"Many People, Many Minds"

Collaborative Writing Using CSCL in the ESL Classroom

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May 2011

We shape our tools and thereafter our tools shape us.
Marshall McLuhan

Write it, cut it, paste it, save it,
Load it, check it, quick – rewrite it,
Plug it, play it, burn it, rip it,
Drag and drop it, zip – unzip it
Touch it, bring it, pay it, watch it,
Turn it, leave it, stop – format it.
Daft Punk – Technologic

For Vanda and Milla

Abstract

This study investigates the use and potential of Computer-Supported Collaborative Learning (CSCL) for students of English as a Second Language (ESL). The hypothesis that drives this study is founded on the assumption that students can work collaboratively online using software which allows them to chat and edit a document simultaneously. The purpose is to study the nature of collaboration and the students' knowledge transformation.

The method used for this study was fieldwork where two different situations were emulated to compare collaborative situations. One group had access to three computers and used chat while the other group had access to one computer and could talk. Participants were 14-year old students from different countries in an international school. They were asked to write essays together. Participants were given surveys before and after the essay writing, and their collaborative writing was recorded using screen-capturing software.

Grounded theory was used as a method to analyze the written essays and the communicative process of either chat or oral discussion. The study provides evidence that ESL students can benefit from working with CSCL as a democratization of the writing process opens up knowledge transforming practices. Weak writers might find CSCL as an arena for contributing to the group and experience reciprocity in groups marked by positive interdependency and the teacher's instructive facilitation. The CSCL arena is a multi-purpose space for new innovative language learning practices which requires instructional strategies from educators as well as comprehensive assessment practices including Assessment for Learning (AFL).

This study is focused on the collaborative process of language work for ESL classrooms, and provides evidence of a potential affordance in the method of CSCL. This potential remains untapped in the ESL classroom today. The need for shared knowledge transformation requires students' ability to appropriate the necessary skills to learn collaboratively. "Many minds" holds the potential to facilitate and assist ESL students in their language learning with the use of new technological opportunities as well as new didactical practices.

Acknowledgements

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Vignette

In a sizable city in Europe Mr. Whitmore works as a middle school teacher. He teaches English as a Second Language class to 20 students from all over the world. On this particular morning he continues with the collaborative writing project on green energy. Lynn, Yin and Moira started last week on their essay last lesson. Unfortunately, Moira is home sick today. Lynn and Yin log on to two different computers and access a document which is saved online in the "cloud". As they are logged on they can see that Moira has logged on and accessed the document from home. They are pleased to see that Moira could join them.

For the next 40 minutes Lynn, Yin and Moira, along with the other groups, work on their essay assignments. When Mr. Whitmore does not walk around in the computer room he visits the documents students are working on from his own computer. He makes sure to record the progress in every group's document for assessment purposes using embedded screen-capturing software. Occasionally he enters the chat to help, give direction or support his students.

At home Moira is chatting with her classmates Yin and Lynn. Moira is dyslectic and finds it hard to write on her own. However, she enjoys finding good resources online and has taken responsibility for finding good sites. Moira is active in the chat box and shares her findings with the others. They discuss the validity of the resources, and how they can use them. Yin is a strong writer, but tends to go straight to Wikipedia and finds Moira's findings refreshing. The three of them discuss the direction of their essay on green energy before Lynn rephrases the introduction and suggests a restructuring of the essay. Moira writes about Hamburg's Smart City project in the document, and Yin helps her with the spelling while Lynn tentatively writes down a to-do-list for them in bullet points in the shared document in the cloud.

Mr. Whitmore sits down later to grade the finished essays, but revisits the screen video of the collaboration for playbacks to observe the collaboration.

1. Thesis

The central question posed for this thesis is whether Computer-Supported Collaborative Learning (CSCL) has the potential to assist students of English as a Second Language (ESL) in productive collaborative writing. Given facilitation can CSCL generate interdependency and language learning within groups? Studies in the field of collaborative writing are focused on information sharing, group and individual activity and coordination (Dourish & Bellotti 1992:1). My approach to the hypothesis of how computer-supported collaboration can indeed assist language learning is to divide the approach to the CSCL hypothesis into three overlapping areas as illustrated below (see figure 1). Each area poses a research question which facilitates a descriptive analytical approach to my hypothesis. I hypothesize that CSCL can assist ESL students in their written production as an ideal result of interdependency, democratization of the writing process and the use of collaborative word processor software.

Information must be exchanged in order for collaboration to function. This requires articulation and communication by the participants. In my descriptive analysis I will describe the collaborative process and the potential learning unfolding. I will identify the mechanisms and factors which signify collaboration and learning by the method of *grounded theory*. My theoretical approach is *activity theory* which will provide a means of understanding CSCL as an activity system.

I have adopted and adapted Andreas Lund's theoretical model presented in *The Teacher as Interface* (2003). Lund discusses the intersection of school subject, technologies and didactics in order to elicit teachers' appropriation of technologies (Lund 2003:10). I have created a theoretical model (figure 1) to understand the processes of collaborative writing in digital environments. The three areas include *affordance, appropriation* and *innovation.*
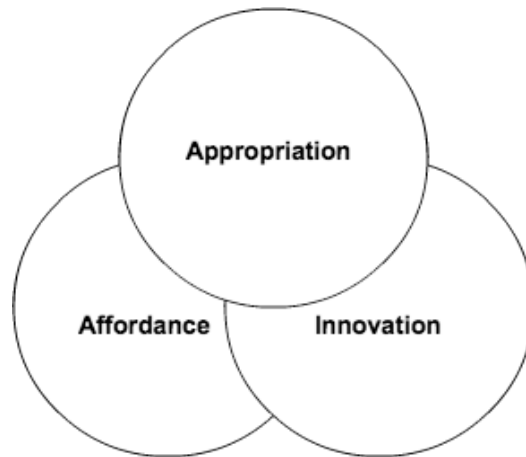
Figure 1: Three overlapping areas for exploring the thesis (Oddvik 2011).

By affordance I mean the *potential* of a tool (computers), while appropriation is the students' *ability* to make good use of the tool (collaboration) and innovation is the *possibility* for new practices to emerge (democratization). I will now briefly explain the three intersecting areas in my model and the three research questions driving my study.

1.1. Affordance

What is the potential of joint text creation using CSCL and how can it assist students of English as a Second Language (ESL)?

Affordance, as understood by the psychologist James Gibson, "holds the potential for triggering action" (Lund 2003:13) and is attributed to tools available to humans. In this study, "tool" is defined as a digital system belonging to Computer-Supported Collaborative Learning (CSCL). CSCL tools provide opportunities for customization and "tailorability" for the participants. The field of CSCL is a specialized field within Computer Supported Collaborative Work (CSCW) (Montano 2005:221). In the 1980s Greif and Cashman defined CSCW as "ways of designing systems – people and computer systems – that will have profound implications for the way we work" (Greif 1988:6). For the purpose of my study I have used Google Documents as the default CSCL software (see figure 2).
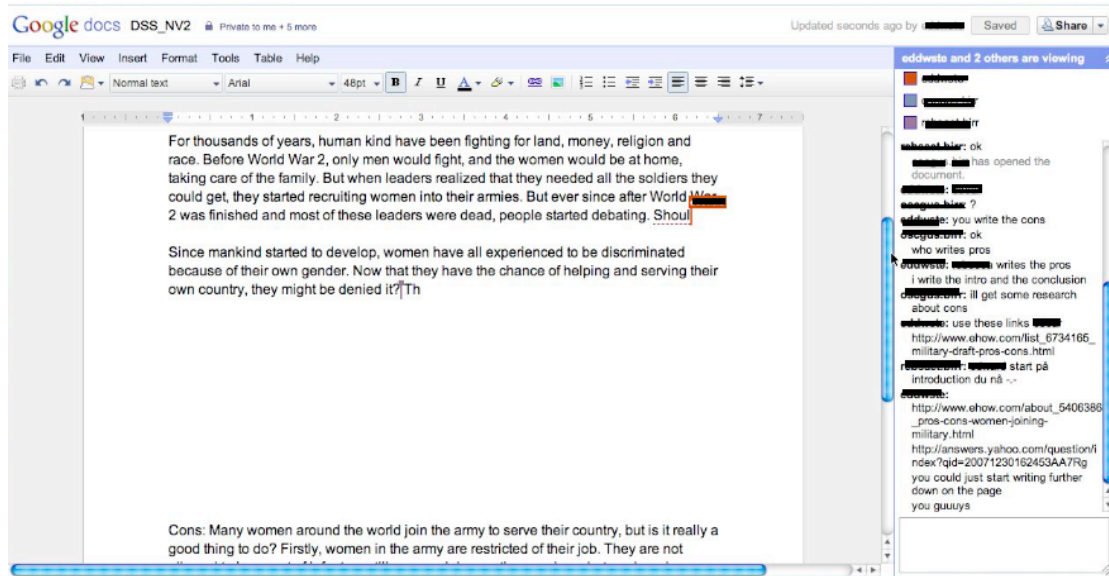
Figure 2: Google Documents screenshot.

Conversational space is represented by the chat to the right, and *creation space* is represented by the document to the left.

My hypothesis relies on an assumption that CSCL has an inherent potential to enhance language learning through collaboration. This *potential* is the factor of affordance. In my descriptive analysis, I will explore both the affordance of the CSCL tool and the participants' ability to customize it. Is CSCL facilitating learning on a group level as well as on a individual level or is it counter-productive? Which factors must be in place for participants to utilize the potential of CSCL? When and if participants are motivated by a shared goal, factors might change, and thus generate, new affordances (Lund 2003.:23). Lund does also suggest that when learner (and teacher) and context "engage in processes of transformation" certain new affordances are created (ibid.). The learning process becomes systemic when the group's learning outcome is stronger than it's individual members' learning outcome.

Perhaps one of the most dominant affordances is the opportunity of a democratic writing process. This is not to say that this is consistently true in practice, but CSCL *holds the potential* to bring equality to a group writing process. Participants can read, write and cooperate *synchronically*. Accessibility and immediacy are other characteristics of CSCL and represent its affordance.

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In order to answer the research question posed above, I presuppose that CSCL tools provide a *multi-purpose space* for language learning. In the situations studied and analyzed, participants were provided with a split window on their monitor with two main spaces. The space on the right was for communication purposes while the space on the left was for creating and writing the document (see figure 2). I will return to discuss the participants' ability to use the affordance of both the *conversational space* (Duffy et. al. in Bonk et al. 1998:70) and the *creation space* when working with CSCL.

1.2. Appropriation

How does the learning process unfold when a group of students collaborate on joint text creation with CSCL?

By appropriation I refer to the participants' ability to use the potential of a tool. Appropriation is a process where people adopt and adapt technologies and make them useful to their own purposes (Dourish 2003:1). This, of course, requires participants to be able to communicate in a constructive and productive manner and it presupposes a reasonable level of digital competence. Furthermore, as Dourish emphasizes, appropriation focuses on the "adoption patterns of technology" (ibid), and the *transformation* of practice. Naturally it is not the tool itself that generates learning; it is the users and through their use of the tool.

Dourish and Bellotti refer to *awareness* understood as "an *understanding of the activities of others* which *provides a context for your own activity*" (Dourish & Bellotti 1992:1). Articulated awareness can take place in both the conversational space and the creation space. However, Dourish and Bellotti distinguishes between awareness information "*explicitly generated*, directed and separated from the shared work object; or *passively collected and distributed* and presented in the same shared work space as the object of collaboration" (ibid.). The latter is particularly appropriate for synchronous systems[1], which my study is limited to.

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[1] CSCL when all participants can view everyone's contributions at the same time.

Activity theory presupposes an *object* of collaboration, i.e. the goal of the collaboration. In this study this object is ideally *language learning*. The participants themselves may feel differently; that the essay itself is the object of their collaboration. One might argue that *language learning is* the main object of the collaborative task. Bereiter and Scardemalia (1987) make the distinction between *knowledge telling* and *knowledge transformation* in their two-model description of writing (Weigle 2002:31) and the research question seeks to answer the nature of CSCL. Are the participants bound to *tell* each other knowledge by adding their separate contributions in an essay, or are they able to *transform* their knowledge and together produce an essay collaboratively and thus augment each other's learning?

The section of participants' *appropriation* overlaps with the tool's *affordance* and suggest that the democratization of the writing process generate a *positive interdependency* if used. Can this be possible? What about the role of the teacher? I will return to these questions when addressing these research questions in my paper.

1.3. Innovation

Does the collaborative nature of CSCL facilitate and enhance the individual's implementation of ESL and thus generate new learning practices?

The justification to have students work in groups and collaborate is often based upon the idea that they can learn from each other. However, this requires scaffolding, direction and inspiration from either a teacher or dedicated students in the group. One participant wrote in the pre-study when describing what the best aspect of working in groups was; "Many people, many minds so many ideas come along."[2] The aspect of *innovation* suggests an opportunity to learn collaboratively and enhance both the individual's as well as the group's learning. The writing process provides equal opportunities for participants to contribute so "many ideas come along" as a result of "many people, many minds". The CSCL provides a structure and affordance which can generate innovative new affordances.

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[2] Pre-Study Day 1. Participant A.

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Schmidt and Bannon define cooperative work as having an augmenting potential. They write how "cooperative work may simply augment the mechanical and information processing capacities" of participants and thus enable the group "to accomplish a task that would have been infeasible" for the individual students alone (Schmidt & Bannon 1992:12). The idea is based upon the social-constructivist assumption that three students can produce a qualitatively better essay than an individual student and also learn more in the process.

In my study I will examine the collaborative nature of CSCL and its multi-purpose spaces and whether it enhances the individual learner's implementation of English in both the conversational space and the creation space (see figure 2).

1.4. Summary

The situations created and analyzed in this study are progressive in nature, as the practice of CSCL in not yet widely used in Norwegian schools. It is a question of describing the phenomena unfolding and understanding the processes. This might in turn lead to new didactical opportunities for learners of ESL.

The situations studied require *trust* among participants and that they *share knowledge* as well as *motivation* to reach a common *object* of collaboration. This interdependency exists in the intersection of *affordance*, *appropriation* and *innovation*.

I hypothesize that innovative ESL practices might emerge when "many minds" collaborate digitally and generate space for innovation linguistically, digitally and didactically.

2. Theory

In the course of the twentieth century, three main approaches emerged to understand the processes of learning.

2.1. Three Learning Theories

In the late nineteenth century, *behaviorism* gained ground and developed further into the first part of the twentieth century. The main preposition posed by behaviorists was that all human actions ought to be considered behaviors. The psychologist B.F. Skinner is well renowned for so-called *operant conditioning* (Woolfolk 200:133). This entailed learning through repetition and rehearsal. Learning was conditioned by stimuli leading to response. However, this causal relationship did not take into account that people have intentions, can assess options, coordinate actions with others and are creative (Hauge et. al., 2007:17). This lead to the second theoretical approach called *cognitivism*.

Cognitivism was preoccupied with the *mind* and dominated learning theory in the sixties. The psychologist Jerome Bruner is a representative for this perspective (Woolfolk.:164) Cognitive theory is focused on individual learning and the ability of a person to construct meaning isolated from others. This is often referred to as the "black box" approach where the objective is to "open" the individual's mind (ibid.:167) Cultural and social factors are secondary and thus often inclined to be merely abstractions of phenomena. Focus is limited to mental processes which generate knowledge acquisition (Hauge et. al.:18).

More specifically, socio-cultural theory is focused on activities with others, especially how activities are constituted through social interaction. This activity is driven by cultural tools such as language, symbols and physical instruments called 'artifacts' (ibid.:18).

The third theoretical approach, the socio-cultural perspectives, can be viewed as both a complement and a successor to behaviorism and cognitive theory. The theories of the Russian psychologist Lev Vygotsky were the inspiration for socio-cultural perspectives on learning (ibid.:250). The socio-cultural approach emphasized the interaction between individuals.

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Socio-cultural perspectives reemerged in the 1990s and have continued to develop into the twenty-first century (ibid.:71). Socio-cultural perspectives have renewed interest in the twenty-first century due to the technological paradigm shift changing the way we access and share information, communicate with each other and how we use technology. Theories such as *connectivism* (Siemens 2006) and *navigationism* (Brown 2006) have been tentatively introduced in order to provide a new scientific approach to new learning situations. I will return to *connectivism* and what Siemens himself calls a "learning theory for the digital age" (Siemens 2006).

The theoretical background for this thesis is socio-cultural and to some extent founded on socio-cognitivism. Activity theory is a particularly appropriate socio-cultural approach in accordance with the main role of this thesis – to study the processes of collaborative learning.

2.2. Activity Theory

The Russian developmental psychologist Aleksei N. Leont'ev made the "distinction between activity and action" which then "became the basis of Leont'ev's three-model of activity" (Engeström 1999:4). The triangle of activity consists of *group*, *tool* and *object*. This model has been further developed by Engeström to include a more complex system of activity (figure 3).

The origins of activity theory extend from German philosophy to Marxist philosophy to the cultural-philosophical theories of Lev Vygotsky. It has certainly attracted new interest in the 1980s and the 1990s (Engeström 1999:19-20) and beyond (Hauge et.al. 2007:97). The Finnish activity theorist Yrja Engeström comments that human "activity is endlessly multifaceted, mobile, and rich in variations of content and form" (ibid.:20). Activity theory makes an important distinction between *activity* and *action*. Actions are individual, and activities are collective operations (Hauge 2007:18). The main purpose of the activity is not the activity itself. It needs a direction. Learning activities require a goal, an object (ibid.:19).

We construct our own activities "by means of material and discursive, object-

oriented actions" (Engeström 1999:10). Rather than study texts separately, activity theory takes on a broader perspective and sets forth to include the complexity of the collective activity.

Engeström emphasizes that "[t]he study of an activity system becomes a collective, multi-voiced construction of its past, present, and future zone of proximal development" (Engeström 1987 in Engeström 1999:10). Activity theory is a particularly fruitful approach in my study as the case studies consist of groups of students who collaborate on a text through a "multi-voiced construction" in a virtual environment.

2.3. Object-Oriented Collaboration
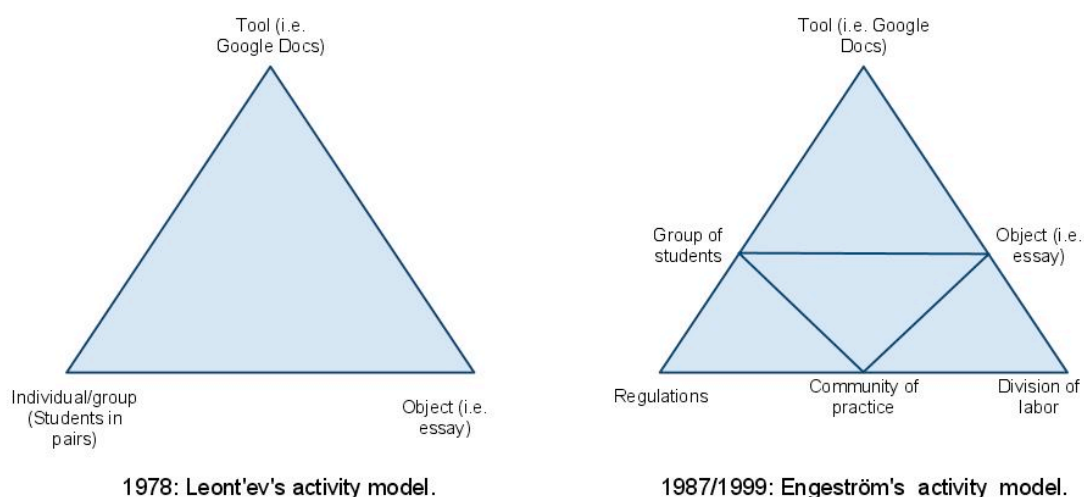
Figure 3: Leont'ev's and Engeström's activity system models.

Leont'ev developed an *activity model* (Leont'ev 1978) which constitutes the concurrence of individuals/group, tool and object. However, Engeström expanded and refined this model to a more elaborate activity model, or *activity system* (1987/199). Engeström illustrates how the object-oriented collaboration is being regulated by subjacent institutional regulations native to the group's institution (Hauge 2007:78-79). The triangle within the triangle illustrates how the *group of students* through the *community of practice* negotiates the *object of writing an essay*. This activity exists within the triangle of the *tool*, *division of labor* and *regulations* set by the teacher, the school and society.

Instead of one triangle, Engeström proposes a more complex system of activity which includes the two triangular concurrences. This diversification accentuates the complexity of collaboration. Additionally, Hauge et. al. points out the value of using collective activity systems to assess and understand some of the frustrations among teachers and students during group work (ibid.:80). The negotiation of object is of particular interest as student activity might divert into other directs than the teacher initially intended.

2.4. Object

The activity of collaborative writing is a collective action and is marked by "knowledge creation" (Hakkarainen, Palonen, Paavola and Lehtinen 2004). Knowledge creation can be understood as new knowledge for the group and/or the individual student. Bereiter and Scardemalia call knowledge creation «knowledge transformation" (Weigle 2002:33) where transactions of knowledge transcends the more passive form of knowledge telling. On the one hand knowledge can be viewed as something learners acquire and accumulate before reiterating it. On the other hand it can be viewed as an action of internalizing knowledge and *transforming* it. Ideally, CSCL generates practice where knowledge transformation and creation occurs.

