the available sound parcels which enabled the course participants to organize themselves into smaller discussion groups, as reported in the teacher trainee course (see Articles 2 and 5, and also 7.2–7.5). Similarly, many were not able to adjust settings for sound properly, resulting in echo effects, and too high or too low volume (see all five articles, and 6.1–6.5). At other times, students had problems with movement in SL resulting in problems in organizing groups.

As mentioned in Article 5 (see also 6.5), learning the affordances available in SL in a short period of time (during a short technical initiation, for example) is rather unrealistic. Nonetheless, learning designs in SL are dependent on students’ technical skills and this factor will greatly influence not only the extent of their participation in the course-related tasks, but also the quality of the same (see 7.1). This points to the need for students to take initiatives to further explore and learn the affordances of SL, and course designs should encourage such activities. For example, initial explorations of SL can be designed around low stake but meaningful learning tasks where students themselves are encouraged to discover and use affordances. Such tasks could include, for instance, treasure hunts, communicative tasks, and should arguably, after initial technical initiation, be carried out without teacher guidance. In this way, and in accordance with van Lier’s theories, students can become aware of the potential uses of a particular tool by actively engaging in meaningful learning activities.

Although mastering the affordances of SL requires time and effort, such activities can themselves actually trigger ‘unplanned scaffolding’, which is yet another important concept in van Lier’s (2004) ecology of language learning (see Chapter 2). In other words, when students actively explore or learn the affordances of SL, they engage in meaningful activities related to the language learning goals, such as seeking help from teachers or peers, or solving a technical issue, e.g. adjusting the volume of their audio (see Article 5 and 6.5). During these unplanned interactions, learners need an appropriate vocabulary to describe the problem at hand, and suitable social skills for seeking help, for example, making appropriate use of politeness strategies in the target language. Therefore, such activities not
only prepare language learners for in-course participation once a certain affordance has been acquired, and equip them with the new vocabulary typical of this environment, but they also stimulate the creation of an authentic language learning situation, in which the target language is used. As van Lier (2004) argues, agents, or in this particular context, students, have different abilities when it comes to making efficient use of the resources available. When the students who are more experienced users of SL help their peers to identify a technical problem, or to learn a new function such as voice morphing in SL (see Articles 2 and 5), peer scaffolding is triggered. As a result of such peer-to-peer cooperation, a community of practice is created, a community in which all participants communicate in the target language, a key ingredient in the course-related tasks to come (see 7.1 and 7.3).

In this case, all students are given a possibility to practice their language skills while providing or receiving technical support from their peers, called ‘assisted participation’ within van Lier’s (2004, p. 147) framework. Peer support (as well as teacher support) is emphasized by van Lier (2004) in the ecology of language learning. Once the knowledge of using SL affordances has been internalized by the less experienced users, they can use it to participate during the course-related tasks in this type of environment, and will thereby also feel more comfortable participating. This is the third type of scaffolding proposed by van Lier (2004), namely: scaffolding can also occur when learners work alone and when they refer to their previous knowledge, learning experience, and resources. Later, these students could also provide support for other students experiencing similar software-related problems.

Not only students should learn affordances of SL, teachers should also explore and learn appropriate affordances of the technology to be used in class (cf. Haines, 2015). This can be conducted by considering course aim and the nature of course tasks. For example, synchronous voice chat can be learned first by teachers and then adopted for students’ oral presentations. Other examples include teachers learning to modify avatars for role-playing and using PowerPoints to present course directions for an assessed task. If teachers could use appropriate affordances of SL for specific tasks, student participation could potentially be facilitated and maximized.

In sum, within the ecological approach to language learning (cf. van Lier 2004), a combination of teacher-support and peer-support strategies, as well as the student’s previous learning experience, are of importance. As discussed above, the affordances of SL can be perceived and mastered during meaningful learning activities, and once language learners and teachers invest a sufficient amount of time and effort into actively exploring the affordances of SL, their in-course participation is much facilitated, with the added benefit that the opportunity to use the target language in an authentic learning context increases. The design of courses in SL should cater for, and stimulate such group dynamics – a potential not fully realized in the courses explored.

7.4.2 Activity theory
Another theory that can be applied to studying the group dynamics of a language learning course in SL is Engeström’s (1987) activity theory. Although both van Lier (2014) and Engeström (1987) emphasize the importance of mediating tools, e.g. SL, during learning
activities, the former looks at the individual/learner level while the latter focuses on the structural sociocultural level. In this section, I will use Engeström’s (1987) structure of a human activity system (see 2.3) to discuss how different parties connected to a course, i.e., teachers, students, technical assistants, administrative staff and infrastructure interact in order to achieve the learning outcomes outlined in the course syllabus, i.e., learning by using SL.

