MULTIDIMENSIONAL PARTICIPATION IN POLYCONTEXTUAL COMPUTER-SUPPORTED LANGUAGE LEARNING

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Abstract

This thesis is an interdisciplinary study on how students and teachers as participants in computer-supported language learning make meaning to their activities. The analysis moves gradually from a more general discussion of participant activity and interaction in computer-supported environments to a domain-specific discussion of language learning and work. The main body of data for the study comes from three different university language courses. The last empirical study introduces a complementary data set from working life.

The thesis grounds its arguments on a discourse perspective of meaning. Rather than considering meaning as a property of a text or discourse, meaning is seen to reside in the active efforts of the participants of a social situation. In the particular case of computer-supported learning, a multiplicity of modes has to be taken into consideration. Language, in the sense of words, is a partial bearer of meaning only. The theoretical framework advances from a discussion of computer-supported learning as a hybrid form of interaction to a discussion of situated perspectives and computer-supported learning. The research approach applies multiple perspectives due to the multimodal and polycontextual nature of computer-supported learning. Special emphasis is laid on reaching the participant perspective.

The findings highlight the multidimensional and polycontextual character of participation in computer-supported learning. The resources that the participants use for meaning-making reach beyond the textual interaction in the learning platform. Furthermore, the participants have multiple ways of taking part in the educational activities. The context that the participants produce for their actions exceeds the limits of the learning platform and ties the activity to the surrounding world in many ways.

Keywords: computer-mediated communication, computer-supported collaborative learning, discourse, language learning (foreign)

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1 Introduction

1.1 The aim of the study and the research questions

Much of the current research on computer-supported learning seems to take for granted that the use of computer media supplemented with progressive pedagogy improves learning. This hypothesis is mostly inspected in rather controlled situations. To some extent, the research in the field utilizes data from "authentic contexts", but nevertheless, controls the experiments as much as possible. A relatively limited amount of research, however, has tried to dig into the "messy" and "ill structured" reality of computer-supported learning in higher education. In this thesis, special emphasis is laid on reaching the richness of meaning-making[1] and learning activity. The research is motivated by the following general research questions: What is going on in web-based learning? What are participation and interaction like from a participant perspective? What is the context of activities that the participants of web-based learning construct?

Despite the fact that the approach applied in this study comes close to data-driven and non-experimental research, application is on the agenda in this thesis as well. However, according to the stance this thesis has taken, human learning and interaction involve such complex phenomena that simple causal explanations of the relationship between learning and computer-technologies are hard if not impossible to establish. Mediating technologies do have a role in the study process, but, however, the manner in which this role is realised is not straightforward. Since the meaning of text, visuals and actions are locally negotiated, learners are likely to build at least slightly different interpretations of the intended pedagogic setup. For example, instructions and different features of the learning platforms might invite – and according to the results of this thesis they do invite – diverse interpretations, despite the fact that the built-in pedagogic context also brings in resources for meaning-making. In particular, this thesis is interested in this local meaning-making and the diversity of interpretations. The aim of this study is:

[1] With the use of the term 'meaning-making' the current thesis wishes to emphasize that meanings are negotiated in interaction between people and objects. Text and discourse are seen here as resources which the readers/hearers use in their efforts of making-sense to the computer-supported activities.

1. To study the ways in which participants make computer-supported interaction and learning meaningful.
2. To develop a qualitative research approach for studying the multimodal and polycontextual contexts of computer-supported collaborative learning (CSCL) and interaction from a participant perspective.
3. To consider the pedagogical implications of the study, particularly in the context of language learning and teaching in higher education.

According to the chosen ethnomethodology-inspired discourse approach, this research set off with the rather general question of "what is going on in computer-supported learning and interaction." Gradually this general question was elaborated into more specific questions. In search of the above mentioned aims, the following research questions are asked:

1. What kind of computer-supported interaction do the participants construct? What are the resources they draw upon?
2. What is the context of computer-supported learning as produced by the participants? Which resources do they draw upon while making interpretations of the activities?
3. How do people participate in the computer-supported learning activities? What is considered as participation? What kind of paths of participation do they follow?