Naturally, CSCL is driven by the need for language in order to connect, collaborate and weave a web of shared understanding. To make this collaboration occur, one must have artifacts or tools (see figure 3), to help and support the collective shared activity.

In all lesson planning, it is clearly vital to establish a learning objective, or a goal or an *object*, for the activity. The object is interlinked with assessment. The object can manifest itself in various ways through the progression of the activity. The action might appear different to the teacher than to the students. The object comes into sight through the students' orientation towards a given task, how they negotiate meaning and use cultural tools, and how they choose to present their solutions in the finished product. This is knowledge creation if done successfully.

Assessment is mainly focused on the individual student and the product

rather than process (Hauge 2007:80). The objectives are criteria upon which the product is assessed, i.e. the finished essay or the oral exam.

The object is neither easy to comprehend nor easy to identify (Hauge 2007:84-85). The students' negotiation of meaning and purpose might give way to a "horizon of possibilities" (ibid.), a set of perspectives which all in its own way are fixed on the object (ibid). The groups' fixation on object can also be understood as «the negotiation of intersubjectivity» (Althauser and Matuga in Bonk et. al., 1998:193) which is to say that the group members are all aware of the communication's purpose.

Ideally, using CSCL in the ESL classroom can open possibilities for students to fulfill the teacher's object of language learning, collaborating successfully *and* create knowledge in the process and internalize it individually. This requires clarity when giving task instructions, aims and objectives, assessment criteria and the affordance of the artifact or *tool*, which in this case is Computer-Supported Collaboration (CSC).

2.5. Artifacts

An artifact is a tool or a vehicle for us to engage and interact with each other. In the case of this paper, the tool is CSC[3]. The German philosopher Martin Heidegger used Aristotle's' theories of artifacts and how they influence our cognitive processes to explore the idea of artifacts. Artifacts by definition open up new worlds and provide us with new insights. A hammer can be used to build a shelter and thus protect us, a wine bottle signifies the transition from barrel to glass and reminds us of the joys we reap from the hard work in the vineyards (Hauge 2007:27).

In the same way learning management systems (LMS), wikis or CSCL can help us to act in new ways and thus see new connections. The collaborative use of these digital artifacts can unify us in the same manner previous and existing technologies have done. The clock and the calendar have not changed due to

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[3] Computer-Supported Collaboration (CSC) is the tool itself, the groupware, while Computer-Supported Collaborative Learning (CSCL) is the method. In this paper I mainly discuss the method of CSCL.

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their technology in itself, but due to the activities communities themselves have established (ibid.). This *community of practice* (see figure 3, 1987/1999) can spur knowledge-building with an object, i.e. completing an essay. The *regulations* are represented in assessment criteria whilst the *division of labor* is part of the group's negotiating of intersubjectivity, i.e. the degree of collaborative success. Artifacts influence the way we think and act and how we communicate, and thus are important components in CSCL.

2.2. Perspectives on Language, Literacy and Assessment

In this section, perspectives on language, literacy and assessment pertained to the analysis will be presented. Two units, or areas, will be analyzed. They can be referred to as *product* and *process*. Product is simply the essay written collaboratively by the groups, whereas the process refers to communicative acts in the two tasks of either *chat* or *oral discussion*.

2.2.1. Introduction

This study relies on my theoretical model of *affordance*, *appropriation* and *innovation* (see figure 4).
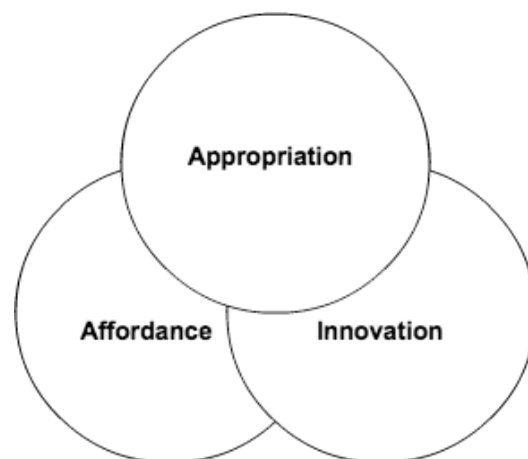
Figure 4: Three overlapping areas for exploring the thesis (Oddvik 2011).

The *unit of analysis* is the *community of practice*, i.e. the groups of three students and how they solve the given task of writing an essay in English using CSCL as their method. By means of language in the form of multi-voiced dialogues (i.e. chats), individuals can engage in knowledge creation and progress in their abilities to transform knowledge and internalize it as a group.

The intention of the theoretical model is to approach the process systematically. By studying the *affordance* of the tool (CSC), the students' *appropriation* of CSCL as a learning strategy and the degree of *innovation* I hope to shed some light upon the processes and mechanisms of collaborative writing (CSCL) in my analysis. The participants had to be digitally literate as well as literate in English and socially competent in order to create a *community of practice* which could function (see figure 5).

Figure 5: Three overlapping perspectives for the analysis (Oddvik 2011).

In order to assess new practices of CSCL in the ESL classroom I had to develop a framework for measuring the degree of fulfillment and success (see figure 5). In the case of this study, assessment criteria were developed for not only assessment purposes, but also for analytical purposes. Categories were established and criteria created to provide the participants with guidelines for their writing. The Common European Framework of Reference for Languages (CEFR 2001) offers a toolbox to understand and facilitate learning as well as design of collaborative tasks and the subsequent analysis of them.

2.2.2. Common European Framework of Reference for Languages

The thirteen assessment criteria given to students in my study were modeled after the Common European Framework of Reference for Languages (CEFR 2001). The Council of Europe developed the framework with the purpose of describing a student's language proficiency. The CEFR established a proficiency scale to improve teaching and assessment of language education, and to help language educators facilitate language learning in a qualitatively

better fashion.

Competencies. The framework "defines levels of proficiency which allow learners' progress to be measured at each stage of learning and on a life-long basis" (CEFR 2001:1). The design of the accompanying assessment criteria given to students has root in the pragmatic competences outlined in the framework.

The three pragmatic competences are *discourse competence, functional competence* and *design competence. Discourse competence* is concerned with the learner's ability to produce organized and structured written or oral texts, while *functional competence* is the ability to communicate with clarity. *Design competence* refers to the ability to organize material "according to interactional and transactional schemata" (ibid.:123), which can be interpreted as encompassing content in the broadest sense, i.e., arguments and discussion for instance.

Assessment Criteria. The essays were assessed on *language, content* and *structure* (CEFR:14). The process itself was assessed and analyzed based upon the degree of *interaction* and *mediation* in the groups (ibid.). The student essays were not assessed for grading purposes, but only used for research.

On the one hand assessment criteria were intended as a framework for participants and their essay (product). On the other hand they were intended for my research analysis of the product (essay), but also of the process (chat). CEFR states that language competence is "activated in the performance of the various language activities, involving reception, production, interaction, or mediation" (ibid.:14). This is particularly useful when analyzing students' written chat communication (process).

However, the term *production* is the main focus for the essay tasks' success criteria, i.e. to what degree the groups succeed in producing an essay together. Production is understood as presentations or written work, and a "particular social value is attached to them" (ibid.) As the task studies are concerned with collaborative writing terms such as *interaction* and *mediation* are specifically applicable.

Interaction. The CEFR defines *interaction* as an activity where two or more individuals partake in an oral and/or written transaction where production and reception amalgamate (ibid.). The framework emphasizes the importance which is "generally attributed to interaction in language use and learning in view of its central role in communication" (ibid.).

A decade ago CEFR quite rightly predicted; "interactive man machine communication is coming to play an ever more important part in the public, occupational, educational and even personal domains" (ibid.:82). Communication occurring in the so-called social media represented by Facebook and Twitter for instance is indeed written and interactional and taking place in domains, which can be defined as pseudo-personal or semi-public. Chat-technology has a longer history than wall posts and tweets, and continues to dominate the communication online. CSCL is a natural part of the educational domain and is founded on the premise that the interactional practices occurring in fact have a didactical potential.

The situations created for this specific study included both a digital communication channel and an oral discussion for comparative reasons. The CEFR does also provide tools to assess and even analyze interactional strategies. The complexities of interactional communication encompasses "both receptive and productive activity as well as activity unique to the construction of joint discourse" (ibid.:84).

Framework. The negotiation of meaning among interlocutors during their task solving is indeed a sophisticated series of activities. According to CEFR these constitute *planning*, *execution*, *evaluation*, *repair*, *initiative*, *cooperating* and *seeking assistance* (ibid.:84-85). Planning entails "the activation of schemata or a 'praxogram'" (ibid.), framing and consideration. The schemata is essentially the rulebook of communication in a group, and interlocutors must commit to «possible and probable" (ibid.) exchanges, which is referred to as *framing*. Framing enables a group to identify indifferences in opinion forming and establish order of turn taking, and thus develop the group's intersubjectivity.

Execution encompasses acts of taking initiative, cooperating on both an

interpersonal and an ideational level as well as mastering obstacles and seeking assistance (ibid.:85). Evaluation activities entail a group's self-governance skills and thus monitoring ability according to established schemata and success rate. A group must additionally inhabit mechanisms for repair, which enable interlocutors to ask for and giving clarification and sort out misunderstandings, which arise (ibid.). The level of mastery within a group of the various activities determines the quality of the interaction. Needless to say, the quality of interaction has a great impact upon the collaborative product if one considers equal contributions as an objective, which ought to be the ideal for any group work.

The third level in Engeström's three-level understanding of interaction formulates a goal of learning maximization by means of *reconceptualizing*.

The CEFR provides a theoretical toolbox for both the task design and the analysis of essays and communicative process. However, which skills must today's students foster in order to succeed in collaborative environments online? Do they already have it, or must they be cultivated and developed? Is learning something else when it occurs in a digital setting? Questions are multiple, but the CEFR outlines a framework, which is particularly applicable to joint text production in online environments.

2.2.3. Digital Literacy

In a digital age information is readily available to anybody who is Google literate[4]. George Siemens argues that the "know-where" becomes more important than the "know-how" and the "know-what" (Siemens 2004:1) in a reality where information is easily accessible to users. In my study participants were also asked to use the Internet and find appropriate sources to use in their essay. Although "know-how" and "know-what" will continue to be important skills, the ability to critically assess the validity of sources, make connections, and reason yourself based upon the knowledge and information you find becomes an essential skill.

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[4] Nicholas Carr argues in an article in The Atlantic (8/2008) entitled "Is Google Making Us Stupid?" that most people are lazy and *google* what they are searching for without a critical approach. (http://bit.ly/gPJkjP).

"The ability to synthesize and recognize connections and patterns is a valuable skill" (ibid.:2). How do we then design a learning environment where the teacher is not the sole provider of information and where we facilitate synthesizing activities?

Marshall McLuhan observed more than 40 years ago how children were bewildered when entering their classrooms and finding information scarce. Today's students are growing up digital in the twenty-first century and are perhaps equally puzzled with an overload of information on their screens. Have education indeed been transformed to foster relevant skills? Professor and author of *Wikinomics* (2006) and an advocate of mass collaboration, writes "It's not what you know that counts anymore; it's what you can learn" (Tapscott 2009:127) and suggests that students' ability today to "think creatively, critically, and collaboratively" is essential in order to "respond to opportunities and challenges with speed, agility, and innovation" (ibid.).

Has the education system facilitated the cultivation of digital skills? The Norwegian reform of 2006, Knowledge Promotion (LK06), explicitly emphasizes the use of *digital tools* on par with reading, writing, speaking and mathematical skills. According to LK06 «being able to use digital tools (...) enable authentic use of the language and opens for additional learning arenas in the subject» (English curriculum 2006:2).[5]

Furthermore, *linguistic competence* is highlighted as «a requirement for using digital tools» (ibid.). A critical approach to sources and legal competence related to copyright and privacy issues are also considered *digital skills*. Collaboration and working digitally appear to go hand in hand to an increasing degree.

Which systems do we have available to implement learning practices which facilitate for digital skills in collaborative environments? Perhaps more importantly, how does educators understand and view complex communicative interactions when they unfold collaboratively? The potential for learning in groups has been explored for decades, but how do knowledge

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[5] Retrieved 05.03.2011 (http://bit.ly/gFmadT)

transform in multi-voiced dialogues?

2.2.4. Dialogues and multilogues

All communication exists *between* individuals and can be identified as a form of dialogue. The Russian linguist and philosopher Mikael Bakhtin developed theories of *dialogism*, which essentially can be understood as a theory where meaning is only negotiated together with others. Through dialogical participation we gain access to a plethora of perspectives. Dialogism is rooted in social experience and contexts (Holquist 2002:43). Whether collaboration occurs in a physical or a virtual environment it is inherently a social practice and in order for it to function participants must communicate through the means of language and dialogue, either in the form of text or speech.

Bahktin's theories from the literary sphere have been further developed in the social sciences, and theories of social practice are pertinent to this particular thesis and its main objectives of linguistic and collaborative mechanisms. The theory of social practice as understood by Lave and Wenger's *situated cognition* "emphasizes the relational interdependency of agent and world, activity, meaning, cognition, learning, and knowing" (Lave and Wenger 1991:50).

In a functioning student group one might observe an emerging *language community* where the individuals contribute with their thoughts and ideas. Hence the group members are mutually dependent on each other as their contributions are intricately entwined, and although there might exist a multilayered substance flow the group shares *the object* as understood by Engeström.

Meaning is constructed in dialogue – *through* (dia) *language* (logos) – and by the means of a new expression in the intermediate zone of written and spoken communication, namely the *multilogue* (Hauge 2007:37). In line with Bahktin's theories, students utilize their knowledge, which is constructed in collaboration and interaction with others. The social practice of group work and participation is "mutually constitutive", and "thus dissolves dichotomies between cerebral and embodied activity, between contemplation and

involvement, between abstraction and experience" (Lave and Wenger 1991:52).

The multilogue can occasionally challenge the teacher as two different discourses emerge. On the one hand there is the teacher's learning intentions (learning/task design) and obligations/intended learning outcome (learning/assessment), and on the other hand there are the students' perspectives. Students might be driven by a motivation to finish quickly, learn less or slower, learn more or faster or learn differently. The diverging discourses can be identified by the use of language. Students might not conform to Standard English and use chat-lingo, while the teacher is interested in the implementation and use of correct English spelling and grammar. This might appear bewildering for a teacher, when dialogues risk excluding the teacher.

The teacher clearly observes that learning is unfolding, but not in the forms intended or expected. The multilogue extends beyond the school's discourse of rules and expectations, and thus challenges the concept of what the institution considers to be learning (Hauge 2007:38). Dialogues and multilogues are complex and hard to decipher, but a hallmark of group work both with and without digital tools. The cognitive processes occurring in a group, and its individuals' affect each other. The processes affect the communication and the degree of success in reaching a shared goal. This goal should transcend individuals' dominance over one another and unite group members in mutual learning and knowledge transformation.

2.2.5. Knowledge Telling and Knowledge Transformation

One of the paradoxes of writing, pointed out by Bereiter and Scardemalia (1987), is that "virtually everyone in a literate society can learn to write as well as they can speak, while on the other hand, expertise involves a difficult, labor-intensive process that only some people master" (as cited in Weigle 2002:31). Bereiter and Scardemalia make the distinction between *knowledge telling* and *knowledge transforming* in their two-model description of writing (ibid.:31).

Knowledge telling does not entail a lot of planning or revision, it is ”unproblematic” and ”natural”, and it lacks what Bereiter and Scardemalia point to as the main problem of writing, namely ”the benefit of conversation” (ibid.:31). When people talk they help each other in the course of the conversation. ”They provide each other with a continual source of cues – cues to proceed, cues to stop, cues to elaborate, cues to shift topic, and a great variety of cues that stir memory.” (Bereiter & Scardemalia, 1987:55 in Weigle 2002:31)

In contrast to knowledge telling, knowledge transformation requires both more cognitive activity and practice. Instead of reproducing and copying down thoughts, knowledge transformation is a process where writing is used ”to create new knowledge” (ibid:33). The act of writing may in itself have a direct impact on how a writer is expressing herself. When several writers come together in a *creation space* knowledge transformation can be possible as their contributions affect each other. Knowledge transformation requires problem analysis and goal setting, which are two domains which Bereiter and Scardemalia refer to as ”content problem space and the rhetorical problem space” (ibid.:33).

The two work in tandem and may produce answers for the respective problems that may arise in the writing process. The distinction between *content problem space* and the *rhetorical problem space* is helpful and provides us with an ideal illustration of the complexity of writing. The distinction between *content knowledge* and *discourse knowledge* is still highly applicable when assessing writing in a collaborative setting.

Jerome Bruner's ideas of *scaffolding* do also provision an appropriate approach to understand collaborative writing. Scaffolding is understood as instructional and supportive elements «in learning tasks that may be beyond their current capabilities by controlling task elements that make learning manageable within their current capabilities» (Althauser and Matuga 1998 in Bonk et. al., 1998:193). In my study a scaffold was established represented by a digital environment for production and communication, and an instructional task sheet with assessment criteria.

Althauser and Matuga noticed the occurrence of *intersubjectivity* during scaffolded instruction when having subjects collaborating digitally. According to Althauser and Matuga intersubjectivity is common knowledge, or «shared understanding among participants about what is being said, communicated, and discussed» (ibid.). This can also be understood as *articulated awareness* (Dourish and Bellotti 1992:1) Without intersubjectivity, Althauser and Matuga write, scaffolded learning is not feasible (ibid.:194). It might not be this strict, but negotiation of meaning, division of labor and group regulations must be articulated either actively or passively to establish an awareness of the object of the collaborative work.

Knowledge transformation occurs in social settings where interaction aids the cognitive processes. This in turn provides a scaffold that facilitates and may optimize the individual's learning in a group. The task given to the groups provide a scaffolding containing support for developing a discussion based upon *content knowledge* as well as *discourse knowledge*. The hypothesis for this study relies heavily on the idea that it is easier to refine and develop skills in knowledge transformation through collaboration given that tools and instructions are supportive and instruction is clear.

This will naturally constitute an evaluation of the tasks' purpose and how transparent assessment practices are to the respondents. Moreover it requires attention to the nature of assessment, or as in the case of this research paper, the scope of the analysis.

2.2.6. Assessment, Test Usefulness and Analytical Scaling

Assessment is not an act of assessing a piece of work once, but rather a set of processes. Assessment processes are used in order to understand and draw conclusions regarding students' learning processes, progress and learning output (Smith 2001 in Smith et al. 2009:24).[6] The objective of *formative* assessment is to enhance a student's learning process and thus ameliorate progress and learning output. However, assessment is assigning value to acts

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[6] "Vurdering er en gruppe prosesser som vi bruker når vi prøver å forstå og trekker slutninger om elevenes læringsprosesser, fremgang og læringsutbytte (Smith 2001)."

of learning (ibid.:42) whether it is a formative process or a summative assessment. A grade is given along with a summative comment.

Transparency is crucial when setting learning objectives and success criteria. Assessment criteria must be clear and transparent in a language understood by the students, and ideally tasks should motivate students to reflect and synthesize. Professor in higher education, Royce Sadler, calls it *fidelity* in which fidelity "can be thought of as the extent to which something actually is what it purports to be" (Sadler 2009:2). Fidelity entails a "process of classification" (ibid.) and seeks to define academic achievement in the context of assessment.

Achievements can be assessed in a continuum of levels, grades, bands or attainment goals. However, Sadler argues that the education system, particularly in higher education, may not be transparent in what is "the acquired learning" and thus graded. "Acquired learning may be referred to as knowledge, skill, proficiency, capability, competence or performance" (ibid.: 4). Assessment practices must additionally be reliable, which means to what extent a test measures the same when repeated with other respondents (Smith et al. 2009:41).[7] For teachers this entails developing practices that prove to be predicable and reliable over time. Assessment without transparency, fidelity validity and reliability, reduces assessment to a meaningless practice of score giving, which does not help nor motivate the student.

The main purpose of formative assessment is to provide the teacher, and perhaps more importantly the students with information that can help improve the learning process. As Black and Wiliam (1998) points out, it is perhaps most importantly the student who is the «ultimate user of assessment information that is elicited in order to improve learning» (Black and Wiliam 1998:6).

Assessment should be designed to enhance learning. Assessment for learning (AFL) combines diagnosis and adjustment of teaching practice with the

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[7] "Reliabilitet/pålitelighet handler om i hvilken grad en test måler det samme når den blir gjentatt med andre respondenter."

objective to *augment* learning according to the student's abilities and potential (ibid.:3). This means that tests and tasks should be adapted with AFL in mind. The design of tasks ought to be guided by its purpose, i.e., its usefulness.

Weigle uses the framework for language testing developed by Bachmann and Palmer (1996 in Weigle 2002), which define test usefulness by presenting six qualities. These include *reliability*, *construct validity*, *authenticity*, *interactiveness*, *impact* and *practicality* (Weigle 2002:48). Reliability refers to what has already been stated above; consistency across different characteristics or facets of a testing situation (ibid.:49).