Focusing on the goal of any activity is central to activity theory and the expected learning outcomes of the three courses under investigation are: discussing language issues with a gender focus and from a cross-culture perspective (Master’s course in English sociolinguistics in Article 1), exploring gender and identity by using gender and voice morphing in SL and experiencing the difficulties and merits of designing a Web 2.0 course (teacher trainee course in Articles 2 and 5), and learning communicative skills in spoken business contexts (spoken business English course in Articles 3 and 4).

In 7.1 and 7.3, I have explained that mastering the affordances of SL constitutes one of the key factors for student learning and participation. In other words, getting a good command of the environment of SL is essential for the success of a course in SL. As illustrated above, the command of the environment does require substantial efforts on behalf of the students. One central issue here in relation to the courses under scrutiny, however, is that technical skills and IT-literacy are not explicitly addressed in the learning outcomes/goals of the courses. This is a problem. While many students embrace the opportunity to learn new technology, others feel that it takes time and focus from their central learning goals. As discussed in Article 1 (p.13), for example, technological issues were responsible for lowering the engagement, and in extension the participation, of some of the students: “Virtual world is not my cup of tea, too unreal to mobilise interest”, said one of the students, for example. It is thus advisable, that the learning of the new technology is clearly written in as one of the learning outcomes/goals of any course conducted in SL, but this can in turn create administrative issues related to the organizational structures under which such courses are given (a language learning department may not be authorized to teach technology, for example).

SL also affects the roles the teachers need to fulfill in the course concerning supporting and coordinating student participation. As discussed in all five articles, this includes technical support (see 7.2 for details), which places new demands on teachers in terms of skills and expertise – knowledge which the university as an organization should provide, but for which there may be limited infrastructure. In terms of division of labor, the teachers may have less responsibility for offering technical support if there are technical assistants available, but again this depends very much on the ‘rules’ and the nature of the ‘community’ in Engeström’s (1987) model (see section 2.3). In the courses under scrutiny, the teachers either had adequate skills in SL due to previous experiences and/or there was sufficient funding to provide technical assistance (due to project funding), but if SL or any other complex technology like it is to be implemented in a system, ‘division of labor’ and competences have to be analyzed and catered for.

Apart from teachers and technicians, the course may also involve administrative staff responsible for enrolling students, recording grades, etc., and here tools such as SL
may create challenges. Administrative staff are bound by the rules set by the department and/or university, and SL may create new challenges in interpreting such rules: how does one ensure the identity of students, for example, and how does one define presence at obligatory events? The fact that an avatar is present in SL does not necessarily mean that the student is present at the other end of the computer, for example.

Technical infrastructure in terms of Internet connection, software and hardware, is another issue that merits attention here. In many of the course events studied, it was observed that while the universities had control over events that took place on campus (in computer labs etc.), there was no assurance that students connecting to the learning events from home had adequate bandwidth, powerful enough computers etc. This can, and did, create problems for the group as a whole (some students were unable to communicate with the group using voice due to bandwidth issues, for example).

To summarize, analyzing a learning event in SL using Activity Theory we see that the technology places special demands on the activity system that go beyond the students themselves. Course developers should be aware of such issues before embarking on courses in complex environments such as SL, and cater for the needs and foresee potential problems prior to launching a course. Examples of issues that could impair the achievement of course goals that were highlighted during this research included:

1. students not having adequate technical skills, and not feeling motivated to attain these since such skills were not included in the course goals;
2. students not being given enough time to learn the complex affordances of SL because there was no room for this in the time allocation of a course (see 7.3);
3. teachers lacking appropriate technical skills (see 7.2);
4. technical infrastructure being inadequate – especially when students worked from home;
5. technical facilities and technicians not being provided in the course due to lack of resources (see 7.3);
6. SL placing demands on administrative and legal structures that are difficult to reconcile within the ‘community rules’ (i.e., the administrative structure of a department).

Since a complex environment such as SL places extra demands and costs on the activity system at all levels, it is prudent that the benefits be weighed against the costs, a point that will be addressed in the next section.