The questions overlap to some extent. While dealing with issues that relate to the question of context in computer-supported study projects we at the same time have to address the resources the participants draw upon and attend to. This, however, reflects the nature of the whole research process, which aims at reaching a participant perspective to computer-supported language learning activity. Studying in computer-supported projects involves examining complex meaning-making in multiple entangled modalities.

The context of these data comes from language learning. The first empirical analyses concentrate on studying the computer-supported learning activity at a general level. For these analyses language courses offer a context. The last study reported in this thesis provides an epilogue, which considers the domain of language learning from the perspective of computer-supported learning. This part of the thesis takes a look at language learning and language work. By turning the gaze from formal language learning contexts to the context of language work, this study wishes to produce new perspectives into what the practice of language teaching is missing. The last study asks:

4. How do technology and computer-supported collaboration relate to language learning? How are these resources used in language work?

The fifth research question, which runs through the whole work, concerns the development of a research approach.

5. What would a research approach that aims at reaching the sense of the activities from the participant perspective have to take into account?

1.2 The framework of the study

Theoretically this study is based upon constructionist (Berger & Luckman 1967) approaches to learning and interaction and draws upon several different perspectives due to the nature of the researched phenomenon of computer-supported learning and interaction (see chapter 2.2.3 for a discussion on computer-supported interaction). Most importantly, this thesis maintains that meaning is not a fixed property of a word or a text or a sign. Texts, in the sense of 'language', have meaning potential and provide semiotic resources, which the language users draw upon when they make meaning. Meanings are negotiated in interaction between people and objects, in social and physical contexts. From this point of view, meaning then is a result of semiotic work (Halliday 1975; 1976). In the particular case of computer-supported learning and interaction a multiplicity of modes has to be taken into consideration. Language, in the sense of words, is a partial bearer of meaning only (Kress 2003, 35). Language both constructs and is constructed by the world (Potter & Wetherel 1987; Wittgenstein 1963).

The view this thesis has adopted of language and interaction (see chapter 2.1) has its roots, first of all, in the work of Michael Halliday (1975; 1976; 1978). Hallidayan functional linguistics approaches language and its structure through language use. In a sense, the systemic-functional theory comes close to sociology in its orientation as this theory sees language more as "social action" and "doing" than "knowing" (Luukka 2002, 90). Furthermore, language is more of a collaborative enterprise than an individual and mental phenomenon (Luukka 2002, 89). Halliday is the force behind the discussion on social semiotics (Hodge & Kress 1988), which this thesis makes use of, especially when dealing with written multimodal communication (Kress 2003: Kress & Van Leeuwen 2001). Mediated discourse analysis (Scollon 2001b; Scollon & Scollon 2003), which also draws to a great deal upon the work of Halliday, provides relevant perspectives for this study, especially in its emphasis on placing language in its social and material surroundings.

Ethnomethodological perspectives (Garfinkel 1967; Sacks 1992) to language and interaction are also considered as a background theory, first of all because they emphasise that meanings are negotiated in situ, which social semiotics does not do to a similar extent in its analytical practices. This thesis aims at looking at computer-supported learning as locally constructed. In this process, interaction around the activity, on the computer and in other off-line situations, has one central role. Making sense of the pedagogic situations, however, involves meaning negotiation in several modes, for example, in writing, image, layout, speech and activity. In order to reach the possible participant perspectives to computer-supported learning and interaction all of these modes have to be taken into account as important semiotic resources. Because computer-supported learning and interaction could be termed also as a hybrid form of discourse, there is reason to involve such theories in the analysis which have mainly concentrated on the spoken mode of interaction. This is not to say that this thesis would consider computer-mediated-communication in asynchronous learning platforms as conversation. On the contrary, later on it will be shown that this is not the case (see chapter 5.3). However, to shed light on the local construction of computer-supported learning, this study also draws upon ethnomethodology (Garfinkel 1967; Sacks 1992), and especially

on the constructionist kind of discourse analysis (Potter & Wetherell 1987) and to some extent the tools offered by conversation analysis (Sacks 1992). In sum, the research approach in this thesis is discursive and it draws upon sources which consider language and other modes of representation as social action (see chapter 4 for a more detailed discussion of the methodological choices).