Construct validity is essentially "the meaningfulness and appropriateness of the interpretations that we make on the basis of test scores» (Bachmann and Palmer, 1996:21 in ibid.). The authenticity quality asks the task designer to set a task which is relevant to the "world beyond the test" (ibid.:51), while interactiveness is defined as "the extent and type of involvement of the test taker's individual characteristics in accomplishing a test task (Bachmann and Palmer, 1996:25 in ibid.:53).

The six qualities are helpful when designing a test task, or a written task as in the case for my particular study of collaborative writing tasks. The assessment of essays required reliability as well as construct validity. Aspects discussed such as practicality, authenticity and interactiveness must also be given attention. As Weigle points out, the act of striking an appropriate balance between the six qualities is a precarious one.

There are three main types of rating scales, or scoring approaches, which Weigle divides into *primary trait scales*, *holistic scales* and *analytical scales* (ibid.:109). The analytical scale is the most appropriate for my analysis of the essays, but for comparative purposes I will briefly explain holistic scales and compare it to analytical scales. Both holistic and analytical scales are marked by the intention of whether the essay will be given a single grade or multiple grades (ibid.). Holistic scoring is an approach which relies on the overall impression of the text (ibid.:112). This approach, writes Weigle, "assumes that all relevant aspects of writing ability develop at the same rate and can thus be

captured in a single score; (...) scores correlate with superficial aspects such as length and handwriting" (ibid.:121).

As the purpose of my study calls for a more diagnostic approach to assessment the analytical scale suits the purpose better than the holistic scale. The CEFR provides my study with the theoretical framework for the analytical scale. Whereas holistic scales focus on an overall assessment, analytical scales focus on multiple aspects of writing based upon a list of criteria. The task design for the case studies included assessment criteria that implemented the categories *language*, *content* and *structure*.

The advantage of an analytical approach is that it generates a more useful diagnosis of the writers' abilities. Reliability is also higher as reliability increases with the amount of details rated in analytical scales compared to holistic scales. The analysis of the essays will rely on analytical scales for its discussion, and subcategories will be further presented and used in the diagnostic analysis.

2.3. Perspectives on Collaboration and Technology

The hypothesis of this paper is that CSCL can assist and facilitate for language learning in the ESL classroom. What characterizes collaboration, and does technology specifically make it different from collaboration in non-digital environments?

In this chapter I will present ideas and theories applicable to the field of collaborative learning in ICT-rich environments. Perceptions of educational technology and the digital skills of students growing up in the twenty-first century are divided. Some hail the so-called "Net Geners" as "the new scrutinizers" who have "the ability to distinguish between fact and fiction" (Tapscott 2009:80), and form complex and rewarding collaborative learning environments which are student-centered and constitute the "2.0 school" as a reference to the socialization of the web coined Web 2.0 (Tapscott:144). Others again express skepticism towards the claimed benefits of the net-enabled forms of communication, collaboration and information seeking, and point to the increasing development of lack of concentration, weak social links

and the general fragmentation of reality (Carr 2010).

Regardless of this, systems are in place to conduct networked learning in an increasingly connected world. The question remains to be answered whether the potential of these educational digital tools truly function in a qualitatively satisfactory manner for ESL students. Does CSCL represent something new which teachers and students can benefit from? How do we assess the validity of the learning outcomes? How can we know we are using the tools in an educational manner? In terms of linguistic quality the potential is there for language learning as written text is still the predominant form of medium online.

2.3.1. Networked Learning in a Connected World

The word *text* is derived from the Greek word 'weaving' as it is used in 'textile' (Russell, 2002:68), which can provide an understanding of the word *context* that can be construed as 'something which weaves together'. Ludwig Wittgenstein once wrote "When I think in language, there aren't meanings going through my mind in addition to verbal expressions; the language is itself the vehicle of thought" (Harris 1990:27).

Text and spoken language are two pivotal aspects of communication and provide illustrations of how humans *together* communicate and negotiate meaning. Metaphors for the digital age include images such as 'web' and 'net'. The etymology of *text* is 'weaved together', and hence emphasizes the close relationship between *context* and *network*.

Learning and teaching does not take place in a singular context, but as part of one or more contexts. Our thinking is not de-contextualized, but closely connected with situations, flow, time, place and available resources (Säljö 2000 in Hauge 2007:25). However, as Wittgenstein pointed out in his analogy, 'language is the vehicle of thought', and in networked learning language does also take other forms in terms of digital tools and virtual environment, or *artifacts*. Communication continues to be negotiation of meaning, but might transform when taking place in new digital environments using new artifacts. The use of artifacts does not undermine the importance of

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communication between individuals in a group, and the knowledge-building nature of their activity that might trigger response and thought. The dialogue is the fiber of the network.

George Siemens is a theorist on learning in digitally based societies, and has developed theories of *connectivism*. Connectivism is defined as a "learning theory for the digital age" and was developed as a consequence of the limitations of previous theories on learning such as behaviorism, cognitivism and constructivism (Siemens 2006). "Chaos is a new reality for knowledge workers," notes Siemens and calls for new practices in our educational system.

> "Unlike constructivism, which states that learners attempt to foster understanding by meaning making tasks, chaos states that the meaning exists – the learner's challenge is to recognize the patterns which appear to be hidden. Meaning-making and forming connections between specialized communities are important activities."

> (Siemens 2006)

As a consequence, this in turn calls for a new assessment practice in order to enable students to what Tapscott deems are abilities to "think creatively, critically, and collaboratively" (Tapscott 2009:127). Connected learning and the theory of connectivism consist of the element of collaboration and networked knowledge formation.

The author Seth Godin has called this human phenomenon of collaboration *formation of tribes* (Godin 2008). The ability to form groups, collaborate together to achieve shared goals are part of connected learning, and in a connected world "the ability to think and learn and find out things is more important than mastering a static body of knowledge" (Tapscott 2009:127).

The digital age is also known as *the information age*, and for students of today the information is readily available, and not only as text, but as an astonishingly abundance of omnipresent audio-visual media. Digital literacy is as important as other core skills expressed in present curricula. The dangers of copy-and-paste-culture can actually be criticized of being a sign of tasks that were designed for a teaching model that no longer serves a meaningful purpose in a context where we are connected digitally.

I would argue that the theory of connectivism, although not refined, could be seen as an important step towards relevant assessment. Rather than having students process information in a teacher-based classroom environment, a practice which equips students to tackle information outside the classroom in a more student-based manner is welcome. This might also spur a more independent and critical student who is more prepared for a networked work life as well.

Competences in group work and collaborating with others continue to be valued by society as well as becoming an essential feature of modern work life as well as education. Paradoxically, although the rise of the individual has gained speed in the post-modern world, formation of productive collaborative entities is both valued and is an asset for a society. Research in the learning sciences have traditionally tended to focus on the individual's learning in collaborative environments, but not necessarily focused on the act of *collaborative learning* as a single unit of analysis.

In recent years an emerging branch of researchers, among them professor of information science Gerry Stahl has studied group cognition. Stahl built upon existing theories of group learning inspired by theories developed by Vygotsky and Piaget. However, Stahl argues that these theories were intended for psychological approaches on an individual level, and the science of group cognition is focused on the group as a solitary entity.

CSCL differs from other domains of research in the learning sciences as it "takes its subject matter *collaborative* learning, that is, what takes place when small groups of workers or students engage together in cognitive activities like problem solving or knowledge building" (Koschmann (1996) in Stahl 2010:24). Studies of *group cognition* is concerned with eliciting events "at the group unit of analysis" (Stahl, 2004b in Stahl 2010). Historically, group processes have been studied for their non-cognitive attributions or all cognitive activities have been credited individuals partaking in group work (ibid.:25). Theories which have endeavored to cover the cognitive aspects at the group level include *distributed cognition* (Hutchins, 1996), *actor-network theory* (Latour, 2007), *situated cognition* (Lave & Wenger, 1991),

ethnomethodology (Garfinkel, 1967) and *activity theory* (Engeström, 1987) (Stahl 2010:25) which Stahl criticizes for being nominally focused "on interaction of individuals with artifacts rather than among people" (ibid.) and thus not suitable for research on cognitive processes on the group level. Subsequently, the theory of group cognition postulates "the *group* constructs, maintains and repairs a joint problem space" (ibid.). Stahl maintains that the approach of group cognition is particularly pertained to studies of "knowledge work and knowledge-building activities" (ibid.).

Ideally groups, which engage in collaborative work, cooperate in shared knowledge-building activities. Interactions and group activity are by no means limited to a physical space, but can ensue in threaded discussions or in chat logs in a digital space. The sharing of knowledge requires a form of communication, and in the case of virtual environments this is often a written one. However, writing is an art of mastering communicative clarity as well as linguistic finesse. In the subsequent analysis I will discuss the collaborative aspect in relation to activity theory and group cognition, i.e. the students ability to use the potential of the CSCL.

2.3.2. Computer Supported Collaborative Learning (CSCL)
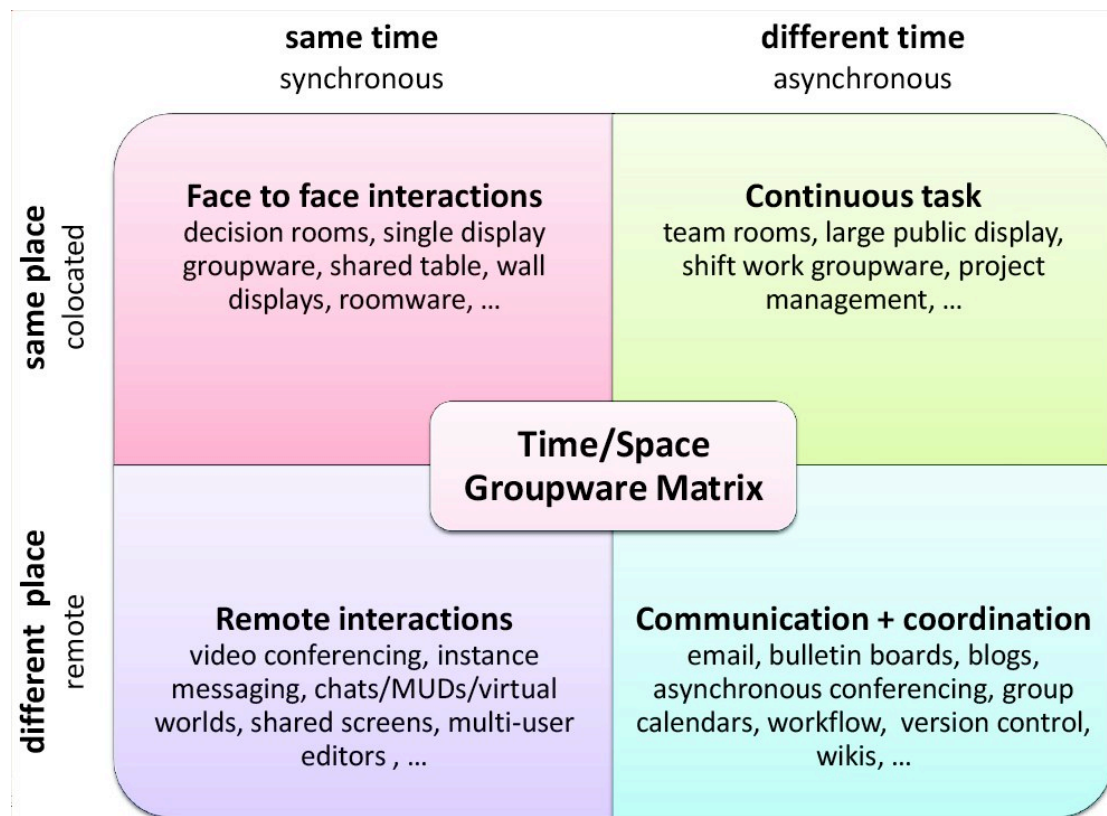
Figure 6: Time/Space Groupware Matrix for CSCW.[8]

The field of Computer Supported Collaborative Learning (CSCL) is a specialized field within Computer Supported Collaborative Work (CSCW) (Montano 2005: 221). CSCW, which Greif and Cashman in the 1980s defined as "ways of designing systems - people and computer systems - that will have profound implications for the way we work" (Greif 1988:6) later developed into the subcategory of CSCL. Figure 6 illustrates the various interactions in a time/space matrix. CSCL can, as in the case of CSCW, function in all areas.

Whereas CSCW is preoccupied with studying groupware in the business field, CSCL is limited to the studies of groupware[9] for educational use (ibid.) In the nineties Koschmann (1996) recognized CSCL as an emerging paradigm of educational technology (Lipponen 2002:72). The term *computer-supported collaborative learning* did first appear in the early nineties (Koschmann, 1994

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[8] Wikimedia Commons Public Domain Use Applies. (http://bit.ly/hha7Ja)

[9] Software which enables groups to collaborate digitally both synchronically and asynchronically.

in ibid.). Attempts to create taxonomies to differentiate between various forms of CSCL have been numerous and continuous. Bonk et al. (1994 in 1998) presents five levels of collaborative writing tools which can be used for school learning (ibid.:7). Research within the field of CSCL continue to develop as a result of technological innovative advances, and the development of quality assessment of the different tools may still be in its preliminary stages (ibid.:11).

However, as the table below (table 1) illustrates, the degree of interaction on a continuum of asynchrony to synchrony separate the five levels. The case study conducted for this particular project is solely operating on Level 4. On this level two or more people engage in real-time text collaboration in a document concurrently. Other characteristics include changes which immediately are visible to participants and discussions might take place in an embedded chat box (ibid.:10).

Level 1: Interaction: Electronic Mail and Delayed-Messaging Tools
Level 2: Interaction: Remote Access/Delayed Collaboration
Level 3: Interaction: Real-Time Brainstorming and Conversation
Level 4: Interaction: Real-Time Text Collaboration
Level 5: Interaction: Real-Time Multimedia and/or Hypermedia Collaboration

Table 1: Levels of Interaction. (Bonk et al.: 1998: 8-11)

The real challenge when studying CSCL tools consists of developing reliable assessment criteria in order "to understand and enhance student text generation and evaluation skill" (ibid.:11). Nonetheless, CSCL research continues to delineate and study the various learner-centered environments. The documentation of these digital environments and its social interactional processes does, as Bonk points out, "respond to a broad array of educational needs" (ibid.:20). Collaborative learning has many characteristics, which is suitable to technological environments defined by interconnectivity that put the learners in the centre of the groupware.

How do we know learning is indeed taking place in such environments? CSCL tools offers major technological opportunities in education, and continue to

become more interactive, distributed and collaborative (ibid.:5). CSCL theories provide a theoretical framework for understanding and assessing the quality of learning processes. Theories and research stemming from the field of CSCL will provide a useful framework for the subsequent discussion in this paper when analyzing the data material.

Why should a teacher use CSCL when facilitating for language learning? Possible answers might regard language as an important reason as it is a means for communication and social interaction. Collaboration might not exceed the learning outcome of individual work, but it might provide students with a social and educational arena to perform and contribute with different skills. It might also create more authentic work situations where assessment becomes more transparent and valid to students.

2.3.3. Collaborative Learning Theories

The main idea of collaboration rests upon a preposition that working together can benefit the collaborators through positive interdependency and augmentation. Unfortunately, in terms of general collaboration and collaborative learning, this is not always the case. Group work requires commitment and highly developed communicative skills in a group in order for it to function. Not only does it require predicable instruction from teacher, instructor or educator, but also a receptive and motivated group of learners.

Lipponen suggests to view collaboration as a «special form of interaction» (2002:73), and adds that within the learning sciences different definitions of collaboration exist. Collaboration for educational purposes is commonly viewed as "co-construction of knowledge and mutual engagement of participants" (ibid.). How does one facilitate this? Engeström (1995 in ibid.) provides a three-level understanding of interaction which includes "coordination, cooperation and reflective communication" (ibid).

The coordination level has participants acting according to their own role with own actions that are scripted. The cooperative, or collaborative level, engages participants in focusing on finding a mutually acceptable way to conceptualize a shared problem (ibid.). The third level, the reflective communication, has

actors "reconceptualizing their own interaction system in relation to their shared objects of activity" (ibid.). Again, the objective is to maximize learning through interaction.

Traditionally, three general theoretical perspectives have affected the research field of collaborative learning, and they include *mutual social dependency*, *cognitive developmental theory* and *behavioral theoretical perspectives* (Haugaløkken et al. 2003: 28).[10]

Kurt Lewin (1935, 1948 in ibid.) maintained that «the heart of a group is the mutual dependency between group members (as they share a mutual goal)» (ibid.). The mutual dependency constitutes a group that is a "dynamic whole" where an individual's, or a sub-group's change in behavior results in a change in the whole group (ibid.). Furthermore, Lewin adds that "an inner state of tension in each member motivates movement towards a common shared goal" (ibid.:29).[11]

According to Stensaasen and Sletta (1989) as referred to by Haugaløkken and Aakervik (2003) "all intrapersonal cooperation is defined by positive interdependence"[12] (Haugaløkken 2003:369), which entails that the group shares a common goal, but reinforcing each other's strengths. Positive interdependence "determines participants' efforts to achieve, the quality of relationships, and psychological adjustment" (Hertz-Lazarowitz and Miller 1995:175) which in turn "lies in an individual's ability to interact with others, to take into account others' perspectives in writing and revising" (Weigle 2008:233). Naturally, a considerable amount of research has already been done in the field of collaborative work without the aid of digital tools. As Haugaløkken points out "the key to collaborative learning is facilitating of

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[10] "Det er minst tre generelle teoretiske perspektiv som har påvirket forskning om samarbeidslæring: Teorier om gjensidig sosial avhengighet, kognitiv utviklingsteori og atferdsteoretiske synsmåter."

[11] "(E)n indre spenningstilstand hos hver enkelt motiverer bevegelse mot å oppnå de felles ønskede mål."

[12] "(...) alt mellommenneskelig samspill er karakterisert av gjensidig avhengighet (...)" (36)

positive   interdependence"   (Haugaløkken   2003:48).[13]   Positive interdependence may in turn require transparency and clear guidelines.

2.3.5. Socio-cultural Approach to Collaborative Technology

The Russian psychologist Lev Vygotsky (1896-1934) is renowned for his work on developing theories to bridge the separation between the individual and its social environment (Wertsch 1985:148). Wertsch comments how Vygotsky proposed that "the individual and the social were conceived of as mutually constitutive elements of a single, interacting system; cognitive development was treated as a process of acquiring culture" (ibid.:148).

Furthermore, Vygotsky coined the term "zone of proximal development" in 1934 in an attempt to describe "the interactional nature of the changes we call development" and thus the "shifting control within activities (ibid.:155). Vygotsky's work on children's cognitive development gave him an opportunity to refine his theories of zone of proximal development (ZPD). He defined ZPD as the difference between the child's progress in individual problem-solving and the more challenging level of problem-solving with adults or more knowledgeable peers (ibid.: 155).

The distinction between "actual development" and "potential development" is only bridged through instruction and structure which by means of repetition and practice will increase the child's responsibility and knowledge in due course (ibid.:155). Henceforth, an individual's cognitive abilities are strongly influenced by "the social interactional, cultural, institutional, and historical context" (Bonk and Cunningham in Bonk et. al. 1998:35).

As Bonk puts it, "one must examine the context and setting in which the thinking and learning occurs" (ibid.). Intelligence is not a static entity, but a dynamic one and expository to the environment (ibid.:37). From a socio-cultural point of view the technological advances produce a plethora of learning possibilities, and as Wertsch maintains, technology impacts cultural tools and institutional environments that in turn changes the cognitive impact

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[13] "Nøkkelen til samarbeidslæring er tilrettelegging av positiv avhengighet."

(Wertsch 1991 in Bonk et. al. 1998:37). Bonk and Cunningham suggest that from a Vygotskian perspective, "electronic social interaction utilizes, extends, and creates ZPDs to foster learner skills and capacities that originally were active only in collaborative or assisted learning situations, but gradually become internalized as independent self-regulatory processes (Bereiter and Scardamalia 1985; A. L. Brown and Palinscar, 1989 in Bonk et. al.,: 38)".

Essentially this means that in order for a learner to internalize information, collaborative processes must have been executed in a social setting first in an independent learning activity (Bonk et. al.:38). In the case of CSCL these tools provide a social setting for the individual learner that on one hand is to a certain degree independent, but on the other hand dependent as group members rely on each other.

Ideally, this dependency can result in independent and mature learners who internalize information in a collaborative manner on an individual level. "I store my knowledge in my friends" (Stephenson undated) is an axiom for collecting knowledge socially. This means that sources of information, the Internet and the social web, are tools, which must be used and maximized through negotiation of meaning and thus knowledge transformation and creation.

3. Method and Material

In *Assessing writing* (2008) Weigle writes, on the effects of technology on writing how "technology is changing the way we think about writing and how we do it" (Weigle 2008:231). In this study I want to examine the processes of collaborative language learning in the ESL classroom when learners use CSCL, in this case Google Documents.[14]

The topics of collaborative writing and interdependency are massive, and therefore I deemed it essential to examine research methods by conducting a pilot study first. In this chapter I will present the setting of the pilot study and the actual study. I will discuss the methods used and materials generated from both studies. I will be using grounded theory for my analysis of the actual study and will explain the methodological approach in further detail. I will also discuss confidentiality issues and my own role as a researcher. The choice of the final case design proved logical and in accordance with the hypothesis and research questions posed for this thesis. However, before explaining the case design I will clarify the setting of the study at hand.