7.4.3 System acceptability

In this section, I will use Nielsen’s (1993) model of the attributes of system acceptability (see 2.6) to analyze whether and when SL is a suitable choice of course platform when it comes to language teaching/learning. More precisely, two primary categories of attributes in his model, i.e., social acceptability and practical acceptability (see Figure 5 in 2.6), will be used. It should be noted that theories of technology adoption are discussed in Article 5, alongside the technical problems affecting participation in the teacher trainee course examined.
In terms of social acceptability, SL is undoubtedly ‘accepted’ by many as a medium of communication for language learning and teaching purposes. As shown in Articles 1–5, it has been used for teaching a variety of university-level courses. Moreover, in SL there are many informal groups that language learners can join in their spare time to practice their language skills, which illustrates the social, synchronous multi-user affordances of SL, in many ways similar to that of popular social media (Facebook, for example). The open nature of SL is not only positive, however; for example, uninvited avatars can show up during a course set-up in SL, thus creating a distraction for the students, as well as for the course instructors.

With reference to the practical acceptability category outlined in Nielsen’s (1993) model, SL has both advantages and disadvantages when used as a learning and teaching platform. The advantages of SL as a tool for language learning involve a set of medium-specific affordances. For example, SL can bring together geographically dispersed participants, of different cultural and educational background, into one collaborative language-learning scenario, which was the case in the three courses under study (see Articles 1–5). Although this can be offered by a number of online tools, the specific affordances of SL, for example, voice chat, voice-morphing, avatar representations, open and in-group communication channels, the virtual 3D space, the possibility to create sound-insulated parcels, have opened up possibilities for the course designers in the courses investigated here, which would not have been possible in other platforms. An illustrative example of SL-specific affordances and how they can be used in course design was the use of avatars in role-play (see Articles 3 and 4). Arguably, the 3D space of SL gave the students a sense of authenticity when they were engaging in role-play. SL also allows designers to customize the learning space. The use of sound parcels to enable discussions in smaller groups (cf. the teacher trainee course, in Articles 2 and 5) is one such example.

Aside from the obvious strengths of SL as a platform for language teaching and learning, there are also a number of weaknesses that should be taken into consideration. In Nielsen’s model (1993) of system acceptability, four attribute categories are outlined, namely: usability, cost, compatibility, and reliability. Nielsen (1993) further distinguishes the following attributes within the category of usability: ‘easy to learn’ (learnability), ‘efficient to use’ (efficiency), ‘easy to remember’, ‘few errors’, and ‘subject satisfaction’, all of which will be discussed below.

With regard to learnability, the findings from the five articles indicate that SL is not easy to learn (see, e.g., Article 5 and 6.5). As pointed out in 7.3, a considerable amount of course time is needed for students to acquire the knowledge and skills needed to master affordances of SL. The results of the current study thus provide further support for Cooke-Plagwitz’s (2008) conclusion that learning how to use SL is time-consuming. When it comes to Nielsen’s (1993) next attribute, efficiency, the observation made throughout this thesis is that SL was not always efficient, and a high degree of student participation was difficult to achieve, e.g. long silences were frequent during the Master’s course in English sociolinguistics (see Article 1 and 6.1). Moreover, as shown in all five articles, technical problems were a recurring issue throughout the three courses examined, which often led to participation breakdown. As for the attribute ‘easy to remember’, some functions and
affordances of SL are quite complex and therefore difficult to master and remember. For instance, students forgot how to adjust volume settings and how to display their avatar names, in spite of having been instructed how to do so (see Articles 5 and 6.5). In terms of the attribute ‘few errors’, the experiences from the courses showed that SL did not qualify here. There were several issues with sound quality, avatars not appearing, and some occasions when SL shut down the entire platform where the courses were conducted. Finally, regarding the last attribute ‘subject satisfaction’, some participants and teachers in the three courses investigated expressed their negative attitudes towards using SL as a platform for language learning and teaching (see Articles 1–5, and 6.1–6.5). The weaknesses of SL revealed through the analysis of the attributes in Nielsen’s (1993) usability category thus constitute one of the main concerns as to whether it is a suitable tool for online language learning and teaching.

The pros and cons of SL as a platform for language learning and teaching can be further discussed using the other three categories of attributes in Nielsen’s (1993) model, i.e., cost, compatibility, and reliability as points of departure. The issue of cost can be approached from two perspectives, namely: price and time. The SL software can be downloaded for free, and some ‘islands’, i.e., the virtual space within the environment, are also free to use. Participants can also create and modify their avatars for free. The possibilities to design learning spaces according to the specific needs of a course, however, come at a cost. In order to build and modify virtual space in SL users have to ‘own’ it and this can cost departments several thousand Euros per year depending on the nature of the space. Linden Lab also charges for special affordances, such as voice-morphing. The complex nature of the environment itself also incurs extra costs in terms of staffing (technicians and support teachers, for example), which excludes institutions with limited resources. SL can also incur costs in terms of course time. As shown in Articles 1 and 5 (see also 6.1 and 6.5), a fairly large proportion of course hours was spent on teaching the students the complex technology of SL rather than focusing on course tasks.