As for the perspective on learning (chapter 2.3), this thesis considers the constructionist approaches. Most current learning theory takes the social aspect of learning into account: some theorisation considers social interaction as the central locus of learning, whereas some see it as one mechanism. The socio-cognitive approaches (cf. Resnick, Levine & Teasley 1991; Resnick 1989; Salomon 1993) have, among others, been interested in studying the social nature of cognition. These views to thinking and learning argue that whereas knowledge is an interpretation of personal experiences, it is also social in nature. Knowledge does not consist of facts absorbed into the brain, but instead is actively constructed by learners. The site, in which the construction of knowledge occurs, is interaction. Individual thinking processes have only one role in this process. The socio-cultural views (Lave & Wenger 1991; Rogoff 1990), which rise from the seminal work of Vygotski (1962), bring into the foreground the cultural context in which the learning and interaction take place: It matters where learning occurs. For example, in institutional contexts pedagogic activities and their interpretations are influenced by the affordances the social context provides. What counts as learning activity in school might differ a great deal from learning activity in out-of –school contexts.

Situated (e.g. Lave & Wenger 1991) and distributed (e.g. Hutchins 1991) perspectives to learning as alternatives to the traditional individualistic view to learning, consider knowledge or, rather, knowing (if we want to accentuate its process of knowing instead of the product) as a "process distributed across the knower, the environment in which knowing occurs, and the activity in which the learner is participating" (Barab & Kirshner 2001:5). The theory of collaborative learning (cf. Dillenbourgh 1999), and the discussion around computer-supported collaborative learning in particular (cf. Koschmann, Hall, & Miyake 2002; Wasson, Hoppe & Ludvigsen 2003; Strijbos, Kirschner, & Martens 2004) provide important perspectives for this thesis. These more or less practice oriented applications of the above mentioned approaches to learning theory have attracted much attention lately. This is largely due to the heavy emphasis on the information society in the recent discussion on educational policies. However, this discussion is of importance considering the topic of this thesis as well.

In accordance with the above-described situated perspectives to learning and interaction, the qualitative methodology applied in this thesis follows a constructionist line of thinking (Berger & Luckman 1967) also. The research approach (see chapter 4) involves a combination of micro- and macro[2] perspectives, and it draws a great deal from ethnomethodologically inspired ethnography (Garfinkel 1967; Goffman 1967) and conversation analysis (Sacks 1992; Goodwin & Duranti 1992), social semiotics (Halliday

[2] The term 'macro' is not used in its most common sense in this thesis'. Instead of focusing on societal aspects (as for example critical discourse analysis often does), 'macro' in this thesis refers to the wider scene of computer-supported learning above the 'micro' perspective (i.e. how individual participants interact and act in various situations).

1978; Kress 1985) and mediated discourse analysis (Scollon 2001b). To sum up, this thesis is grounded on the constructionist line of thinking both in the theories of interaction and of learning. As computer-supported learning is activity which involves several media and modes, this thesis combines both discourse-analytic and social-semiotic perspectives.

1.3 The structure of this thesis

The theoretical and methodological background of this thesis is introduced in detail in chapters two and four. Chapter two reviews relevant theory in connection with computer-supported learning and interaction. Chapter three, in between, provides an ethnographic description of the research contexts reported in this thesis. Chapter three does not thus describe the pedagogic approach from the perspective of learning theory alone, but it also provides some analysis of the events in the light of data. Furthermore, even if the pedagogic activity in the researched contexts were in advance explicitly outlined by the teachers in terms of learning theory, this thesis does not assume that these theories are what became realised in the learning activities. On the contrary, the thesis attempts to question and critically examine what kind of pedagogic context emerges from these data (see the empirical analyses in chapter 5). Chapter four introduces the research approach, data and methods applied in this thesis. In addition to providing the theoretical background, chapter four will also discuss evidence from the data to support the methodological choices.

Reports of the empirical analyses are offered from chapter five onwards. Chapter five discusses computer-supported learning and interaction from a general perspective and, therefore, does not yet cover the specific questions around language learning. The first sub-section, chapter 5.1, discusses the resources the participants have available for meaning-making in learning platforms and related contexts. Chapter 5.2 moves towards a reader perspective of computer-supported learning as it takes a look at how actual participants interpret the activities and move around the computer-supported learning platform. Chapter 5.3 analyses the context of computer-supported learning activities as it is portrayed by the participants. The last subsection, chapter 5.4, explores the relationship between the written product (the collaboratively produced computer-supported discussion) and participant activity. The research approach in chapter five involves a dialogue between data and theory. On one hand, aspects that emerge from the data are brought up. On the other, these issues are dealt with the aid of current theoretical discussion around computer-supported learning.