3.1. Setting

A case study, as the name suggests, is a study of one or more cases. However, for this study I choose to refer to the cases as *situations* that were emulated to gather data. This thesis is examining the process of collaboration in a digital environment in English as a Second Language (ESL). This is essentially the entity, which will be analyzed and discussed, in further detail in this paper.

I conducted a preliminary pilot experiment with the objective to collect information on what defined this type of collaboration. Three students volunteered to participate in the pilot study. The pilot study had the participants take part in a group interview before and after the collaborative writing task where aspects of group work and language learning were addressed.

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[14] Google Documents will be referred to as Google Docs and is treated as a singular noun as it is a brand.

The pilot experiment generated data in terms of communicative and collaborative processes. However, the group interview did not appear more valid than a survey, as it turned out to be lacking in focus and generated only general answers. The transcriptions of the group interview proved helpful when designing the surveys used for the main study. I decided to set up two tasks for comparative reasons in the main study as I needed evidence of how a group of students would work differently when provided with only one computer rather than three.

The main study had a limited focus on CSCL and ESL, and the subsequent analysis is based on a theoretical foundation aforementioned as well as a detailed description of events unfolding. Robert K. Yin (2003) emphasizes two dimensions of case studies, where one is whether the study is focusing on one case or more and where a second dimension is whether the researcher utilizes a holistic approach (one unit of analysis) or an analytical approach (several units) (Johannesen 2009:85).

My study was designed as a combination of the two, with a reliance on a holistic approach on the one hand and an analytical approach when comparing the two task designs. Johannessen and Yin calls this a multi-case design with a focus on variations for comparative reasons (ibid.:85-86). Furthermore, Yin emphasizes *five* components for a successful case study; research questions, theory, unit of analysis, the logical correlation between data and theory and lastly criteria to analyze the findings (ibid.:84-85).

The *unit of analysis* is a social setting of collaboration and related to research questions of *appropriation* and *innovation* (CSCL and ESL). The research question related to *affordance* is primarily limited to the digital tool (CSC). The two task designs will be explained in further detail, however they both share the common denominator of *joint text creation in a digital environment*. They only differ in the nature of communication and number of PCs available to them.

3.2. Research Design

The research design consisted of two tasks, Task 1 and Task 2, which

participants were asked to complete in the study. I will address the two communication forms available to the participants in the two different task designs represented by *oral discussion* and *chat*. Additionally, I will explain the design of the surveys used prior to and following the tasks before I will explain the selection of participants for the specific task situations.

3.2.1. Task Designs

The tasks designed for this study were organized for two groups with three participants in each. Over the course of two days the two groups were asked to solve two separate group tasks collaboratively using the online word processor and CSCW/CSCL tool of Google Docs.
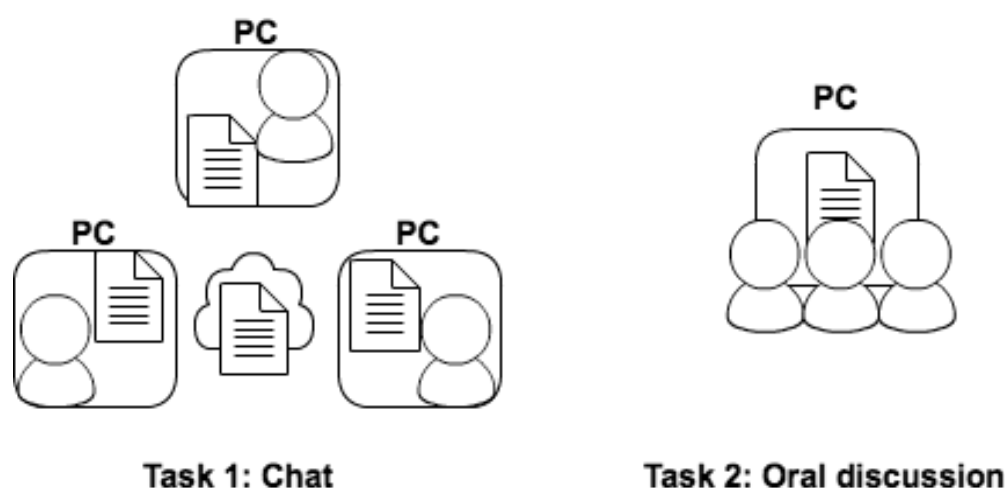
Figure 7: Visualization of Task 1 and Task 2.

The two tasks differed in the amount of computers and access (see figure 5). Task 1 restricted respondents to *one* computer and *one* document, but they were free to discuss their given assignment orally. Task 2 differed as groups were only allowed to use one shared document accessed from *three* different computers and limited to chat as their form of communication.

Both groups were asked to do Task 1 and Task 2 on separate days. On day one group 1 did Task 1, while group 2 did Task 2, and on the following day group 1 did Task 2 and group 2 did Task 1. Two different essay assignments were given on the two days in order to avoid reproduction of text, references, argumentation and ideas.

The design of the two essay questions was similar, but different in content. On Day 1 groups were given a topic of zoos and on Day 2 groups were given a topic of military draft for women (see Task Topic Day 1 and Day 2 below). Topics were chosen on the basis of something which participants would find interesting and with hopes of provoking discussion.

> *Zoos around the world are filled with lots of different wild animals, from gorillas to tigers. The animals come from all around the world and zoos give us the opportunity to see them up close. But is it ok to put these animals in zoos? Write an essay where you argue pros and cons.*

<div align="right">Task Topic Day 1</div>

> *Norway has a military draft which means that young men have to spend a year in the army. This year, 2010, the draft is not only limited to young men, but young women can also be drafted for military service. Is it fair that both sexes can be drafted for military service, or should it be limited to young men? Write an essay where you argue pros and cons.*

<div align="right">Task Topic Day 2</div>

The accompanying instructions and assignment criteria provided participants with a timeframe (45 minutes), essay length (500-800 words), information on the task restrictions (short essay, Google Docs, work on three computers/one computer, non verbal/verbal (sic)[15] communication), an encouragement to use the set assessment criteria provided along with a notice on the videotaping of the screen during the task.

The two days produced four essays. On day 1 two essays were produced on the topic of zoos, and on day 2 two essays were produced on the topic of women in the military. A short instructive statement along with assessment criteria were printed on the paper too, and differed slightly in the last sentence:

> Collaborative Writing using chat and using 3 computers: *The essay should have an introduction, 3 arguments (pros <u>and</u> cons) and a conclusion. Everyone in the group should attempt to take part and are responsible for the final draft. You can only communicate using the document or chat. No verbal* (sic) *communication!*

<div align="right">Task 1 Instructions, Day 1 and Day 2</div>

> Collaborate Writing using discussion and 1 computer: *The essay should have an*

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15 The terms 'non-verbal' and 'verbal' were present in the documents presented to participants, but later changed to 'digital' and 'oral'.

introduction, 3 arguments (pros <u>and</u> cons) and a conclusion. Everyone in the group should attempt to take part and are responsible for the final draft. Oral discussion during work is allowed.

<div align="right">Task 2 Instructions, Day 1 and Day 2</div>

Besides the essay questions participants' perhaps most important asset was the assessment criteria printed on the handout. The assessment criteria were divided into three categories; *language*, *structure* and *content* as derived from the CEFR. Correct and appropriate use of English along with good grammar and spelling went under *language*, while *structure* included the elements title, introduction, arguments, conclusion, paragraphs, header and photo.

Content asked for relevance, examples, reasons, formality and source citations. The groups were handed a double-sided sheet of paper with all of these instructions and the essay question. However, they were not at any point asked explicitly to neither read it carefully nor refer to it during the tasks. Participants were given instructions on how to communicate, but language was not specified.

3.2.2. Communication

The two task designs differed in how participants were able to communicate. As Task 1 had oral discussion as its form of communication, Task 2 had *chat*. The difference between the two is the presence or absence of orality along with "gaze or physical gesture" (Hutchby 2001:176). Chats can be synchronous or asynchronous and language is equally important as in oral discussion, but it manifests itself in the written word.

Technologically, of course, chats with voice are possible, but were not used for Task 2. In the design of Task 2 participants had access to a chat box embedded in the shared document and allowed a *synchronous conversation* for participating group members (see figure 6 below). This is *Real-Time Brainstorming and Conversation* (Level 3) and allows participants to share thoughts, brainstorm and give each other instructions.

Deborah Hoogstrate-Cooney suggests in her article *Sharing Aspects Within Aspects: Real-Time Collaboration in the High School English Classroom* (1998) the use of a basic *unit for analysis*, which is considered to be "idea

units" (Gere & Abbott, 1985).

These idea units can in the case of conversational analysis also be called *turns*, and each utterance in the chat transcripts are defined as turns. In regard to the oral discussions they were audio-recorded and later transcribed, and the same approach was taken of turn-based conversational analysis. The turns were counted, coded and categorized for the purpose of analysis. The chats were also filmed using screen video capture software as a backup, in order to observe the written discussion unfold. However, this method was used as a second reference in case of lack of clarity in the transcription process.
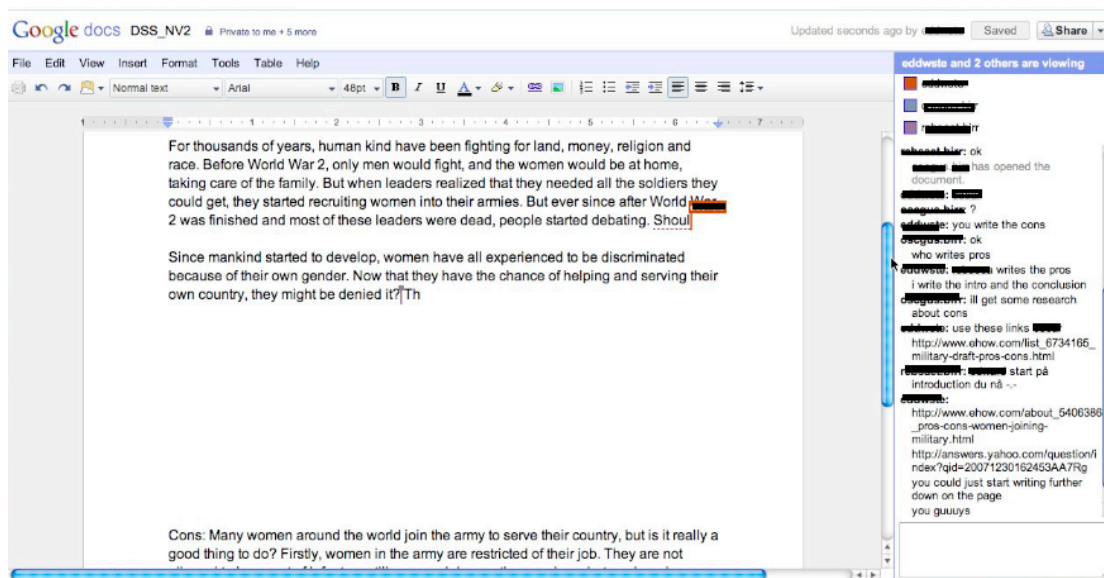
Figure 7: Screenshot of shared document and embedded chat box for Task 1.

The CSCL tool is online and not native to the desktop. Participants chat in the chat box to the right (process and communication) whereas the document itself to the left contains the essay (product). Participants have color codes which correspond in the chat and in the document so they know who is writing what. Names of participants are "nicks", or nicknames they have chosen themselves. A timestamp can be observed for each *turn* in the chat. The document is saved in real time, which means that every change is saved. A revision history function is accessible in the toolbar so participants can return to earlier versions.

3.2.3. Surveys

Two surveys were conducted before and after the tasks. The reason for using surveys as a method was to gather information of participants' sentiments in relation to working in groups and utilizing CSCL when working in English as their second language (ESL). Surveys provide information of a more general standardization with pre-coded questions using the Likert-scale (values from 0-5) and a handful of semi-structured questions (Johannesen 2009.:224). However, surveys are also prone to subjective selection in how questions are phrased, alternatives provided and which questions are present and which are omitted from the survey (ibid.:221-222). Although surveys can provide a general insight into the topic, it might not necessarily generate qualitatively better data than interviews would do (ibid.:222).

Surveys were chosen instead of group interviews based upon experiences during the pilot experiment were group interviews did not appear useful. Furthermore, surveys were designed based upon the interview guide made for the pilot study and modified accordingly. The pre-study surveys contained nine pre-coded questions and eight semi-structured questions. The post-study surveys contained eight pre-coded questions and three semi-structured ones. The main purpose of the surveys was to convey some information about the participants' pre-conceptions of group work, CSCL and ESL on the one hand, and self-assessment of the same topics on the other hand in the case of post-surveys. Surveys generated data material, which provided the study with a framework consisting of perceptions and evaluation of the task completed. Surveys are limited in detail, but provide a general framework for reference and subsequent analysis.

3.2.4. Selection of participants

The selection of participants took place in a class of ninth graders at a school where I am employed as a teacher. The K12-school is a private international school in Norway. However, I am not teaching English in this class. I did teach Norwegian at the time of data collection in the class where the selection of participants took place. The selection itself was random and participants were selected based upon a blind draw. The blind draw was managed by writing

down names on pieces of paper, and pull out names randomly in two piles, which created two groups of three respondents in each. As a researcher and a teacher I inhabit two roles, and it is important to clarify the nature of the two.

For this thesis I remain in the role of a researcher and less as a teacher. The reason for selecting participants at my own school is twofold. On the one hand, students are familiar with working digitally, although not necessarily utilizing CSCL to its fullest potential. On the other hand, the case study itself did not involve teaching or instruction beyond the facilitation of computers and provision of task sheets. For this reason I did not deem it necessary to conduct the study elsewhere.

In the course of the tasks participants did address me for clarifications, but I did not respond as a teacher when asked linguistic or topical questions. The division between researcher and teacher was crucial during the collection of data, and will be revisited in further detail when discussing the justification of method.

Participants were not informed of the nature of the task given nor their roles except that nothing would account towards grades or any form of assessment. This of course might have had an impact on *motivation*. Participants were neither given information on what language to use when they discussed. An information letter was sent out to parents prior to the random selection in the class, and a letter of consent was sent out to the six participants after the study was completed and data was collected[16].

I will return to the aspect of confidentiality and treatment of data. The limitation of random selection and perhaps more importantly, the size of the selection, is that the results are more qualitative in nature than quantitative. This entails a closer study of the groups and the collaborative processes that unfolded. Nonetheless, this study will however provide an insight into the learning processes and the digital and linguistic mechanisms when utilizing CSCL in small groups in the ESL classroom.

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[16] Appendix 2: Letter to Parents and Guardians

3.3. Data Collection

Data collected for this study contains case-sensitive information about the persons who participated. Permission has been granted from NSD (Norsk samfunnsvitenskapelig datatjeneste)[17] which states that all identifiable and case-sensitive data collected must be decimated when the project has been completed. All information collected is confidential, and participants and their guardians were informed by letter that they could withdraw their participation and contributed material at any point during the course of the study before publication.[18]

All identifiable information has been changed and altered with letters or numbers in order to comply with the NSD's restrictions. No data material is traceable to participants, and when the study was completed all data material including audio-visual data, logs and screen prints were decimated accordingly. In this chapter I will present the data material collected and address confidentiality and the treatment of each component.

3.3.1. Material and Confidentiality

The four situations resulting from the two groups generated material which included chat logs transcripts, videotaped discussions, screen video captures, printed essay documents and pre- and post-surveys. The tasks themselves were done in digital environments online only accessible by me, and files were consequently deleted after they had been transferred to an external hard drive. The collected data saved on the hard drive was also deleted when the study was completed in accordance with NSD's requirements. All written material was categorized and numbered for easier retrieval. Participants' names were not collected for the surveys, but a number was assigned to each participant (1-6).

During the chat of Task 2 participants used their own emails for logging in. This entailed the use of their own *nicks*, or nicknames, which could in some

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[17] Appendix 1: Letter NSD

[18] Appendix 2: Letter to Parents and Guardians

instances, be combinations of their first name and surname. In accordance with confidentiality, letters (A-F) were used when analyzing the chat-logs and during transcriptions of video material when oral discussions were recorded. This safeguards and hinders any identification or retracing of individuals when original screen video and video material also has been decimated.

3.3.2. Digital and Printed Material

The collected material can be divided into two categories. The first category is the printed material that includes pre- and post-surveys, essays and chat logs. The second category is digital and audio-visual material, which includes screen video captures of both Task 1 and 2, and video-recorded discussions in the case of Task 1. All printed material was collected in a physical folder, whereas all audio-visual material was transferred to an external hard drive. The audio-visual material was recorded using screen-capture software and video-recorders. I monitored the recording process for technical reasons, but did not observe the recorded action before later on. The participants were duly informed of the recording and archiving of events as well as the destruction of the same material in due course.

After the collection of the audio-visual material was completed transcription commenced. Transcriptions were printed and archived in the same physical folder. However, screen video captures have *not* been used in the analysis as primary sources for two reasons. One reason is a question of time and purpose, and another reason is confidentiality as names are exposed in the material. Material has been subsequently deleted after functioning as a second reference if I have been uncertain of unfolding events when transcribing video-recordings.

Groups were given arbitrary name, i.e. *DSV1* etc. which were only decipherable to me. During this process of amassing material only numbers and letters were used to refer to participants, and this does also apply to the following analysis and discussion. Digital files located online, on my computer or on the external hard drive were all deleted when the study was completed.

3.3.3. Survey Data

Two particular surveys were conducted. One was conducted before the tasks commenced on the first day, and were pre-surveys. All surveys were on paper and participants used a pencil to mark Xs on a Likert-scale or to write down their answers on semi-structured questions. All answers were transcribed digitally and numbers used at the time of the surveys were kept for obvious organizational purposes. I used spreadsheets to visualize the pre-coded results from the surveys in order to easier get an overview of the material. Again, only numbers and letters were used to identify the four different situations, i.e., *Essay 1*, *Essay 2* etcetera.

3.4. Grounded Theory

Grounded theory is a method to analyze qualitative data, which was developed by Glaser and Strauss (Johannesen et. al., 2009:171). Empirically based theorization is *grounded* on the premise that theories should be rooted and developed based on empirical data (ibid.). Grounded theory is *not* a theory in itself, but a "method to generate experience-based theories" (ibid.). The analytical approach to the collected data is founded on grounded theory. This approach necessitates systematic coding and categorization of collected data. In this sub-chapter I will elicit the main characteristics of coding and categorization when utilizing grounded theory before I will explain the purpose of this method for the subsequent analysis.

3.4.1. Coding and Categorization

The first priority in grounded theory is to decide upon a *focus* for the research, and this is manifested in the research questions. The focus for this thesis is CSCL and its potential to enhance language learning. The second priority is to choose the *unit of analysis*. In the case of this thesis the *unit of analysis* is represented by collaborative tasks Task 1 and Task 2.

According to grounded theory, the purpose is constantly to pursue an understanding of the phenomenon examined, which results in a theorization based upon the correlation between categories which are identified in the course of research (Johannesen et. al. 2009:174). Johannesen et. al. writes

that "Coding is the process where data is analyzed, conceptualized, categorized, and refined to a description (or a theory)" (ibid.:176).[19]

Naturally, this is not a linear process, but a constant circular process of revision. As data was collected transcriptions of audio and video recordings began while chat logs were printed. Coding consists of three steps, which includes *open coding*, *axial coding* and *selective coding* (ibid.) The main objective of *open coding* is to identify and compare in order to establish terminology broad enough to encompass several aspects of the material. Glaser and Strauss coined the term *categorization process* which objective is to categorize the defining aspects of a particular phenomenon studied. In the case of my data material the categorization is focused on *turns* and the coding and grouping of them. The *unit of analysis* is the group's collaboration as manifested by their communication (chat or oral discussion).
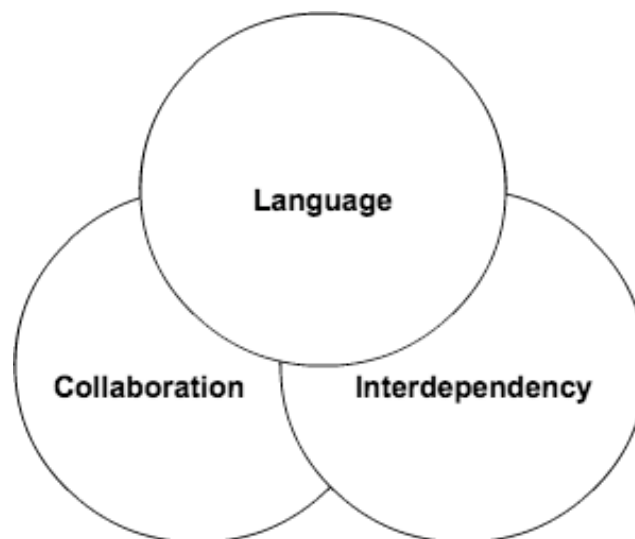
Figure 8: Triplet of main categories for the analysis of chats (Oddvik 2011).