In relation to compatibility, the results in Article 5 (see also 6.5) show that the SL software behaved differently on different operating systems, e.g. Microsoft Windows and OS X, which caused confusion on the students’ part during the teacher trainee course. Finally, in terms of the reliability of a system (cf. Nielsen 1993), all five articles have addressed the fact that SL is not always reliable, one of the major problems being its sound quality (see Articles 1–5). Other problems include restricted access to certain spaces within SL due to maintenance (see Article 2 and 6.2), software crashing, and an inability to send instant messages (see Article 5 and 6.5). Those technical weaknesses of SL caused serious problems for students, thereby affecting their participation negatively (see Articles 1–5). The five articles also show that technical problems occurred at different stages of the course, both at the beginning and at the end of the three courses, and technical support was still needed during the final stages of the courses (see Articles 1 and 5).

In sum, SL has both strengths and weaknesses, all of which have to be taken into account when deciding whether or not to use the environment in language courses. In the following section, I will conclude by providing some recommendations for possible
scenarios when SL may be a good alternative for language teaching purposes, and when it may be better to use a different tool.

7.5 Conclusion
On the basis of the discussion above, it can be concluded that a wide spectrum of pedagogical and socio-linguistic factors has to be considered before using SL as a platform for in-course communication. In this section, I will outline some recommendations regarding the type of learning scenarios in which SL represents an appropriate tool, and in which it is arguably less so.

Focusing on the course aims and course conditions, Figures 9.1 and 9.2 below offer a number of possible scenarios in which SL is, or is not, beneficial as a platform for language learning and teaching.

![Figure 9.1 Scenarios in which Second Life is suitable](image)

**Figure 9.1 Scenarios in which Second Life is suitable**
As shown, SL is suitable for courses that aim at creating new possibilities for language learning and teaching, such as combining language learning with the introduction of complex technology or using the special affordances of SL for specific learning scenarios (see Articles 1–5, and 7.4.3). Moreover, SL can be used to trigger authentic conversations and unrehearsed speech between language learners (see also 7.3 and 7.4). If the use of a 3D environment is required by the design of a language learning course, e.g. in the case of role-playing, SL constitutes a reasonable choice. If the creation of co-presence between participants is one of the objectives, SL can be used to achieve that. However, all of the above depend on the conditions listed in the right-hand column, in Figure 9.1. For example, if teachers and participants have adequate technical skills, and there is a fast and stable Internet connection, as well as powerful computers, the outcome of an SL session may be successful. When the course budget allows for financial and technological support in order to improve students’ technical skills, the affordances of SL can be deployed to create exciting learning scenarios in order to facilitate students’ participation.

However, in some cases, SL may not be the best choice, for practical reasons. If a course solely aims at practicing the target language synchronously, or/and bringing together geographically dispersed learners into collaboration, other technologies can be used, for example, video-conferencing. Most importantly, if a course aims at creating dynamic social exchanges between participants, especially when participants are unfamiliar with each other, it is advisable to avoid using SL because of its complexity. Although SL could give participants a sense of co-presence, it is difficult to establish a community of practice in this 3D world (see 7.2 for details). Moreover, if a course consists of a large number of students, and there is no possibility of dividing participants into smaller groups due to the nature of

Figure 9.2 Scenarios in which Second Life is not suitable}

<table>
<thead>
<tr>
<th>SL is not well suited for conditions when</th>
<th>Under some conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A course aims at</td>
<td></td>
</tr>
<tr>
<td>• practicing the target language</td>
<td>• limited course time</td>
</tr>
<tr>
<td>• ONLY bringing geographically dispersed learners together</td>
<td>• insufficient financial support</td>
</tr>
<tr>
<td>• creating dynamic social communication</td>
<td>• deficient technological resources</td>
</tr>
<tr>
<td>• large group interactions</td>
<td>• lack of technical skills</td>
</tr>
<tr>
<td></td>
<td>• no technicians</td>
</tr>
<tr>
<td></td>
<td>• negative attitudes</td>
</tr>
<tr>
<td></td>
<td>• no experience of using SL</td>
</tr>
</tbody>
</table>
activities (for instance, a seminar in which all participants are supposed to be present simultaneously and contribute), SL is unlikely to be the best choice of platform for in-course communication. Finally, a simpler tool is to be preferred under the following circumstances: when a course runs during a short period of time; there is no possibility of improving student technical skills; the technological resources available are insufficient (e.g. weak computers and a slow Internet connection); participants or teachers have negative attitudes towards SL, or have no previous experience of using the environment.