As an epilogue to the empirical studies, chapter six turns attention to the domain-specific discussion on language learning. Formal language teaching carries with it its institutional constraints and affordances[3]. Pedagogic activities are interpreted through the frame of language learning discourses. Therefore, putting new teaching and learning practices into action is not a simple task. Distancing us from formal language learning contexts, chapter six will discuss the use of electronic and collaborative resources in language learning in the light of language work.

[3] According to Norman (1988:9) affordances refer to 'to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used'. Affordances provide strong clues to the operations of things and they suggest the range of possibilities. Here the term affordance refers to the range of possible actions that can be taken within language learning context.

2 Learning and interaction in networked environments

Chapter two takes a look at relevant theory in connection with computer-supported learning and interaction. It will move from a general perspective to the particular discussion of computer-supported learning. First, approaches to meaning-making and computer-mediated-communication will be discussed. Because of the inherently multimodal and polycontextual nature of computer-supported interaction the chapter discusses at length multimodal and situated perspectives to computer-supported interaction. Secondly, it will progress to a discussion of situated learning theoretical perspectives in relation to computer-supported learning. Situated perspectives to interaction and learning share the common concern of locally accomplished and situated character of social order.

The first chapter, chapter 2.1, will discuss the concept of meaning. This discussion lays the foundation for the theoretical and methodological approaches applied in this study. The second major theme in this chapter involves a discussion of computer-supported learning as a form of interaction in chapter 2.2. Chapter 2.3 provides learning theoretical angles to computer-supported learning from a situated perspective.

2.1 The concept of meaning

2.1.1 Meaning as socially constructed

The so-called discursive turn in social sciences, especially within the fields of sociology and social psychology, turned attention to the ways people make meaning in interaction with others. This major shift in perspective called for new kinds of research questions and methods of analysis (e.g. Garfinkel 1967, Gergen 1973, Potter & Wetherell 1987). In educational research, there have also been strong traditions resting on interpretive paradigms (e.g. Glaser & Strauss 1967). The recent interest in discourse and interaction in these accounts is supported by the developments within socio-cognitive (cf. Resnick & al. 1991, Resnick 1989, Salomon 1993) and socio-cultural (Lave & Wenger 1991, Rogoff 1990) theories of learning. Still, it seems that the concept of 'discourse' as conveying 'talk

about learning' seems to have gained a broader interest in research on learning and instruction only recently (cf. EARLI 2001). Many of these studies, however, seem to imply a discrepancy: Although the discourse perspective into activities and learning is acknowledged, the research methods applied often rely on paradigms that assume language as a direct reflection of reality and not as a medium for constructing multiple realities.

When we look at discourse as situated, constitutive use of language in social settings, the talk between participants is not to be interpreted as facts as such. Potter and Wetherell (1987, 6) illustrate this perspective in the following way:

> "[..] social texts do not merely reflect or mirror objects, events and categories pre-existing in the social and natural world. Rather, they actively construct a version of those things. They do not just describe things: they do things. And being active, they have social and political implications." (Potter & Wetherell 1987, 6).

Thus, what people say is not a direct reflection of what they think (state of mind). Instead, we do things with words (discourse as constitutive use of language) (Austin 1962). The research approach of ethnomethodology adds to the agenda the principle of observing what people do (cf. Sacks 1992). Instead of attitudes and emotions, ethnomethodology takes common sense, or the methods with which people make sense of the world (ethno methods), as the object of inquiry.

Similarly from the perspective of social semiotics, meaning is seen to reside in the active efforts of the participants of a social situation. Social semiotic theory (Halliday 1978, Hodge & Kress 1988), the roots of which reach as far as to the work of Peirce, for example, but which has recently gained new interest, considers meaning as a result of semiotic work. According to the recent development in multimodal semiotics (Kress & Van Leeuwen 2001; Kress 2003; Lemke 2002), semiosis, or meaning-making, involves more than the linguistic mode. Meaning is spread across many different modes[4] and it is the result of semiotic work. Readers use 'semiotic resources'[5] to make meaning. From the perspective or the writer, the meanings the readers make are always approximations. We make sings, or in other words we are engaged in semiosis, when we write or when we read.