The established categories applicable to turns for my analysis of the chats are based on the triplet of *collaboration*, *language* and *interdependence* (see figure 8). The categories are defined by values ranging from strong values of *collaborative* and *augmentative* to weak dimensions of *fragmentation* and *devaluation*. Turns are acts of communication and they can be categorized as

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[19] "Koding er prosessen der data analyseres, konseptualiseres, kategoriseres, og bygges opp til en beskrivelse (eller ren teori)."

constructive for the group, i.e., will to work towards a shared goal. This is marked by strong values of *language awareness*. At the other, weaker side of the scale turns can be categorized as counter-productive, or even worse, as acts of sabotage. This is marked by weak values of *language awareness* and strong values of *language ignorance*. This categorization was applied to both the communicative processes in Task 1 as well as Task 2. However, the phenomenon studied is Task 2 and chat-based collaboration. Task 1 is also coded and categorized for the purpose of triangulation and comparison.
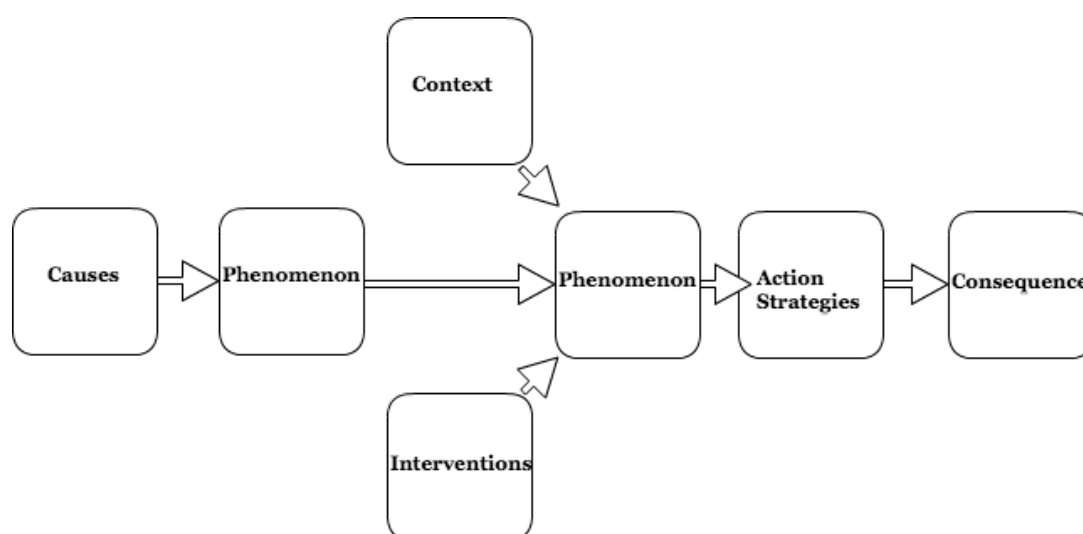
Figure 9: Paradigm model before the *axial coding* of the material. See figure 14 for *post*.

The purpose of *axial coding* is to elicit the connections between the various categories. Strauss and Corbin refers to this as the *paradigm model* (ibid.:177) (see figure 9). I will explain this model in further detail in the analysis. Axial coding is defined by a process of induction and deduction in an attempt to establish broader categories and thus shape a testing of the hypothesis (ibid.:179). Whereas *open coding* establishes terms and categories, axial coding's main objective is to order these in coherent chains (ibid.:178). Axial coding can affect the results of the open coding, and may result in modifications and revisions.

Axial coding should attempt a high abstraction level in order to encompass aspects of the phenomenon. This includes cause-and-effect, context, external interventions, action- and interaction strategies and consequences (ibid. 179). The paradigm model is founded on these aspects and its purpose is to abstract

and elevate the processes done by means of open coding.

In the case of my research abstracted terms are interlinked with the research questions. *Affordance*, *appropriation* and *innovation* are broad, but clearly marked categories, that make up the paradigm model. The last step in coding entails a *selective coding* which is the concluding process of grounded theory. The purpose of selective coding is to write an analytical story line that used the core category as its foundation for a descriptive theorization of the phenomenon studied (ibid.).

Notetaking, or memos, is an important component of grounded theory. Throughout the process of analysis three types of notes should be kept. These include *coding memos*, *theoretical memos* and *operational memos* (ibid.:181). Grounded theory is a complex, but creative process, which requires revision of the three steps in order to modify and tweak categories. The ultimate goal of this method is to theorize and establish a typology of the phenomenon studied. Theories can be developed by telling the story about the phenomenon (ibid.:182), in this case collaborative writing online. The theory developed must be on a more elevated level than the selective coding (ibid.).

3.4.2. Purpose

The justification of using grounded theory for the present analysis is based on the limited scope of the case study. Grounded theory serves a useful purpose when the objective is to describe a particular phenomenon in a thorough manner (ibid.:173). However, it is important to clarify that although I theorize analytical findings it will by no means result in new theories, but merely a descriptive analysis and thus a deeper understanding of the phenomenon of CSCL in ESL work (ibid.). I will now turn my attention to the reliability and validity of the method used as well as the role of myself as a teacher and a researcher.

### 3.5. Action Research, Reliability and Validity

My intention is to study subjects in an environment in which I myself operate as a teacher. This implicates certain pitfalls and challenges. Action research can be viewed as an extension of social-constructivist ideas as in the case of

symbolic interactionism, which primarily is process-oriented. According to symbolic interactionism humans continuously create their identity in interaction with others (Thaagard 2009:36).[20] This particular study is two-fold, where one is student-student-based and the other one is teacher-student-based.

As I am researching subjects in an environment where I myself teach I need to take into account the implications of my role and effect upon the students. It should be stated, that I will, and must, consider and compare the alternative to study subjects outside of my own environment. However, the value of conducting studies in one's own environment should not be underestimated.

3.5.1. Action Research

Action research "may be characterized as the development of practical 'tools' of relevance for a particular institution or a professional group at a particular time" (Siemensen 1998:280). Taking this into account one may argue that the progressive nature of using collaborative writing strategies for ESL learning in digital-based environments might indeed call for an action research approach. Postholm argues "[t]hat the purpose is to describe the complexity of a phenomenon associated with a particular focus or an issue. This phenomenon is part of a real setting." (Postholm 2009:27)[21] The real setting is my own environment where I operate as both a teacher and a researcher.
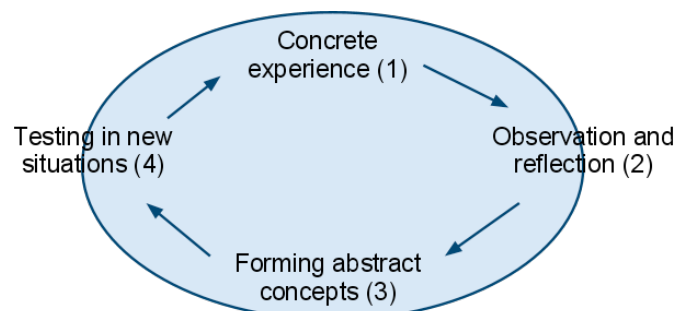
Figure 10: David Kolb's experimental learning circle created after Kurt Lewin' work. My illustration.

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[20] "I følge symbolsk interaksjonisme skaper mennesker kontinuerlig sin identitet i interaksjon med andre."

[21] "Hensikten er å beskrive kompleksiteten av et fenomen knyttet til et bestemt fokus eller en problemstilling. Dette fenomenet er en del av en virkelig setting." (Postholm, 2005)

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Kurt Lewin was the first who used the term "action research" (Postholm 2009:32)[22] and its prime goal is to change existing practices. Lewin visualized his theories (see figure 10[23]) with reflecting spirals consisting of planning, action, observation and reflection (ibid. 33)[24] In my research study I am curious to whether implementation and use of CSCL enhance ESL learning, and particularly how the learning process unfolds.

Planning, action, observation and reflection generate an ecosystem of practice in a social context and a dialogue between the participants (Postholm 2009:33).[25] In essence, I think questioning new practices and learning strategies in the language classroom is vital to rethink and assess the quality of the learning outcome, and this means a high degree of reflection and self-reflection in order to improve and enhance the teaching practices (ibid.).

Action research, however, presents the researcher with some ethical dilemmas. Thaagard writes that; "There is however a common notion that the researcher's influence on the development of theory makes the researcher responsible for the interpretation." (Thaagard 2009:211).[26] This implies that the ethical dilemmas of developmental research must be thoroughly discussed. As the informants are not present when the analysis work occurs the researcher has more influence during this phase than during the collection of data (ibid.)[27]

To what extent do I project my convictions onto the participants? How do I

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[22] "Kurt Lewin (1952) var den som først brukte uttrykket "aksjonsforskning"."

[23] David Kolb's original to be found here: http://bit.ly/9XMafJ

[24] " Lewin visualiserte aksjonsforskningen i reflekterende spiraler bestående av planlegging, handling, observasjon og refleksjon (...)."

[25] "Carl and Kemmis (1986) har, med utgangspunkt i Lewins reflekterende spiraler, laget en modell som setter endringsaktiviteten inn i en nåtidig og fremtidig ramme. Carl og Kemmis uttaler, i samsvar med Lewin, at gruppebestemmelser må være et prinsipp mer en teknikk i aksjonsforskning, og baserer sitt standpunkt i forhold til både endring og engasjement."

[26] "Det er imidlertid en utbredt oppfatning at forskerens innflytelse på utviklingen av teori gjør forskeren ansvarlig for tolkningen (Fog 2004:204-214)."

[27] "Fordi informanten ikke er til stede under analysen og tolkningen av dataene, har forskeren mer innflytelse i disse fasene av forskningsprosessen enn i løpet av datainnsamlingen."

influence the design of tasks given and to what extent to I think the hypothesis is right or wrong? At the outset of this study I think the implementation of CSCL will and can help enhance both strong and weak learners in their ESL development. I also think that the reliance on positive interdependence within a group is crucial to optimize the quality of the ESL development. My choices of methods, selection of participants must be transparent and presented in an objective fashion to secure validity of the research, and assert the reliability of the results and subsequent analysis.

3.5.2. Reliability and Validity

The process of analyzing and presenting the data material gathered, calls for careful considerations related to reliability and validity. Reliability is understood as the degree of accountability, i.e. whether another researcher and end can use my methods up with the same results (Thaagard 2009:198).[28] Qualitative methods are traditionally inductive, which means the theoretical perspective is developed on the grounds of the analysis of the data (ibid.:189).

I need to strive towards the highest degree of reliability and accountability in terms of methods as well as analysis to ensure the quality of this study. In regard to the selection of participants I must question the reliability of the selection of the students and whether it would function with "convenience sample" for this main study.

Validity, on the other hand, is related to the interpretation of data (ibid.:201).[29] "When the results of qualitative studies have aims to go beyond the descriptive, the analysis represents interpretations of the phenomena we are studying." (ibid.)[30] My analysis of my collected data must have validity in the reality, which has been studied. The need for transparency is fundamental,

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[28] "Begrepet reliabilitet referer i utgangspunktet til spørsmålet om en annen forsker som anvender de samme metodene, ville komme frem til samme resultat."

[29] "Validitet er knyttet til tolkning av data."

[30] Når resultater av kvalitative studier har som målsetting å gå ut over det rent deskriptive, representerer analysen fortolkninger av de fenomener vi studerer."

which necessitates full disclosure of the foundations for my interpretations by account for how the analysis compromises my conclusions (ibid.).[31]

3.6. Summary

In this chapter on method and material I have presented and discussed my methodological approach for this paper. I have explained my research design and how it was developed on the basis of an initial pilot study. The description of the research design has made clear how tasks, communication and surveys were designed and used. Furthermore, I have discussed the selection of participants and shed light upon how the limited scope of the study has both its positives and negatives. The confidential treatment of data material has also been addressed. In the next chapter my analysis of the data material will be presented.

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[31] "Gjennomsiktighet innebærer at forskeren tydeliggjør grunnlaget for fortolkninger ved å redegjøre for hvordan analysen gir grunnlag for de konklusjoner hun eller han kommer fem til."

4. Analysis

In order to analyze the collected data structuring is needed. Postholm (2010) states how the collection of data and the subsequent analysis is both recurring and dynamic processes (ibid.:86). Descriptive analysis encompasses analytical processes, which aids the structuring of collected data material (ibid.). I use the "constant comparative method of analyses" (Glaser & Strauss 1967, p. 101-116 in Postholm 2010:87). This method originates from *grounded theory*, which provides the analysis with a methodological approach presented earlier. Throughout this chapter I will present descriptive analyses of communication, essays and surveys.

4.1. The Communication Process

In this section I will give a descriptive analysis of my material with a main focus on Task 1 (see figure 11) and the two chats. I will refer to Task 2 for comparison. By using grounded theory I have approached the communication processes occurring in both tasks analytically. In this section I will present the operationalization, categorization and analysis. The operationalization of *turns* has been important to sort material in a preliminary phase while the categorization is a process of *open coding*. Its purpose is to reveal a more substantial analysis of the material. The analysis itself will be utilizing *axial coding* and the *paradigm model* developed for my study of the two chats.
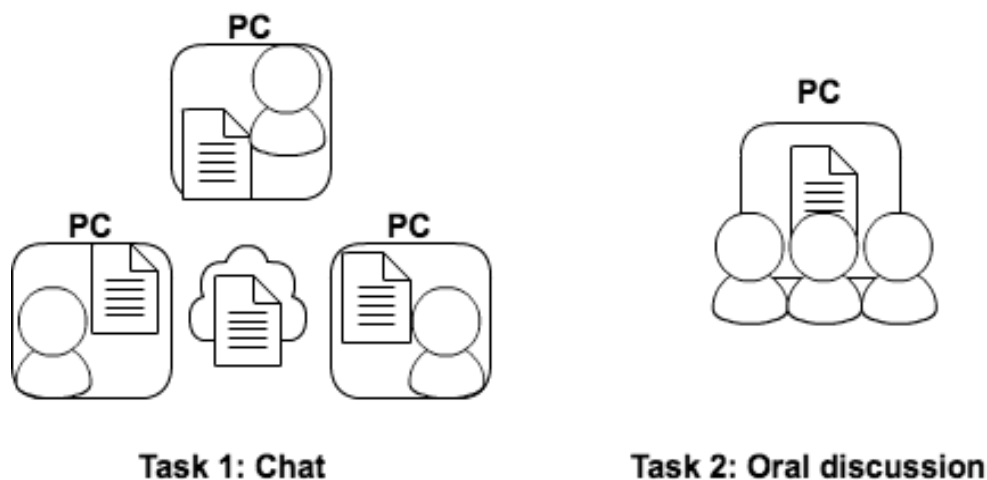

Figure 11: Visualization of Task 1 and Task 2.

4.1.1. Operationalization of Coding Scheme

The first priority was to establish a coding scheme (table 2) in order to operationalize the analysis. Deborah Hoogstrate-Cooney (1998) limits herself to three broad categories that attempt to encompass all utterances of meaning, or turns, in the dialogue (Gere and Abbott, 1985). The *unit of analysis* in my analysis is *turns*. A *turn* can be viewed as a building brick – a unit of meaning – but *a turn* can also be a series of units if the speaker utters several units of meaning (Norrby 1996:99)[32]. I refer to *turns* and not *acts* or *utterances* for the sake of clarity. "Cooney's three categories contain discourse about the *content*, discourse about the *task* and *off-task* talk (Cooney 278:1998). I added a fourth category to include *metatalk* to accommodate for affirmations and clarifications. However, during the coding process of turns I did on occasion categorize a turn to belong to two categories.

Metatalk: shape the discourse, affirmations, misunderstandings, clarifications, delegation,

Task: interpretations, perceptions and discussions of task given

Off-Task: non-relevant and social talk

Content: discourse about content, argumentation, language, structure, content-based discussion

Table 2: Coding Scheme of turn categories.

Table 2 presents the following categories (1) Metatalk, (2) Task, (3) Off-Task and (4) Content. Metatalk accommodates affirmations (i.e., 'Okay'), misunderstandings (i.e., 'What?') and clarifications (i.e., 'I see.') and this category is encompasses short, abrupt and rapid utterances, which still carry meaning.

The category of Task is synonymous with all utterances that refer to the task at hand, and thus accommodates task instructions (i.e., 'How much time is left?') and success criteria (i.e., 'Do we have a conclusion yet?'). The third category, Off-Task, accommodates all utterances associated with non-relevant talk (i.e.,

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[32] "En samtalstur kan alltså vara identisk med en enda byggkloss – en meningsenhet av varierande utseende – men kan också bestå av många sådana enhete, vilket är fallet när någon pratar på en längre stund och naturligtvis fullbordar många meningsenheter under berättandets gång."

'It's raining outside!') while the third category, Content, accommodates all utterances that are substantive and directly pertained to the argumentation as well as grammatical and linguistic discourse. All categorization is based upon the content of the *idea unit*.

Based upon the preliminary categorization of *turns* information related to frequency of turns, language use, focus and consensus was revealed. In terms of turn frequency groups discussing orally when working on Task 2 produced a higher total number of turns than groups chatting. This might be due to the fact that it is faster to talk than to type.

Perhaps more interestingly, both Task 1 and Task 2 had participants use a mix of English and Norwegian. However, in Task 1 participants retyped and rectified spelling errors and English was marginally more used than Norwegian. Norwegian appeared more frequently in the oral discussions.

	Type	Turns	Metatalk	Task	Off-Task	Content
Task 1 (Group 1)	**chat**	56	24	13	3	18
Task 2 (Group 2)	oral	464	187	38	50	178
Task 1 (Group 2)	**chat**	90	45	17	3	33
Task 2 (Group 1)	oral	164	38	24	0	103

Table 3: Number of turns categorized by turn categories.

All turns were predominantly *metatalk* (see table 3) and were clarifications and delegation of work. Most groups were limited to a few turns categorized *off-task*, and the group who had 50 turns *off-task* were talking about a sudden change in the weather as they were working on their task. The second category of interest after *metatalk* was *content* were turns dealt with discussions regarding *pros* and *cons* related to the essay question. Comparing the number of *metatalk* turns and *content* turns oral groups it becomes apparent that they tended to focus more on content than in the chats.

Groups who chat does have a lower overall frequency of turns, and judging from the transcript there are hiatuses of minutes when participants type in the document rather than chatting. The dominance of *metatalk* in chats appears also to be focused on work distribution (i.e. "ill get some research about

cons")[33]. This might also suggest that groups communicating digitally appear to be more focused on getting done as they have a focus on *metatalk* rather than *content* (i.e. "we're done!!!!!!!!!! :D:D)[34].

In the case of groups communicating orally they have more *content*-based discussions, but get sidetracked and does not produce as long essays as chat-groups. This focus on *content* in groups who discuss orally does also encompass turns that are preoccupied with language as in spelling or use of vocabulary. I will return to this in the open coding. The next step is to go beyond the *form* of turns, and to categorize them according to *function*.

4.1.2. Categorization of the Communication Process

The categorization and coding focus on the *function* of *turns* and the grouping of them in accordance with values from high to low. Using grounded theory I have created an open coding scheme based upon my theoretical foundations discussed earlier. The *open coding* established *function categories* applicable to turns and/or sequences of turns and is based on the triplet of *collaboration*, *language* and *interdependence* (see figure 12).
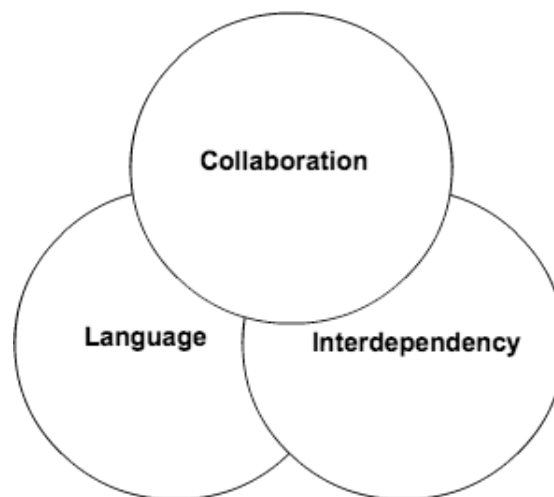
Figure 12: Collaboration, language and interdependence are intersecting aspects of the communication process (Oddvik 2011).

The *unit of analysis* is the group's collaboration represented by their

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[33] Task 1, Group 2

[34] Task 1, Group 1

communication. The process of open coding entails going beyond the nature of each individual *turn*. A *turn*, as Norrby writes, can also be a *series of units* if the speaker utters *several units of meaning* (Norrby 1996:99). Figure 12 above illustrates the triplet of *collaboration*, *language* and *interdependency*. The three domains cover subcategories, which I call *function categories* (see table 4). In table 4 below *collaboration* and *democratization* belong to the same domain, whilst *language* and *production* belong to the domain of *language* and *augmentation* and *organization* are part of the domain of *interdependency*. Firstly, I went through the material and sorted turns according to *metatalk*, *task*, *off-task* and *content*. Generally, turns categorized as everything except *off-task* could be a potential marker of *collaboration*. Secondly, I counted the frequency of the four categories and generated charts to compare the communicative processes in both Task 1 and Task 2. Thirdly, I established *six* broader categories (see table 4) of turn *functions*.