To summarize, due to the special affordances of SL, it has strengths when used in a language-learning course, but it also has limitations caused by its complexity. Considering both the course aims and practical limitations and possibilities when designing an online course is the key to success. If the complexity of the learning environment confuses participants, their participation may well be hindered.
8. CONCLUSION

In 8.1, the results of the present investigation are approached in terms of the research aims given in 1.1. In 8.2, the implications and limitations of the current study are outlined, and suggestions for future research provided.

8.1 Results

The first research aim was to examine what factors affect participation in complex Multi-User Virtual learning Environments (MUVEs). This study shows that participation is affected by a number of interrelated factors (see Figure 8 in Chapter 7). From the perspective of students, the participants’ technical skills can affect the power relations within a group significantly, and their attitudes towards using Second Life (SL) for learning English. Within the variable category of teachers (see Figure 8), SL requires that teachers adapt their teaching strategies and roles to facilitate and motivate student participation, to stimulate the creation of a community of practice, and to provide technical support while teaching. The teachers working in SL are thus faced with a challenging task of assisting students in their learning process without damaging student autonomy. As elaborated on in Chapter 7, SL demands that special attention should be paid to task design, course design, as well as to technical facilities and assistance. As the complex technology of SL plays an important role in mediating student participation, choosing a suitable tool for in-course communication is the first concern when setting up an online English course.

The second research aim was to investigate what factors are particularly important when it comes to student participation. As discussed in Chapter 7, the most significant factors in an SL English course are students’ technical skills, students’ attitudes towards the technology, teachers’ technical skills, teaching strategies, teacher roles, course and task design, technical assistance, and technical facilities. In other words, the importance of a certain factor is motivated by the complexity of technology.

Regarding the third research aim, which involves building a general model of factors affecting participation in telecollaboration in SL, the model is presented in Figure 8 in Chapter 7. The discussion in Chapter 7 is structured according to the different variable categories outlined in the model. In addition, in 7.5 (see, in particular, Figures 9.1 and 9.2), different scenarios in which SL can and cannot be used successfully are discussed.

8.2 Implications, limitations, and future research

In this section, I point to the implications of the current study for future research within the field of CALL by focusing on three areas, i.e., theory, methodology, and new technical tools. I also discuss the limitations of this study.

The theoretical implication is that multiple theories and frameworks can be applied to investigate the complex dynamics of participation in an online environment. In the current work, I used the sociocultural perspective on learning, the ecology of language learning, Activity Theory, a CA methodology, discourse analysis, and technology adoption. However, as the focus of the thesis is on participation, I have not tested students’ achievements, for example, whether students’ spoken proficiency improved after the
courses. Future research could apply the model introduced in this thesis to analyze students’ progress in terms of language proficiency, subject didactics, or second language acquisition.

The methodological implication concerns two points. A combination of quantitative and qualitative methods of research is necessary when studying the dynamics of online participation, and the complex factors that may affect it (cf. Hrastinski, 2008a, 2009). The quantitative method provides an overall representation of participation, and the qualitative method reveals important details as to the nature of communication online, such as who has power to control and manage conversations. In addition, various factors need to be considered when online participation is examined, such as participants’ technical skills, task design, teaching strategies, language proficiency, and age. Given the practical limitations of a thesis, the current study only focuses on examining the most important factors. Future research could explore other factors in the model. Moreover, in this study, private communication in SL has not been investigated, as I did not have access to it. Future research could examine whether students choose to contribute to communication by using the private chat or audio in SL instead of using the modes for public communication.

Future research could also apply and test the model provided in relation to other technical tools. For example, smart phones have become an important tool for multi-modal communication, and mobile APPs for language teaching and learning have been developed. An application of the model to investigate new technical tools could thus generate a broader understanding of language learning and teaching in general, especially as technology has been developing so rapidly in recent years. A comparison of factors influencing participation in other technical tools and in a MUVE could also be conducted.

In conclusion, this study contributes to the field of CALL by investigating a complex multi-modal environment, SL, which is undoubtedly one of the most popular MUVEs. A general model of factors affecting participation in telecollaboration in SL adds to previous research on factors affecting online participation. The significant factors affecting participation in a MUVE have been outlined and analyzed. The results of the current work have shed light on the interplay of factors involved in student participation online, and are particularly useful for language researchers, educators, and learners who are interested in online teaching and learning, especially those who plan to conduct formal language courses and informal language-learning activities in SL.
REFERENCES


Liou, H. C. (2011). The roles of Second Life in a college computer-assisted language learning (CALL) course in Taiwan, ROC. *Computer Assisted Language Learning, iFirst article*, 1–18.


earning_in_virtual_worlds_An_exploratory_case-study_of_a_Business_English_course