> "Words are not much more than rough outlines waiting for us the readers to colour them in. What the written text provides is words in a clear order. Each word asks to be filled with meaning, a meaning that comes from our past experience of that word in our social lives. All social lives – where we have lived them in broadly the same society – are shaped by the similarity of experiences, something that is much in the foreground, and shaped by the myriad of differences, something we need to leave in the background in everyday communication and interaction, but differences which are there, and are real. Writing provides relatively clear structures which are entities

[4] Mode is used here in the sense of "culturally and socially fashioned resource for representation and communication" (Kress 2003, 45). Examples of modes include, speech, dance, writing, image, music and layout.

[5] Semiotic resource is used here in the sense of "resources of or resources for meaning-making" (Kress 2003, 9)

needing to be filled with meaning. This is the space for imagination created by writing, by and large." (Kress 2003, 59)

Texts[6] – the resource material for meaning-making - are constituted of three significant factors (Kress 2003, 94): 'genre', 'discourse' and 'mode'. 'Genre' refers to the aspects of organisation of text, which allows us to "understand the social relations of the participants in the making, the reception and the reading/interpretation of the text (Kress 2003, 94) ". A good example of this could be the genre of "rules and regulations". The text gives usually hints about "who is the one who rules" and "who are the subjects of this ruling". 'Discourse', on the other hand, refers to the "organisation of content from a particular institutional point of view" (Kress 2003, 94). Used this way, in the Foucauldian sense, we can talk, for example, about legal or religious discourse. 'Mode', the third factor, talks about the form of language we are dealing with, be it writing, speech, image or some multimodal combination of these. What is worth emphasising at this points when considering writing and reading related meaning-making, is that different people make different meanings relying on different resources. However, meaning is not totally independent of form. It is not to be denied however, that some forms of language are usually given rather similar interpretations. For example, "a letter", is in most cases recognised as "a specific form on written communication".

Constructionist perspectives have, indeed, become established in many fields of science, and there is a growing body of research from a discourse perspective on face-to-face situations in classrooms (cf. Edwards & Mercer 1987; Säljö & Bergqvist 1993; Sarangi 1998, Dysthe 1996; Gutierrez, Baquedano-López & Tejeda 1999). However, within the research of computer-supported learning and instruction these paradigms are only emerging. Some interesting research is being done on computer-supported learning from a discursive perspective, emphasising the situated character of sense making (cf. Rystedt 2001; Ivarsson 2001; Arnseth & Solheim 2002; O'Neill, Martin, Al-Matrouk & Wastell 2002; Koschmann, Zemel, Conlee-Stevens, Young, Robbs, & Barnhart 2003; Ludvigsen & Mørch 2003). In the field of computer-supported language learning the ethnographic work by Warschauer (2000) provides an interesting perspective, especially in terms of his critical views towards the effects of technologies within pedagogic settings. The ecological-semiotic perspective outlined by Van Lier (2002), as well as the sociocultural perspectives to language learning as discussed by Lantolf (2000), for example, provide also relevant perspectives.

2.1.2 Meaning-making as multimodal activity

Most research on computer-mediated communication (CMC) and computer-supported learning focuses on textual activity in on-line environments. This thesis, however, takes the stance that computer-mediated environments are not divorced from other social spaces, but, instead, are a part of a complex network of media and contexts. Consider a scene in a classroom were the students utilise computer-supported communication as a tool for accomplishing their learning tasks. They talk to each other and to the teacher,

[6] In the sense of language.

commenting on the work, asking for instructions, talking about "off-task" issues etc. They write to each other in the learning environment. They wave at each other, point at computer screens. They smile and make faces. They read text and make meaning to pictures and other visual elements. Some might share a synchronous computer-mediated chat simultaneously. All this is situated in the context of a classroom, in an educational setting, which in turn gives rise to various interpretations on participant roles, their expected behaviours and related interaction patterns. Working and learning in multimedia or mixed-mode environments makes us face a hybrid of different media and modalities. It is fair to conclude that the computer screen is not the only context where the computer-supported learning activities are negotiated.