Function	General Characteristics	Possible Values
Collaboration	*Degree of cooperation. Degree of group reliance and facilitation for collaboration.*	*Full collaboration – fragmentation. Mutual reliance – sabotage.*
Democratization	*Division of labor. Degree of equality. Degree of ownership.*	*Labor equality – despotism.*
Language	*Degree of language focus, i.e. spelling, grammar, vocabulary.*	*Strong language focus – weak language focus.*
Production	*Contributions i.e. written production, ideas, thoughts, arguments.*	*High productivity – low or no productivity*
Augmentation	*Degree of aid, facilitation and student-based learning within the group.*	*Strong augmentation – isolation.*
Organization	*Degree of unity and shared goals.*	*Sophisticated organization – chaos.*

Table 4: Open coding scheme.

The *function categories* are marked by values ranging from high to low. For

instance, a low value of *collaboration* indicates fragmentation when participants work by themselves. A high value of collaboration is functioning collaboration when participants work *together* and facilitate collaboration.

The following excerpts from the data material will be serving as an illustration of how I have conducted the preliminary categorization and subsequent open coding. This particular excerpt is taken from Day 1 and is a Task 2. The excerpt is primarily focused on *organization* and *language*.

Turns	Categories	Open Coding
A: HELLOOOOOOOOO :D:D:D[35]	Metatalk	Language/Collaboration
B: Ok :D Yo...	Metatalk	
A: i think i have like written about his before ?	Task	Organization
B: you have :D kwl[36] anyways	Task	Organization
We need a topic? or we have one XD[37]?	Content	Organization
Pros? and Cons? Topic or not? XD	Content	Collaboration
Confuzzled :D anyways	Metatalk	Language
A: it says on the back of the paper!!!	Task	Organization

Table 5: Excerpt from Task 1 on Day 1.

Not surprisingly, the participants are trying to organize themselves in two ways when chatting (table 5). On the one hand they are trying to understand the task and secondly they are trying to figure out a way to solve it. The process of coding each unit might not necessarily generate a lot of information beyond the *function* of the turn, but it helps the open coding. However, coding sequences of turns might reveal a pattern. A's first utterance is "HELLOOOOOOOOO :D:D:D" and has been coded as both *language* and *collaboration.*

A is the first one in the chat and checks if the other participants are present yet. The student is inviting them to *collaborate.* Simultaneously the student is playing with spelling here with capital letters which signals "shouting" and adding three

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[35] A very happy smiley face. Urban Dictionary. (http://bit.ly/hleszj)

[36] It is short for cool. Urban Dictionary. (http://bit.ly/ihhW4Z)

[37] A laughing face. Urban Dictionary. (http://bit.ly/glJVyS)

emoticons,[38] or "smilies" to invite the others in a nice and cheerful way. This playful approach has many connotations and is evidence of the students' knowledge of chat lingo and thus linguistic competence. Another example is B's turn including "We need a topic? Or we have one XD? Pros? And Cons? Topic or not? XD" in his *turn*. Many questions might suggest eagerness to get started, and turns have been categorized *content*. However, the open coding suggests turns and sequence are *organizational* and *collaborative.*

The last turn in the transcript "it says on the back of the paper!!!" is also an *organizational* turn which illustrates this transcript as being preoccupied with understanding (and finding!) the task as well as involving each other in a collaborative project. The value of *organization* and *language* differs in this transcript. The value of *organization* is strong, but one could argue that the value of *language* is low as there are spelling errors and normative spelling is not followed. The focus for the participants here is to *communicate*, and not follow rules of sentence structure, concord or spelling.

Turns	Categories	Open Coding
C: read what I have written for the negative point	Metatalk Content	Augmentation - strong Language - strong
B: Its nice But you can add like points	Metatalk	Augmentation - strong
cause i have been in zoos way to many -.-"	Metatalk Content	Collaboration - weak
And i saw many pens which were huge	Metatalk	Language - weak
C: pens?	Metatalk	Language -weak
B: so some installments don't have the correct environment	Content	Language - strong
ehmmm grounds places to go like	Metatalk	Language - weak
A: i dont get it :p	Metatalk	Fragmentation

Table 6: Excerpt from Task 1 on Day 1.

Augmentation is the dominant *function* in the excerpt above (see table 6).

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[38] Emoticons, or *smileys* are the simple way to capture everyday emotions into a small combination of computer characters. Urban Dictionary (http://bit.ly/fW04X8)

Participant C is seeking assistance from participant B. I have coded this to belong to *augmentation* as C is checking with B to improve his argumentation. Naturally, it could also simultaneously belong to *collaboration*, but I choose to code it as reasonably strong valued *augmented* when seen in context with B's answer to C. The next couple of turns here are coded *language* and valued rather weak as the word "pens" create confusion and B does not appear to clarify C's "pens?". A's turn who has perhaps read parts or the whole transaction between C and B lets them know that "i don't get it :P".

I have coded the latter turn as weak *fragmenting* as it signals that A has not been part of C and B's discussion. It is weak because it is possible for her to be included and understand the transaction between the other two.

Turns	Categories	Open Coding
C: okey i wioll write the conclusion	Metatalk	Collaboration - strong
B: There is a positive point where she is writing now	Content	Augmentation - strong
and i have negative	Content	Collaboration - strong
and you mix?	Content	Collaboration - strong
almost done	Task	Organization - strong
keep it up	Metatalk	Collaboration
A: what? :P	Metatalk	Augmentation - weak
B: the good work :3	Metatalk	Augmentation - strong
C: Done with the conclusion	Content	Collaboration
B: nice nice	Metatalk	Augmentation - strong

Table 7: Excerpt from Task 1 on Day 1.

I have now illustrated the open coding process. One might argue that there is a question of subjectivity on my part as there are many processes unfolding simultaneously. The *multi-voiced multilogue* consists of three voices and three agendas. The challenge, and *object* of the group work is to have the three students find common ground and work together (see table 7). *Augmentation* and *collaboration* are valued strong when participants are synchronized in action and share a common goal as seen in the transcript above. I have coded the sequence *augmentation* or *collaboration* with varying value form strong to weak.

The communication in here (table 7) has a strong value of *collaboration* as participants manage to simultaneously manage to communicate positive interdependency and articulating what Dourish and Bellotti (1992) calls *awareness* of what everyone is and will be doing next ("There is a positive point where she is writing now/and I have negative/and you mix?/almost done/keep it up"). B is taking a leading role as organizer and motivator in this sequence, but is collaborating with both C and A. B is also making sure also to strengthen the Augmentation by clarifying the motivating remark to A. In the next transcript a weak collaborative value has been assigned due to the fragmenting nature of the turns.

On Day 2 Group 2 began the same way as Group 1 on Day 1 in terms of focusing on *organization* in the beginning of the chat (see table 8). I coded the first sequences as strong in *collaboration* and *augmentation*, but this changed in the course of the task to weak.

Turns	Categories	Open Coding
D: copy paste from whats over n00b	Metatalk	Collaboration - weak
E: y are u editing mine D? !	Content	Collaboration - weak
D: becuzz	Content	Collaboration - weak
E: ok	Metatalk	Collaboration - weak
but im finished now ww	Metatalk	Augmentation - weak

Table 8: Excerpt from Task 1 on Day 2.

The transcript (table 8) demonstrates a lack of *articulated awareness* (Dourish & Bellotti 1992) among the participants D and E. D's remark "copy paste from whats over n00b[39]" suggests a condescending tone, and E amply relies "y are u editing mine D? !". I coded this transaction with low *collaboration*, as D is intruding on E's contributions in the document. This might also suggest that participants are working separately.

The most striking feature of Task 2 (oral discussions) with both groups is how the language is predominantly Norwegian, or Norwegian sentences containing English words. However, I have valued *language* strong as in the following

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[39] "A inexperienced and/or ignorant or unskilled person. Especially used in computer games." Urban Dictionary. (http://bit.ly/gsEidt)

transcript, because there exists a discourse about language. *Augmentation* has also been valued strong as the "degree of aid, facilitation and student-based learning within the group" is strong. The participants are trying to address word choice, but also improve their essay.

Turns	Categories	Open Coding
E: Studeis?	Content	Language – weak
D: Ja, skal rette opp det.	Content	Language– strong
F: hvordan fortsetter vi. bra introduction,	Content	Augmentation - strong
E: Poor conditions kanskje?	Content	Language/Augmentation – both strong
F: Vi burde si noe om... horrible?	Content	Language/Augmentation – both strong

Table 9: Excerpt from Task 2 on Day 1.

Student A is questioning spelling of "studies" typed by A, while C is asking for a joint direction for the continuation and simultaneously complimenting A (and B?) on the introductory paragraph. The ensuing discussion continues to focus on *language* and "student-based learning" where participants B and C aid A in spelling while at the same time discussing the content of their essay and attempting to find consensus.

Participants in this group appear to work together towards a shared goal, but as mostly A is typing that person is in control of what is being written although B and C help A with vocabulary. This is why parts have weak in value in *collaboration* in Task 2 as seen in the other group who wrote their essay on Day 2.

Turns	Categories	Open Coding
C: So what will you start with? (to B)	Metatalk	Collaboration - weak
B: As many points as I can come up with...	Content	Collaboration - weak
A: (inaudible) What do we think?	Content	Collaboration - strong

Table 10: Excerpt from Task 2 on Day 2.

The use of pronouns is telling in sequences like this (table 10). C is using "you" to address B, and B answers that "I" will come up with as many points as possible. Naturally, this occurrence can be viewed as simply being a matter of

expressing work distribution. However, it appears that participants have elected B to type while C and A are merely spectators, at best active spectators. To sum up the process open coding we can make some generalizations (table 11) based upon the coding scheme. It appears that all four discussions begin with a focus on *organization* valued strong. However, chats appear to be more able to maintain a strong *collaboration* as well as strong valued *augmentation* compared to oral discussions.

Task 1 (Chats)	Task 2 (Oral Discussions)
Collaboration - strong	Collaboration - weak/strong
Language - weak	Language – strong
Augmentation - weak/strong	Augmentation - weak/strong
Democratization - strong	Democratization - weak
Production - weak	Production - weak
Organization - weak/strong	Organization - weak/strong

Table 11: Generalized overview of types and their values from Task 1 and Task 2.

The *production* is variable, but overall weak in all four cases. All groups produce essays of a certain length, but they are at best first drafts. Participants tend to get bogged down in discussions, fruitful and less fruitful regarding work distribution, spelling or other issues. *Democratization* is strong in value in Task 1 as all participants take an active part in the text-creation as they *all* write. While it is valued weak in Task 2 as the typer tends to be in charge of the decision-making. Interestingly perhaps, it appears that *language* is valued strong in oral discussions compared to low in chats. Again, this is related to in-group discussions stalling the *production*, but enhancing the value of *language*.

Based upon the results of the open coding discussed I have grouped the value distribution of the six functional types and put them into a diagram (see figure 13). For chats (Task 1) both *language* and *production* are weak types, while for oral discussions (Task 2) *democratization* and *production* are valued weak. Strong valued types for Task 1 include *collaboration, augmentation, democratization* and *organization*. For Task 2 valued types include *collaboration, augmentation, organization* and *language*.
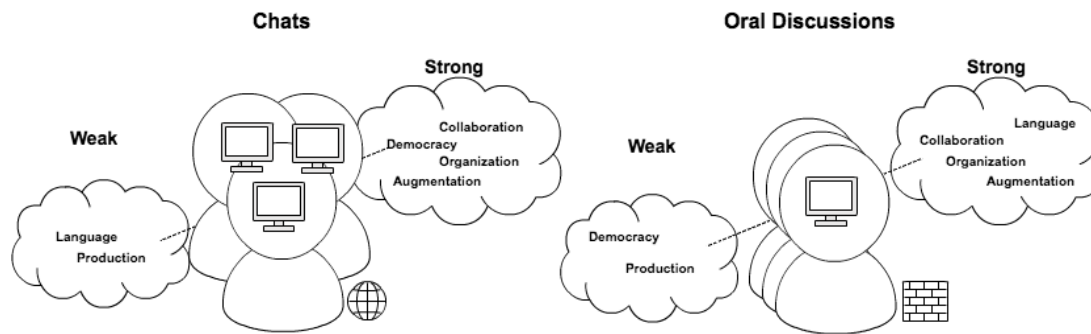
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Figure 13: Diagrams representing the value distribution of the six function categories for Chats (Task 1) and Oral Discussions (Task 2).

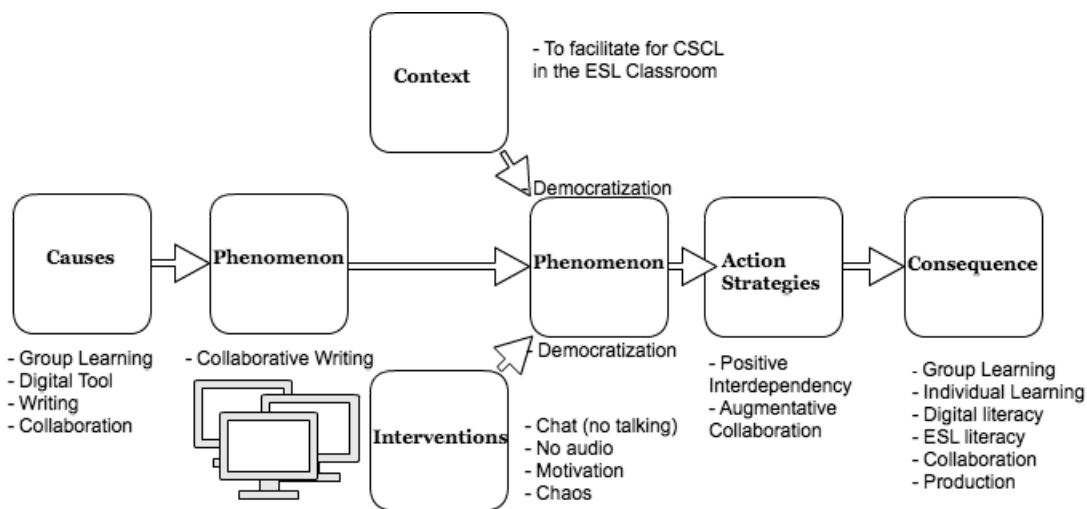## 4.1.3. Analysis of Communicative Processes

Figure 14: Paradigm model of Task 1 after axial coding.[40]

A teacher asks three students to access a web-based document from three different computers. The object of the group task is to create a learning space for English as a Second Language and entails *collaborative* as well as *digital learning*. The teacher who acts as a facilitator for the three students sets the object. Causes (figure 14) for the engineering of the task and its object include *group learning*, *digital tool competency* and *ESL communicative competence (reading, writing and speaking)* – also referred to as CSCL.

The phenomenon is collaborative writing, and by examining the context and *interventions* of the phenomenon I will describe the *action strategies* and consequence of CSCL implementation in the ESL classroom as analyzed in the previous chapter. In this case the context is *to facilitate for group-based*

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[40] Johannessen 2009: 178

digital writing in ESL. The open coding of communication processes elucidated the context by means of values of the *function categories* of the chat transactions.

The students organize themselves in writing when they use the chat, which is an intervening circumstance. This intervention provisions immediate communication between students, but limits it to writing. No audio-based communication. As the students have all accessed the shared web-based document online and have commenced the task they are prone to the intervening circumstance of either *organization* or *disorganization.* The open coding revealed how groups most of the time began to organize by delegating and distributing work assignments. However, as students worked on their written contributions in the document, some forgot the communication in the chat and thus operated partially isolated. This is referred to as negative interdependency.

Most of the time students attempted to establish consensus on what they as a group wanted to express in terms of arguments and conclusion. Another intervening circumstance is motivation. The object of the students might differ from the teacher's object of CSCL. Other aspects such as finishing the task and do something else might motivate students. From the teacher's point of view this is obviously not motivation apt for the task. However, the augmentation was strong in transactions in chats and might suggest motivating factors generated by the group members themselves. Examples include supportive remarks, constructive help and expressions of a shared goal.

The context is an experience of collaboration that is stronger (than individual work) because of the *awareness* of the shared knowledge production. The degree of collaboration relies on the assumption that the chat (intervention) is organized, synchronous and marked by a high level of motivation. This is what Dourish and Bellotti (1992:1) refers to as *awareness* when all group members understand each other's role and activity. When this awareness is articulated among participants each individual student is provided with a context, which is attuned to the others in the same group.

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In order to facilitate and help joint text collaboration, action strategies such as positive interdependency, motivation, ICT knowledge and a shared language community are required. The ability for group members to articulate an awareness of the work distribution and shared knowledge distribution requires shared language community. Positive interdependency is not enough. Group members must not only inhabit digital skills to operate in a computer-supported collaborative environment, but also be able to understand the language used. In the case of chats students are continually exposed to each other's spelling (or misspelling), chat lingo, bilingual sentences and emoticons. The data material reveals chats being mostly conducted in English with Norwegian words. Although normative English spelling is ignored it appears that group members for the most part understand each other. The focus is on communication, and not grammar or spelling. This is different in Task 2 where group members spend time debating the spelling of various words before having the typing student write it in the document.

What are the consequences of CSCL in the ESL classroom? When chat-enabled groups have completed the task they have spent more time in the document than in the chat. What does this tell us? On the one hand it might suggest that students have used the chat to communicate rather than discuss extensively. They have used their *discourse knowledge* (Weigle 2002:29). On the other hand it might suggest that students have been busy writing separately and/or checking each other's work in accordance with awareness present in the group. They have used their *content knowledge* (ibid.:33). Evidence of the latter is found in transcripts where participants express will to check other's work (i.e. "if you change your paragraph to against, and i'll write for, than we can put it together afterwards? :D")[41] The participants' pragmatic competences of *discourse competence*, *functional competence* and *design competence* (CEFR 2001.:123) have all been tested at some level in the course of the CSCL task.

If we look at the real-time collaboration document and chat as a *content problem space* and *rhetorical problem space* (Weigle 2002:33) for language

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[41] Task 1, Task 2

learning of CSCL in the ESL classroom, it might potentially provide and strengthen a range of new and old learning processes. These include *group learning*, *individual learning*, *digital learning*, *linguistic learning*, *topical learning* and *social learning*. Potentially are all of them included in CSCL and located in the intersection of *collaboration*, *language* and *interdependence.*

4.1.4. Results

The limited scope of this study restricts any greater generalizations of trends beyond what has been presented. However, through *grounded theory* I have approached the communicative processes in a descriptive manner. In the process I have attempted to categorize functions of the chats and thus deduced and developed a paradigm model however limited.

The main phenomenon studied in the communicative processes is chat, but for comparison I have also analyzed oral discussions in Task 2. The main difference appears to be how chat-based groups are more democratic. Everyone writes and can actively take part in the writing process when they all access a computer.

Interestingly, oral discussions spurred debates on language whereas chats appeared to be more augmentative to the effect that students collaborated more on content rather than language-specific issues. In terms of production both Task 1 and Task 2, relative to the time given (45 min), did produce reasonably sized first drafts. Although students in their chats contributed productively with links, ideas, thoughts, and arguments it is logical to shift focus to the written product and assess and analyze how the product compares to the process behind it.

4.2. The Written Product

In this section I will present and describe the characteristics of the four essays produced. Firstly I will explain the operationalization of the analytical approach. Secondly I will analyze the essays based upon the operationalization. Finally I will present the results in a brief summary.

4.2.1 Descriptive Analysis of Essays

Four essays were written collaboratively using a web-based word-processor. The total word count for the four essays exceeded 10.000 words (including spaces). This requires a coherent and transparent approach in order to assess and analyze the *quality* of the text products. The framework for assessing the *quality* of the essays was modeled after the CEFR (2001).

A total of *thirteen* criteria covered the three competencies of *language*, *structure* and *content*. A swift word count provided information on time efficiency in terms of text production, which attributed the analysis with a quantitative measure for comparison.

The assessment itself required an operationalization of quality, and a point system ranging from 0-3 was introduced (table 12). Te 0-3 scale was chosen rather than a conventional 6-level grade system for the sake of economy and qualitative gradation. Counting essentially operationalized the assessment of quality and gradation of the assessment criteria listed.

| Criterion met and done good or better.	3
Criterion met satisfactorily.	2
Criterion met, but poorly.	1
Criterion not met.	0

Table 12: Assessment criteria fulfillment scale.

Ensuing the assessment of the four essays, web charts were produced based upon the numeric assessment (figures 15-18). By visualizing the success rate of the groups' ability to interpret and transfer criteria complex data was made more readily available.