The most prevalent line of inquiry in computer-supported learning and interaction approaches participant activity primarily through analyses of monomodal[7] text on computer screens. Most CMC concentrates on the textual mode (cf. Herring 1999, Baym 1996). Also in connection with CSCL (cf. Koschman & al. 2002) research it is text which receives most of the researchers' attention. There is a growing interest, however, deriving from the work of Hodge and Kress (1985) and Halliday (1978) on the notion of multimodality: the multiple forms that all language use comprises of (cf. Kress and van Leeuwen 2001). Lemke (2002), for example, approached hypertext from the perspective of multimodal semiotics. This discussion takes a critical stance towards monomodal research frames (e.g. Kress and van Leeuwen 2001). As Lehtonen (2002) points out, currently prevalent theories of meaning primarily focus on oral and written communication. Still, language is never "mere words". Instead, it always comes in material forms, which contribute to the shared construction of meaning. All language is multimodal. When we write, for example, we do not use bare words, but also typographical means such as font size or capital letters to convey meaning. Thus, a multimodal analysis should bear in mind all the resources for meaning-making that we have available through all our senses in addition to the customary analyses of written or spoken text. Ethnomethodologists, who mainly concentrate on spoken interactions, have also fairly recently turned their attention to extra-linguistic elements in semiosis. Goodwin (2002) suggests that visual elements should receive attention - not in isolation but as the systematic practices of seeing used by participants as embedded in other meaning-making activities. With respect to muldimodality, this thesis will consider how aspects of the structuring of computer-mediated discussion participate the meaning-making process. Computer-supported learning is also analysed from the perspective of activity. In practise this means that in addition to the textual exchanges computer-generated traces of participant activity will be analysed. Some attention is paid on face-to-face interaction (on the computer, in the classroom), as well. However, within the scope of this analysis it is not possible to analyse practices of seeing.

[7] The stance that Kress and VanLeeuwen (2001) have taken maintains that also written text makes use of several modes: words can be boldfaced or written in the uppercase, which provide resources for meaning-making, too.

2.2 Computer-supported learning as a form of interaction

Chapter 2.2. will discuss computer-supported learning from the perspective of interaction. As will be shown in this chapter, and later in the empirical analyses as well, computer-mediated communication can justifiably be described as a hybrid form of communication, which follows multidimensional sequentiality. First CMC will be looked at as a textual activity, involving reading and text (2.2.1). Secondly, it is examined as an interactive form of communication, the materiality of which provides certain constraints and affordances for the communication (2.2.2). The current chapter finishes off with a discussion on the notion of context in computer-supported learning (2.2.3).

2.2.1 Computer-supported learning as reading activity

The multimodal activities in computer-supported learning environments involve a considerable amount of textual interaction. Computer-supported asynchronous communication undeniably includes reading and writing activity. Therefore this thesis pays considerable attention to reviewing the theory of reading, literacy and texts: what is reading like as meaning-making and what is the role of textual structures in this process.

Although it is sometimes said that learning environments store and make visible the learning process the learners are involved in, the participants' meaning-making process cannot be traced from the textual clues they leave in the asynchronous discussions in the learning environment alone. Looking at theories of reading and literacy, we shall soon see that the meaning-making process the participants in computer-supported collaboration undergo is far more complicated than that. Readers do not decode fixed meanings from texts, but instead, readers use text and other semiotic resources for making meaning. This makes the scene of reading activities complex.

2.2.1.1 Reading

Earlier research considered reading mainly as a process of unravelling the meaning of a text. According to this product- or text-oriented view, meaning resides in the text and is more or less stable. The purpose of reading is to shift information from the text to the reader. This theoretical framework suggests that a successful reader is one who is able to decode texts unerringly. In other words, s/he is able to decipher the exact meaning the writer intended. (Linnakylä & Takala 1990, Takala 1986) This basically behaviouristic model sees reading as a textual stimulus - reader response configuration (Baker & Luke 1991, 11)".