This entails a simplification of *text quality* produced in a collaborative writing process. The simplification of complexity and quality presents a problem of objectivity. The assessment of the essays relies on a subjective evaluation, as in the case of a teacher' assessment. Determining quality is by definition a qualitative undertaking.
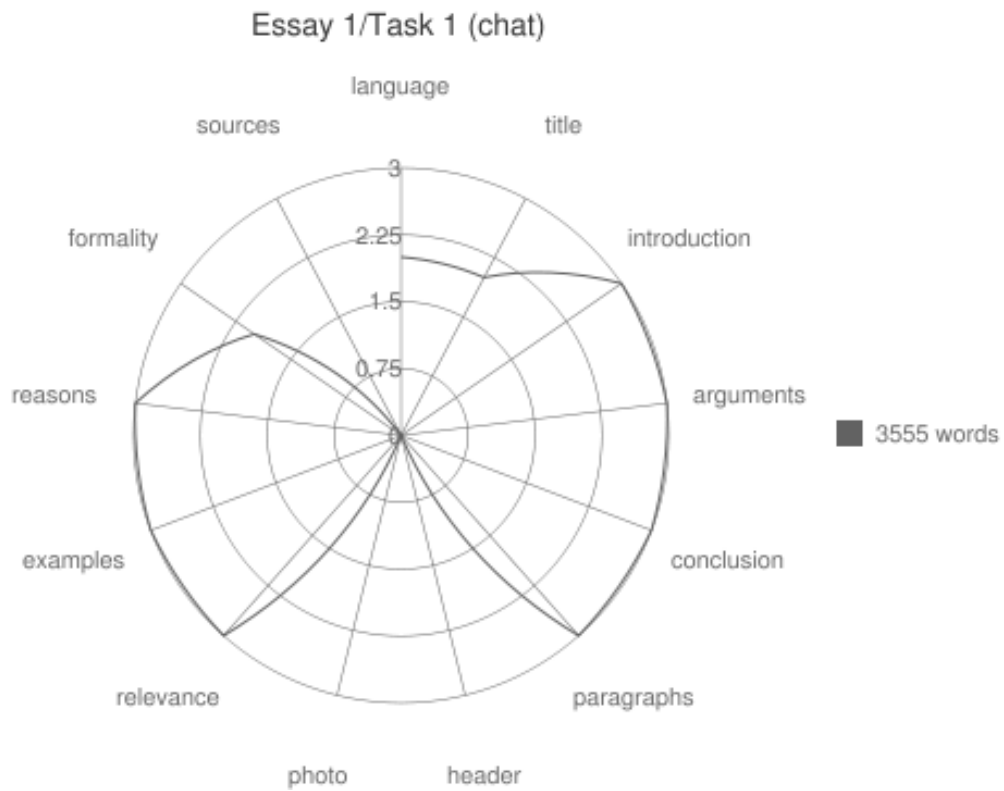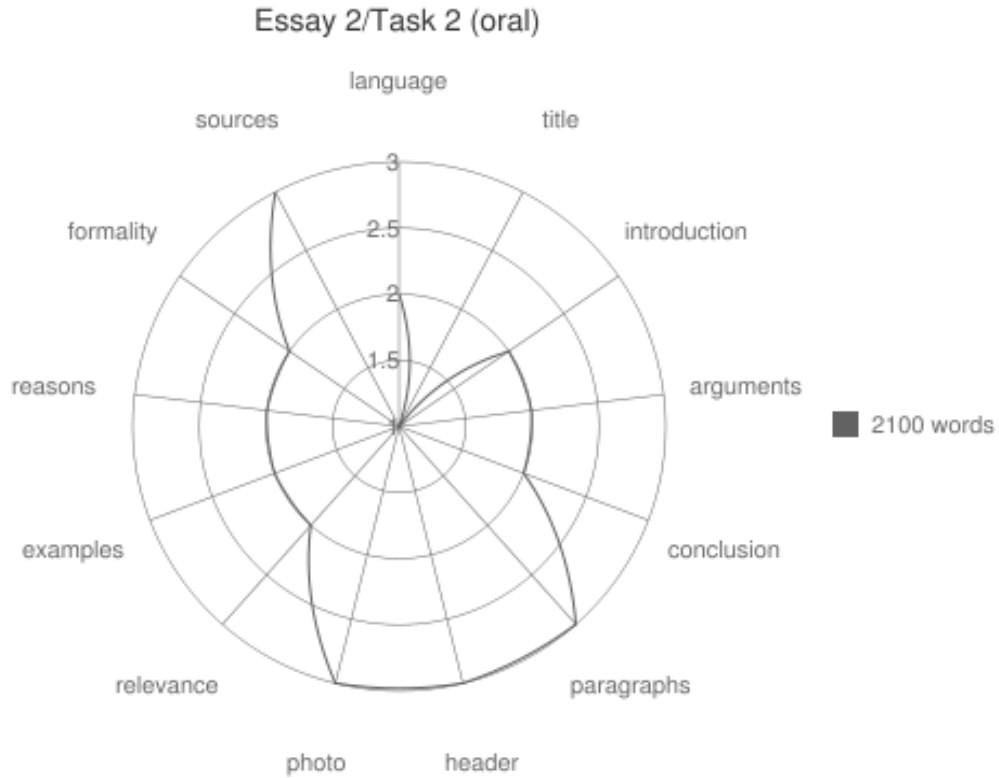
Figure 15: Day 1; Essay 1/Task 1 (chat).
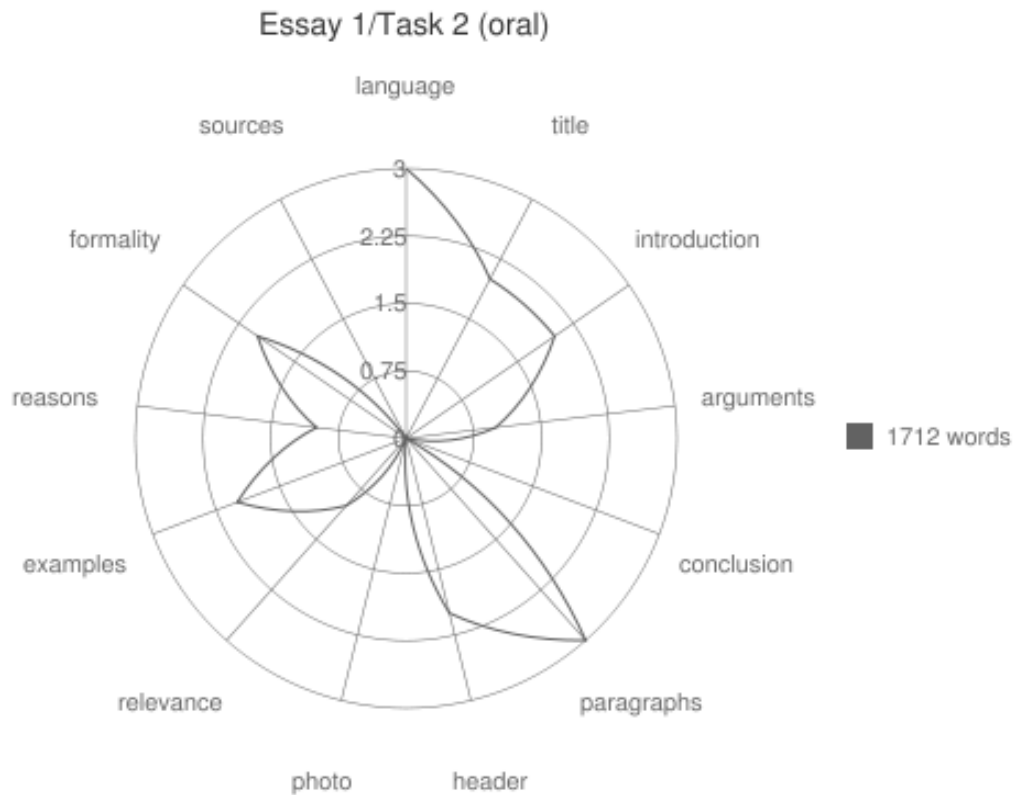
Figure 16: Day 1; Essay 1/Task 1 (oral discussion).
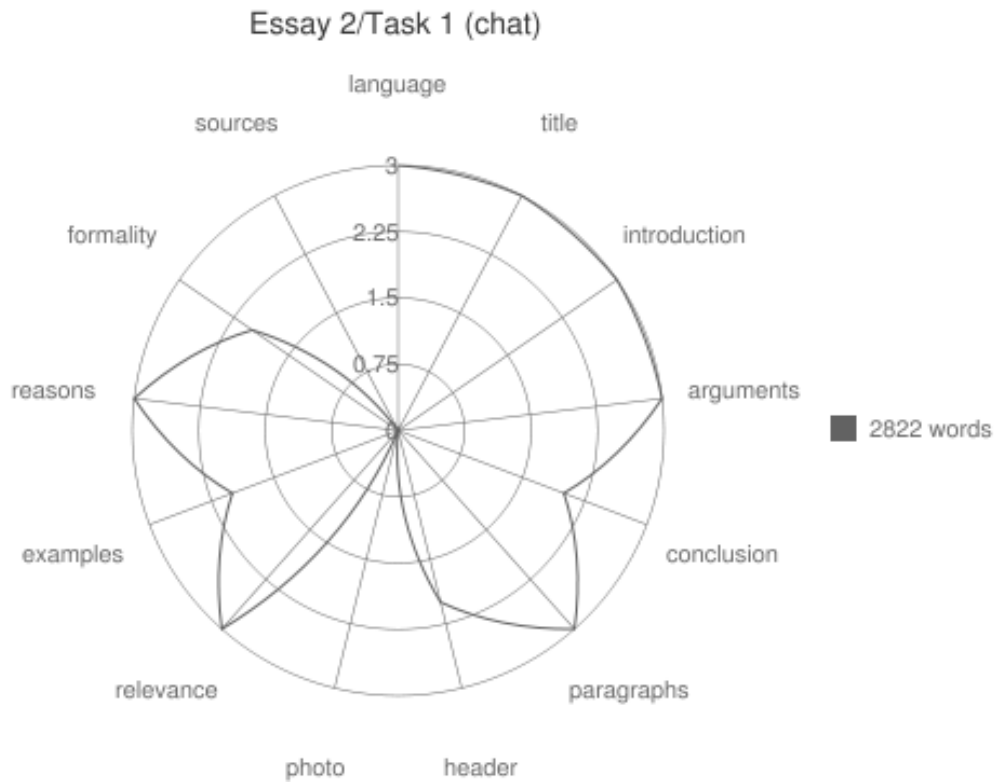
Figure 17: Day 2; Essay 2/Task 1 (chat).

Figure 18: Day 2; Essay 2/Task 2 (oral discussion).

4.2.3. Pragmatic Competencies in Essays

The Common European Framework of Reference for Languages (CEFR 2001) provided the model for the thirteen assessment criteria accompanying the task sheet. In the following analysis of the produced essays I will systematically approach the assessed data by scrutinizing the pragmatic competences displayed. The pragmatic competences were *discourse competence*, *functional competence* and *design competence* represented by near corresponding (and somewhat overlapping) categories of *language*, *content* and *structure* (see table 13).

Language (functional competence)	Content (discourse competence)	Structure (design competence)
Correct and appropriate use of English Good grammar and spelling	Relevant discussion to topic question Examples Reasons Formal style Une of online sources must be quoted and referenced	Title Introduction Arguments Conclusion Paragraphs Header Illustration (optional)

Table 13: Pragmatic competencies table.

Admittedly, text quality is an elusive entity. One essay can appear well structured, but with poor language and sentence structure, or it can present excellent ideas and strong arguments, but in an unstructured and cluttered fashion.

The category of *structure* provides an easier task at checking whether groups have remembered the various aspects listed. It appears that three out of four groups have indeed made a title for their essay, but only one group had truly thought of a creative title in terms of alliteration; Women in War[42]. The one group, which scored 0.0 points for title had written Collaborative Task.[43] Second on the list in the category of *structure* comes Introduction, and by this groups are expected to introduce the topic of the essay in a brief, but informative manner. Both of the essays produced using chat only, scored the highest with 3.0 points, while essays produced using oral discussion scored

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[42] Essay 3

[43] Essay 4

the lowest with 2.0 points.

The functional competence appears to be reasonably comparable for all groups in both Task 1 and Task 1. There are no noticeable differences in terms of sophistication in grammar, sentence structure or vocabulary. The same applies to discourse competence, as all groups appear to have found a few pros and cons related to the task question. It is important to remember how all groups had a time limit of 45 minutes, which of course does not leave that much time for reflection and sophisticating arguments and ideas. Overall, all essays meet the minimum of competence in both *language* and *content*.

4.2.3. Results

Groups who worked on three computers and communicated via chat appeared to produce longer essays than groups using only one computer and discussing orally. This is perhaps only natural as only one person can type, and given that she types at a normal pace relative to her peers. Comparing transcriptions of oral discussions and chat logs might also suggest that groups who only had one computer at their disposal tended to spend more time talking and less at writing. This lack of text production does not necessarily signal misspent time as it could also generate discussions related to form or content. However, as will be duly discussed, when the processes are being examined, time spent on talking can also be categorized as off-task and truly misspent energies. Equally, in the case of groups who accessed three computers and utilized the chat, spent less time chatting and more on writing.

Although the *democratization* of writing (everyone in the group can contribute throughout the process by writing in the document) as opposed to one typer, this form of collaboration can also foster *fragmentation*, i.e., every writer is working by herself in a limited part of the document. For instance one writer would work on the pro-arguments, while another one would work on the con-arguments, but they would not necessarily coordinate a consensus. The task itself is challenging and complex as it asks groups to produce an essay (500-800 words) in 45 minutes, and in the process communicating either orally or digitally. From this it can be concluded that in cases where groups discussed orally they did so to a larger extent than in cases were they

discussed digitally. The latter produced longer essays, and in case of the former they had lengthier discussions.

As for similarities all groups did produce essays marked by linguistic coherency and fluency. Three groups forgot to cite their sources, which all groups sought online. One group who discussed orally remembered to include sources, header and a photo. Based upon these observations one can deduce that all groups to some extent neglected to consult the assessment criteria in detail. All four essays do include titles, introductions, arguments and a conclusion. Although titles vary in precision in one case and the irregularities of argumentations and coherency between introduction and conclusion, groups have produced essays, which prove to be satisfactory first drafts produced in a short time.

In terms of language all four groups produced essays that scored relatively high. Essay 1/Task 1 (chat) and Essay 2/Task 2 (oral) scored the lowest with 2.0 points, while Essay 1/Task 2 (oral) and Essay 2/Task 1 (chat) scored the highest with 3.0 (see figure 15-18). Assessment criteria stated that groups were advised to produce essays with "correct and appropriate use of English" and "good grammar and spelling"[44].

To conclude I would deem the written products as less interesting, as I did not allow the participants sufficient time to conclude the essays. It appears that I have no evidence to prove that three students are able to produce a qualitatively better essay than one student. Perhaps the most important discovery is how Task 1 (chat) *democratizes* the writing *process* and allows everyone to write down his or her contributions *synchronically*. This might lower the bar for weaker writers to also share their views and contribute as the *rhetorical problem space* (chat) has a "freer" form than normative English spelling. Weaker writers can also contribute with links, ideas and other aspects needed which do not necessarily belong the *language* domain, but to domains of *content* and *structure*. I will now discuss the surveys to shed some light upon the participants' opinions on collaboration in ESL in general.

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[44] Appendix 3-6: Task Papers Day 1 and Day 2.

4.3. Surveys

Surveys provide a phenomenological framework for this study. Answers were collated and categorized using grounded theory's coding schemes. Surveys revealed information limited to participants' perceptions of working collaboratively and digitally.

4.3.1. Descriptive Analysis of Pre-Surveys

Applying *function categories* such as *collaboration*, *language* and *augmentation/interdependency* was helpful when analyzing the answers given in the pre-surveys. Putting the coded answers (in italics) in a grid (see table 14) provides a quick overview over the answers.

Questions	Values	Collaboration	Language	Augmentation
1. What do you do when you have to collaborate on a text-based group project in English?	Strong	*we put the parts together*	*polish the writing*	*find (…) starting point which works for the group*
2. If the group has only <u>one</u> computer, how would you carry out the work?	Strong Low	*Everyone tries to work together* *exchange who is writing*	-	*give ideas to the person writing*
3. According to you, what is the best thing about working in groups?	Strong	*Many people, many minds so many ideas come along.*		*get more perspectives* *get a good mixed essay* *share your ideas*
4. According to you, what is the worst thing about working in groups?	Weak	*time wasting and hard to control* *worst is that you have to depend on your mates* *one doing everything and someone not doing anything*	that they don't use copy-paste so the teacher notices	*disagree with each other*

| 5: In English class, do you prefer to work by yourselves, or work in groups? Why? | Strong ——— Weak | *the more people there are more information we get* *Even though it is chaotic, work gets done* | | *nice to work alone because you can decide yourself wether the work is good or not.* |

Table 14: Categorized answers from pre-studies.

The semi-structured questions mostly deal with group work and working together on class work. This naturally generates categorized answers in categories such as *collaboration* and *augmentation*.

Very few of the participants pointed out *the written element* and opportunity to improve language when working with CSCL, which is interesting in itself. It appears as participants mostly view the collaborative aspects as the most rewarding, meaningful and "fun".

The collective and shared experience is highlighted, but does not specify to what degree and on what level. Collaboration is viewed as "putting parts together", "many ideas" and "more information". Participants seem to view collaboration as an advantage in terms of *volume* and *efficiency*. The same aspects can able produce negative feelings of "time wasting" and "depending on others".

Questions 6 to 13 provided participants with a Likert-scale where they had to cross out a number. Questions were designed to get information about the participants' view on collaboration and personal gain (see table 15).

Table 15 displays how participants in my study view collaboration as something positive in terms of *information sharing* as long as it is based upon mutual trust, or positive interdependency (questions 7 and 8). The results for questions 9a and 9b might suggest that participants think that their English written and oral skills improve when working in a group.

Questions	Strongly agree	Agree	Neither	Disagree	Strongly disagree
6. When working in groups your classmates always listen to your ideas.		5		1	
7. When working in groups you always share your ideas with the group.	3	2	1		
8.According to you, how important is it that you get along with the other students in the group?	4	2			
9a. Your oral English improve when you work in a group.	2	1	3		
9b. Your written English improve when you work in a group.	1	2	3		

Table 15: Questions 6-9b. Numbers represent participants.

Question 9c (see table 16) reveals further information about *to what degree* in areas of *language*, *topic knowledge* and *structure and discussion*. Participants appears to value the positive impact of the latter when working in groups (but not necessarily CSCL), but are slightly more divided when it come to *language* and *topic knowledge*.

It can definitely be argued here that the last area of *structure* and discussion ought to have been two separate areas in order to distinguish the answers more thoroughly.

9c. Please mark to what degree the three areas have a positive impact for you personally when working in groups.					
	5	4	3	2	1
Language	2	2	2		
Topic Knowledge	3	3			
Structure and Discussion	5	1			

Table 16: Degree of positive impact in areas of language, topic knowledge, structure and discussion.

The last segment (see table 17) of the pre-survey focused on CSCL as a tool for writing. CSCL is in this case represented by Google Documents. I categorized the answers into *collaboration*, *language* and *augmentation*.

Questions	Values	Collaboration	Language	Augmentation
14. What is positive about Google Docs?		*we all write from where possible work together online*		*people that you work with can edit the same text as you.*
15. What is missing in Google Docs?	Weak			*Google docs does not have a simple way of structuring texts. I personally think that it looks messy even when structured.*
16:.If you want to add something else about a topic or survey please write it here:	Weak Strong	*groupwork is harder than working alone.*		_____ __ *The fun and "teamwork" makes it easier and better to learn.*

Table 17: Categorized answers from pre-studies (questions 14-16).

Interestingly, *language* is not represented in the material collected for these questions. Language in this instance is understood as utterances explicitly highlighting opportunities to learn new vocabulary or proofread each other's work. None of the participants expressed observations or opinions suggesting this before the task solving. Answers are limited to either *collaboration*, "work together online", and *augmentation*, "people that you work with can edit the same text as you".

To summarize the data collected for the pre-survey participants appears to be positive about the aspect of collaboration as long as it *functions* and offers a *personal gain*. Answers reveal a positive view of collaboration when it is based upon a positive interdependency where everyone is included and listened to. Information sharing is positive, but time wasting and lack of control are downsides of collaboration. CSCL is viewed as something "fun" and facilitates "teamwork" which can make it better to learn.

4.3.2. Descriptive Analysis of Post-Surveys

The main purpose of the post-surveys were to collect information related to the participants' task solving. The first question (see figure 19) asked to what extent participants' contributed in the group work completed in a range of areas expressed in the success criteria on the task paper.

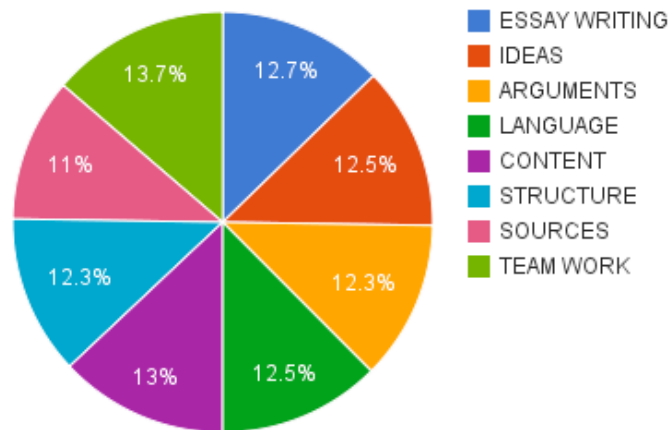Please X to what extent you contributed in the group work completed in the various areas.

Figure 19: Pie chart displaying the distributions of answers within the eight areas expressed in the success criteria on the task paper.

The pie chart does not reveal anything particular, other than that the answers are evenly distributed. It can be argued that most of the participants view themselves as positive driving forces in all areas, and thus very subjective and not necessarily true. Perhaps the question should have focused on the others' contributions rather than "you".