The "reading as decoding" -perspective was replaced by interaction theory, which interpreted reading as a process of straightforward interaction between the text and the reader. According to this view, the meaning of the text is created in a process of interaction, between the text and the reader; which implies that the meaning does not reside in the text as such. (cf. Linnakylä & Takala 1990; Takala 1986). This basically

cognitivist approach regards reading as "a cognitive and psycholinguistic process": one involving background knowledge, memory and discourse schemata, and possibly some kind of "deep" linguistic processing (Baker and Luke 1991, 11)".

How readers approach texts is seen to be dependent on the reading purpose, as well. Reading strategies vary according to reading tasks. Michael Hoey (1991) lists different reading purposes and strategies that would typically relate to these. These strategies vary from scanning to careful reading. According to Hoey (1991, 224), checking information and seeking clarification involves scanning of the text. Skimming the whole and reading quickly the relevant parts of text is the strategy applied when readers seek for clarification, and look for support for a position or background information. Careful reading is involved in such tasks which involve evaluation, studying or translation. Only the last reading purposes would typically involve sentence-by-sentence processing of text.

A later development in the field of reading research is the so-called transaction theory (Linnakylä & Takala 1990, Takala, 1986). Transaction theorists emphasise the reader's role in text interpretation even more firmly than the interaction theorists do. According to this theory readers use texts to construct meaning relying on their previous knowledge, experiences, attitudes, values, skills and needs. The transaction perspective assumes that knowledge is a social artefact, rather than a reflection of objective reality. All readers make their own meaning to a text, depending on their reader histories and the context of reading.

This approach to reading differs from the interaction theory in a sense that is does not see reading only as an internal process. Instead, what counts as reading is highly dependable on the social meanings we attach to the word. The transaction theory sees reading as "varied forms of visible, social, cultural and political practice", (Baker & Luke 1991, 12). Each and every one of us has several different literacies instead of mastering one clear-cut process.

According to the transaction theory, a successful reader processes texts further while she reads: she selects relevant information, summarises, makes links, analyses and organises information, and edits (Niemi & Vauras 1994, 47). A successful reader acts upon texts and reflects on them critically. Linnakylä (1990, 6) points out that independent and self-reliant readers do not, in fact, merely interpret texts; instead, they use texts to evaluate their own thoughts and ideas. In other words, a competent reader takes an assertive position towards a text when needed, where as a less competent reader consents to a submissive position all the time (cf. Widdowson 1984, 91-94 "submissive and assertive readers"; Wallace 1992, 45 "submissive and resistant readers"). However, we have to remember that discourses also construct reading positions and subject positions for the readers of texts (Kress 1985, 37).

Instead of one literacy skill, we acquire several different types of literacies as our experience as readers develops. Linnakylä (1990, 4-5) divides literacy into three types: basic literacy, functional literacy and emancipatory literacy. Basic literacy is an instrumental skill, which has relatively stable demands. In other words, basic literacy consists of a relatively stable set of decoding and comprehension skills. Admittedly, if readers are not familiar with letters and the sounds they stand for, they can hardly be said to be literate. Thus, basic literacy is the kind of literacy, which the other types of literacies build on. However, basic decoding and comprehension skills do not alone make a literate

reader. A person is literate only if she is able to use text in order to act in a society, to reach her own goals, to acquire new skills and knowledge, and to develop as a human being (Linnakylä 1987, 227).

The second variety, functional literacy is this kind of an active literacy, which integrates skills, knowledge and action. It varies according to different situations and to the demands of the surrounding society. Linnakylä (1990, 5) lists six different subcategories: environment related reading, information gathering reading, professional reading, entertaining reading, ritual reading and reflective reading. The third variety, emancipatory literacy integrates literacy skills, demands of the society and critical thinking. In this case, literacy is seen as a means to learn with the help of different texts. Emancipatorily literate readers are able to use their literacy to master their own lives and influence the surrounding world. How they use texts is dependent on their values, rather than on the demands of the society. These readers do not accept every text as such: they have the ability to make decisions and reflect on texts critically. Emancipatory literacy is one of the various skills, which guarantee us a control over our own course of life.