Question 2 (see figure 20) asked participants whether they found "working like this (collaboratively) was better than working alone on the same task". The distributions of answers are split, and might suggest that participants experienced the *collaboration* very differently. 25% said that they "strongly agreed" to the statement, while a 33% said "neither" and 33% said that they "agreed". Only a mere 8,3% "disagreed" with the statement altogether.

Questions 3 and 4 asked participants to highlight advantages and disadvantages to diversify their answer for question 2. Advantages included "we all added ideas" (information sharing), "work took (sic) faster" (efficiency) and "less work" (work distribution). Disadvantages included "we didn't have 100% control", "not so organized" (lack of awareness) and "couldn't talk together" (lack of orality).

2. Working like this was better than working alone on the same task.

Strongly agree — 25%
Agree — 33.3%
Neither — 33.3%
Disagree — 8.3%
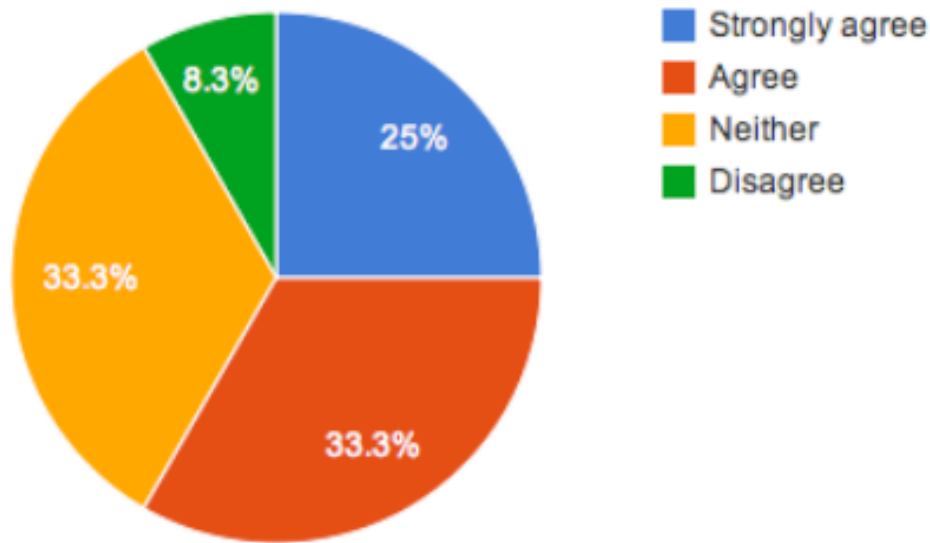
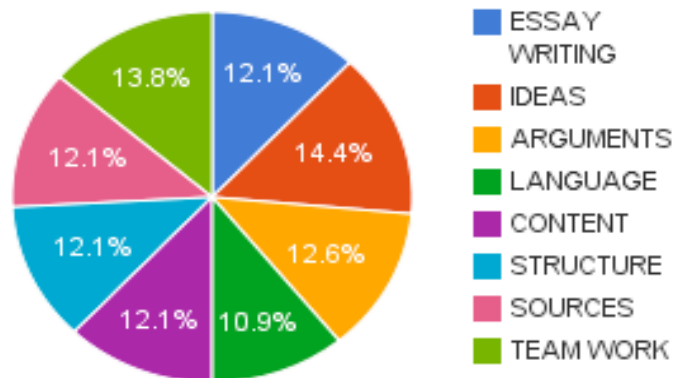**Figure 20: Pie chart displaying the distributions of answers to question 2.**

Questions 5-9 had participants cross out on a Likert-scale to what degree they agreed with a certain statement related to working with collaboratively in CSCL. I have only included results (see table 18) related to groups doing Task 1 (chat), as questions were relevant to this communication form.

Questions	Strongly agree	Agree	Neither	Disagree	Strongly disagree
5a. "I used the chat for formal discussion and information giving"	4	2			
5b. "I used the chat for social conversation."		1	3	1	1
6. "I felt very limited of not being able to talk to my classmates during the task."		1	1	2	2
7. "Collaborating in Google Docs was difficult and not very productive."				2	4
8. "Collaborating in Google Docs made writing the essay much easier."	5	1			

Table 18: Table displaying answers (questions 5-8) in the post-survey for groups doing Task 1 (chat).

The last question (question 9) had students allocate a number to the eight areas mentioned in the list of success criteria on the task paper. This might have been a difficult task for the participants to assess their own learning in this way.

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Figure 21: Pie chart displaying distribution of answers to the question: "To what extent you learned something new in the listed areas when working collaboratively."

As the results demonstrate (see figure 18) it appears that the group of six participants thought that they learned something within every field. This might either suggest that they did indeed learn something new in different ways and knowledge transforming has taken place as a product of collaboration. It might also suggest that participants are guessing, rather than knowing as the time for the task solving was too brief.

4.3.3. Results

The surveys do convey some interesting information about the participants' use of CSCL and working collaboratively. Firstly, it appears that they find that collaboration is positive. Secondly, they do seem to express an opinion of CSCL being fun and fast way of working, but also a frustrating one. Thirdly, participants express that language is not a focus area for them when using CSCL, but rather getting the job done in an efficient way. Lastly, the aspect of efficiency might have a positive consequence of fruitful discussion and information sharing.

5. Conclusion: The Collaborative Process

At the outset of this paper I hypothesized that the use of CSCL had the potential to enhance English as Second Language learning. I have described the communicative process in the conversational space (chat) and analyzed the communication descriptively. I have found evidence that using CSCL indeed has a potential to help language learning as well as nurturing collaborative skills.

Throughout my project the focus on the collaborative process has become increasingly more interesting than the written product. The act of collaboration and the language used in the process has therefore been given more space in the descriptive analysis.

The reason is simple. I do not have evidence enough to prove that the written essays are qualitatively better when using three computers compared to one. However, the unfolding processes during Task 1 (CSCL), revealed a rich potential for language learning. It appeared that students felt more at ease to contribute to the writing as well as in the discussion of the collaborative task. Data analysis does also reveal how chats had students use English as their main language, and thus exposing each other to it throughout.

My hypothesis relies on the overlapping triplet of *affordance*, *appropriation* and *innovation*. These should be viewed as a methodological approach to understand the processes analyzed. I will now return to research questions posed and assumptions made in the beginning of this paper.

5.1. Affordance: Democratization of the Writing Process

Firstly I wanted to reveal what the potential of joint text creation was when using CSCL. Secondly I wanted to understand how, and if, it could enhance English as Second Language learning. The analysis of chats demonstrated that the functional types of *collaboration*, *augmentation*, *organization* and *democracy* were all valued strong. Comparatively, analysis of oral discussions showed that *collaboration*, *augmentation* and *organization* were valued

strong while *democratization* was valued weak. This suggests how CSCL has the potential to provide a *democratic writing process*.

Addressing the second question of how, and if, CSCL could enhance ESL learning, the answer is not as clear. Surveys revealed how participants enjoyed working together using CSCL, and clearly recognized the potential inherent in the tool. A student formulated the affordance of the tool in the following way: "You can see what the others are writing and you can chat with them about (sic) subject you are writing about."[45]

CSCL provides learners with a *multi-purpose space*. The main driving force for learners is motivation, i.e. *What's in it for me?* Motivation is intertwined with affordance. By this I mean how students find enjoyment in working together in new ways. The democratic aspect of the collaborative writing process is an important one as students share the ownership of the joint text-creation and allow interventions. A student highlighted "*That people that you work with can edit the same text as you.*"[46]. The remark reveals a less protective approach to text creation, which to many is very personal. It is important however, to remind the reader that the situations created for this study did not provide a grade for the participants. This of course, eliminated a very strong motivational factor which could indeed be present in a different setting than my study.

Adding real assessment to a collaborative writing task could generate a potentially very strong motivational drive for the students. Combining factors such as "fun", "sharing" and grading suggests that the potential of using CSCL in ESL learning could very well generate new affordances for language learning as well as skills for collaborative work. It is important to emphasize the role of the teacher and the need for good instructional design rooted in a didactical intention. If the teacher succeeds in doing this the potential for new affordances in the *multi-purpose space* is definitely present.

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[45] Pre-Study Survey, Participant E, Question 14

[46] Pre-Study Survey, Participant F, Question 14

5.2. Appropriation: Shared Knowledge Transformation

The second research question I wanted to investigate was how the learning process unfolded when a group of students collaborated on joint text creation with CSCL. The data analysis suggests that students were able to collaborate in a constructive manner. Students were able to use the potential of the tool, and thus as Dourish points out to *transform practice* (Dourish 2003:1). The students generate an activity system by themselves where they articulate the shared object of completing a given task in a satisfactory manner.

The learning process in CSCL is multi-faceted in nature, but perhaps more focused on how language is used to communicate rather than pursuing normative spelling when doing it. The message is more important than the medium as it were. The essays do not differ considerably in quality in Task 1 (chats) and Task 2 (oral), but the collaborative writing processes are noticeably different in quality. The frequency of English is higher in Task 1 than in Task 2. Although both *language* and *production* were valued low in the analysis of the chats, functional types of *collaboration*, *organization*, *augmentation* and *democratization* were valued high. This suggests that students were succeeding in acquiring "an *understanding of the activities of others*" which in turn provided a context for their own individual activities (Dourish & Bellotti 1992:1).

Activity theory states that collaborators must share an object of their cooperation. For the participants in this study it was to complete a collaborative task within a set timeframe. For a teacher the object is most likely to *enhance language learning*. I would argue that the two objects overlap if the teacher manages to create a clear instructional design. The teacher must create a task that is clear in instruction, expectations and purpose. The teacher is also responsible for setting some rules and guidelines for how the collaboration should be done. This should be stated in the task. Of course, a range of choices is presented to the teacher. Should the teacher monitor the communication? Will the process be monitored? Group grade? Individual grade? Essay grade only? There are no simple answers to these questions other than that they should be given thoughtful consideration by the

teacher.

The main object for setting a task using CSCL in ESL learning could be focusing on what Bereiter and Scardemalia calls *knowledge transforming* (Weigle 2002:31). The teacher wants students to use the English language to transform knowledge, individual and shared, and thus generate a *positive interdependency* in the group. Given the evidence presented and analyzed this might be a feasible object to set. Perhaps, more interestingly, it might generate new ways of learning both language (ESL) and to collaborating digitally (CSCL).

5.3. Innovation: "Many people, many minds"

The third component is innovation. I asked the question of whether the collaborative nature of CSCL facilitate and enhance the individual's implementation of English in process and product. As discussed it turns out that the innovative aspects lies in the communicative and collaborative domains. The democratization of the writing process opens up new arenas for discussion. These discussions can be topical, linguistic or related to work distribution.

Data material form Task 1 shows that participants used English in the chats, although not always normative English. They did, however, play with language using chat-lingo, alternative spelling and typographical representations to communicate feelings. The CSCL provides users with a conversational space and a creation space. It appears that the new innovative aspects of language learning takes place in the conversational space and might lower the bar for weaker ESL students. In the creation space participants helped each other to improve sentences, paragraphs and content in the creation space. This of course, is founded on trust and a positive interdependency within the group.

On the one hand I have no evidence to claim that three students can produce a qualitatively better essay than an individual student. On the other hand, I do claim to have evidence that individual learners are exposed to language

learning when collaborating and communicating in the process. This can in turn generate new innovative learning practices for the ESL classroom.

Innovative practices when using CSCL in the ESL classroom lies with the teacher. If the teacher is able to create a learning environment based upon trust and a sense of shared goals innovative ESL practices might emerge. Low achievers might experience a strong degree of shared purpose and motivation when the object of learning is on communication and collaboration.

When "many minds" collaborate digitally in multi-purpose spaces language will always be present, and thus also generate space for innovation didactically. This requires new instructional strategies for new learning strategies to thrive.

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Appendix 5: Task Paper Day 2 – Task 1

Appendix 6: Task Paper Day 2 – Task 2

Appendix 1: Letter NSD (scanned)

Norsk samfunnsvitenskapelig datatjeneste AS
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Vår dato: 07.12.2010   Vår ref: 25208 / 3 / MSS   Deres dato: Deres ref:

KVITTERING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 07.10.2010. All nødvendig informasjon om prosjektet forelå i sin helhet 27.11.2010. Meldingen gjelder prosjektet:

25208	*Collaborative Writing in ESL Classroom using CSCL*
Behandlingsansvarlig	*NTNU, ved institusjonens øverste leder*
Daglig ansvarlig	*Tale Margrethe Guldal*
Student	*Morten Oddvik*

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, eventuelle kommentarer samt personopplysningsloven/-helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, http://www.nsd.uib.no/personvern/forsk_stud/skjema.html. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, http://www.nsd.uib.no/personvern/prosjektoversikt.jsp.

Personvernombudet vil ved prosjektets avslutning, 25.05.2011, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Bjørn Henrichsen   Marie Strand Schildmann

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Personvernombudet for forskning

Prosjektvurdering - Kommentar

Prosjektet er en undersøkelse av læringsmekanismer og læringsprosesser når ikke norskspråklige elever samarbeider om tekstproduksjon i engelskfaget ved bruk av det digitale samskrivingsverktøyet Google Dokumenter.

Utvalget består av seks elever på 9. trinn.

Personvernombudet registrerer at datainnsamling er gjennomført. Ombudet presiserer at prosjektet skulle vært meldt senest 30 dager før datainnsamlingen ble igangsatt.

Utvalget og foresatte har mottatt skriftlig informasjon om prosjektet. Det er utarbeidet revidert informasjonsskriv som ettersendes utvalget. Det innhentes samtykke fra foreldre. Ombudet finner informasjonsskriv av 27.11.2010 tilfredsstillende.

Datamaterialet innhentes gjennom spørreskjema, observasjon og skjerm/videoopptak. Utover videoopptak og opplysninger om den enkeltes "nick" eller chat-"alias" innhentes ikke personidentifiserende opplysninger. utvalget besvarer spørreskjema før og etter at de har gjennomført arbeidet med verktøyet Google Documents. Det innhentes opplysninger om elevenes vurdering av ulike arbeidsmetoder, samt hvilke erfaringer de hadde med det aktuelle samskrivingsverktøyet.

Prosjektslutt er 25.05.2011. Datamaterialet anonymiseres ved at verken direkte eller indirekte personidentifiserende opplysninger fremgår. Lydfiler slettes. Indirekte personidentifiserende opplysninger som f. eks. navn på skole, "nicks" og "alias" fjernes, omskrives eller grovkategoriseres.

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Information Letter regarding research in YXX

Trondheim 29.11.2010

Dear Y10 Parents,

In October Mr Oddvik conducted a small research project with students in Year 10 as part of his studies and subsequent master's thesis at NTNU. The study took place on both Wednesday and Thursday, **Oct. 13 and 14**. Not all students took part in the study as a *random selection* will invited only 6 students to partake in Mr Oddvik's study.

The study itself invited the students to participate in a group activity involving collaborative writing using the digital tool Google Documents for two tasks. Tasks took 45 minutes each. Additionally students were asked to fill out individual surveys on paper in writing. Transcripts of chats and surveys are kept secure and not available to anyone other than Mr Oddvik. The total time for each student who will be invited to partake in the study spent a total of 2 hours when participating.

Observations were recorded through the means of screen and video capture, and is for research purposes only, is kept secure on a protected external harddrive, and all data will be deleted after analysis work has been concluded in May 2011. Results obtained in the study have no impact on the grading of students in English. **All students will be anonymised in the study and subsequent analysis and presentation.**

Students are at liberty to withdraw from the research project at any point throughout the time of the project and all data collected will then be deleted subsequently. All data will be kept secure on an external hard drive and transcripts of chats will be kept in a separate ring binder. My project is due to be completed on <u>May 25 2011</u> and all data collected digitally will then be deleted and printed and written material will be extirpated accordingly. As students are under the age of 16 I need a written permission from parents or guardians to permit participation, and therefore I kindly ask you to sign the attached slip and return to me when possible.

Thank you for you kind attention.
Regards,
Mr Oddvik

Further details:
Main tutor: Tale M. Guldal
<u>tale.guldal@plu.ntnu.no</u>
PLU NTNU
Permission
I have read the information letter and I hereby give my informed consent represented by my signature, for my child to partake in Mr Oddvik's research study. I acknowledge that data collected will be used in data analysis and discussion in a paper, but that all data will be deleted and made unavailable after the date of May 25 2011.

Appendix 3: Task Paper Day 1 – Task 1

DSSNV01_Collaborative Task Experiment **GROUP A**

Collaborative Writing Task Day 1

Time: 45 minutes

Instruction: In a group of 3 you will write a short essay using Google Docs. You have to work on **3 individual computers**.

The essay should have an introduction, 3 arguments (pros <u>and</u> cons) and a conclusion. Everyone in the group should attempt to take part and are responsible for the final draft. You can only communicate using the document or chat.

No verbal communication!

Use the set assessment criteria to assess your work.

Mr Oddvik will be videorecording the screen during the task, but will not view your work when it is unfolding.

Task:

Zoos around the world are filled with lots of different wild animals, from gorrillas to tigers. The animals come from all around the world and zoos give us the oppportunity to see them up close. <u>But is it ok to put these animals in zoos? Write an essay where you argue pros and cons.</u>*

Length: 500-800 words

Assessment Criteria:
Language
  • Correct and appropriate use of English
  • Good grammar and spelling
Structure
  • Title
  • Introduction
  • Arguments
  • Conclusion
  • Proper use of paragraphs
  • Header with group members name and date
  • Photo is optional
Content
  • Relevant discussion to topic question
  • Examples
  • Reasons
  • Formal style

Appendix 4: Task Paper Day 1 – Task 2

DASV01_Collaborative Task Experiment **GROUP B**

Collaborative Writing Task Day 1

Time: 45 minutes

Instruction: In a group of 3 you will write a short essay using Google Docs*. You have to work on **1 individual computer**.

The essay should have an introduction, 3 arguments (pros <u>and</u> cons) and a conclusion. Everyone in the group should attempt to take part and are responsible for the final draft.

Oral discussion during work is allowed.

Use the set assessment criteria to assess your work.

Mr Oddvik will be videorecording you during the task, but will not be present in the room with you while you work.

Task:

Zoos around the world are filled with lots of different wild animals, from gorrillas to tigers. The animals come from all around the world and zoos give us the oppportunity to see them up close. <u>But is it ok to put these animals in zoos? Write an essay where you argue pros and cons.</u>*

Length: 500-800 words

Assessment Criteria:

Language
- Correct and appropriate use of English
- Good grammar and spelling

Structure
- Title
- Introduction
- Arguments
- Conclusion
- Proper use of paragraphs
- Header with group members name and date
- Photo is optional

Content
- Relevant discussion to topic question
- Examples
- Reasons
- Formal style
- Use of <u>online</u> sources <u>must</u> be quoted and referenced

Appendix 5: Task Paper Day 2 – Task 1

DSSNV02_Collaborative Task Experiment **GROUP B**
Collaborative Writing Task Day 2
Time: 45 minutes
Instruction: In a group of 3 you will write a short essay using Google Docs. You have to work on **3 individual computers**.

The essay should have an introduction, 3 arguments (pros <u>and</u> cons) and a conclusion. Everyone in the group should attempt to take part and are responsible for the final draft. You can only communicate using the document or chat.

No verbal communication!
Use the set assessment criteria to assess your work.
Mr Oddvik will be <u>videorecording</u> the screen during the task, but will not view your work when it is unfolding.

Task:
Norway has a military draft which means that young men have to spend a year in the army. This year, 2010, the draft is not only limited to young men, but young women can also be drafted for military service. Is it fair that both sexes can be drafted for military service, or should it be limited to young men? <u>Write an essay where you argue pros and cons.</u>
Length: 500-800 words

Assessment Criteria:

Language
- Correct and appropriate use of English
- Good grammar and spelling

Structure
- Title
- Introduction
- Arguments
- Conclusion
- Proper use of paragraphs
- Header with group members name and date
- Photo is optional

Content
- Relevant discussion to topic question
- Examples
- Reasons
- Formal style
- Use of <u>online</u> sources <u>must</u> be quoted and referenced

Appendix 6: Task Paper Day 2 – Task 2

DASV02_Collaborative Task Experiment **GROUP A**
Collaborative Writing Task Day 2
Time: 45 minutes
Instruction: In a group of 3 you will write a short essay using Google Docs. You must work on **1 individual computer**.

The essay should have an introduction, 3 arguments (pros <u>and</u> cons) and a conclusion. Everyone in the group should attempt to take part and are responsible for the final draft.

Oral discussion during work is allowed.
Use the set assessment criteria to assess your work.
Mr Oddvik will be videorecording you during the task, but will not be present in the room with you while you work.

Task:
Norway has a military draft which means that young men have to spend a year in the army. This year, 2010, the draft is not only limited to young men, but young women can also be drafted for military service. Is it fair that both sexes can be drafted for military service, or should it be limited to young men? <u>Write an essay where you argue pros and cons.</u>
Length: 500-800 words

Assessment Criteria:

Language
 • Correct and appropriate use of English
 • Good grammar and spelling
Structure
 • Title
 • Introduction
 • Arguments
 • Conclusion
 • Proper use of paragraphs
 • Header with group members name and date
 • Photo is optional
Content
 • Relevant discussion to topic question
 • Examples
 • Reasons