To capture the swift transformations of cultural differences and rapidly changing communications media, the so-called New London Group (cf. Cope & Kalantzis 2000) introduced the concept of multiliteracies. 'Multiliteracies' is a term, which reaches two important arguments. The first of the arguments engage with the multiplicity of communication channels and media. With the introduction of electronic hypermedia, for example, significant modes of meaning-making multiplied and became more densely integrated. Today, the textual is related to the visual, the audio, the spatial as well as the behavioural, which is reflected in the multimodality of meaning-making in video, interactive multimedia and public text, for example. The media is reshaping the ways in which we use language. The New London group suggests a theory of meaning-making, which rests on six design elements: linguistic meaning, visual meaning, audio meaning, gestural meaning, spatial meaning, and the multimodal patterns of meaning that relate the first five modes of meaning to each other (Cope & Kalantzis 2000, 5-7). For Kress (2003) reading is an inherently multimodal process, in which the screen and the logic of image have gained increasing importance. This is especially true in connection with new media technologies.

The second argument behind multiliteracies tackled cultural and linguistic diversity. On the one hand the local diversity of language is increasing. An example of this development is the English language, which today more than ever, is breaking into differentiated Englishes according to accents, national origin, subcultural style and professional communities, for example. On the other, the media and increasing intercultural communication creates an image of global connectedness. This development has lead to a situation where dealing with linguistic and cultural differences has become central in our lives. Therefore there is also a demand for flexible literacies. The multiliteracies argument suggests that we cannot build literacy instruction anymore on normative, canonical and prescriptive descriptions of language use, but instead, we would have to turn to functional and flexible grammars. (Cope & Kalantzis 2000, 6) Like learning theory, the theories of reading move in a continuum from an individual process to social perspective. Table 1. sums up what has so far been said about reading, literacy, meaning and reader roles.

Table 1. Reading theories, literacies, meaning and reader roles.

Theory of reading	Type of literacy	Meaning	Reader role
Reading as simple decoding	Basic literacy	Meaning resides in the text.	Submissive/passive
Interaction theory	Functional literacy	Meaning is created in the process of interaction.	Active
Transaction theory	Emansipatory literacy	Readers use text to construct meaning.	Active/assertive
Multiliteracies	Flexible, situational, multiple literacies	Multimodal	Active/assertive

In the light of the discussion of reading so far, we could conclude that reading in a learning platform involves more than unravelling the meaning of the text. Readers use text for making meaning. Readers, for example, challenge the text or scan it in search of specific information. All this is done in multiplicity of modes: visual and spatial as well as textual. The following chapter will have a look at the notion of text, because it undeniably constitutes one important semiotic resource, which the readers make use of when making meaning to computer-supported interaction.

2.2.1.2 Texts

As already pointed out above, texts provide meaning potential for readers. This chapter will discuss some key concepts in relation to texts. These involve text-linguistic perspectives to cohesion, coherence, schemata and text-type, which are discussed first. None of these are mere properties of text, but rather properties of the process of reading in the sense that to materialise they all have to be discovered by a reader. This discussion draws mainly on the domains of text linguistics and cognitive reading research. The social semiotic discussion of genre is also briefly touched upon. The contextual and social aspect of reading and literacy are more forcefully emphasised in the theory of multiliteracies.

Although these text-linguistic perspectives provide valuable support for discussing computer-supported collaborative learning as textual activity, the social constructionist approach to meaning-making is perhaps better supported by social semiotic notion of genre. The theory of genre takes a look at "that aspect of the form of texts which is due to the effect of their production in particular social occasion" (Kress 1987, 36), which guides our attention towards texts in use. However, a full reader perspective to meaning negotiation in textual interaction would call for a look at how texts are used by real people, in real situations of text use.

In discourse processing, such as reading, we take some linguistic and situational details as cues, form a general hypothesis and then try to build the whole picture. We interpret texts as texts rather than as words, clauses and sentences. The top-down processing and bottom-up processing models generate two hypotheses about the reading process. The task of the reader in bottom-up processing is to interpret the lowest-level

units of language first. After this she proceeds to an interpretation of the rank above. In the top-down processing model the reader interprets first on the basis of the most general ranks, the macro level, and then moves downwards through the ranks below to the micro-level. (Cook 1989) The competence of a reader depends on her knowledge of the subject matter as well as her linguistic skills. Often the lack of background knowledge, or of the schema of the particular topic area, rather than the lack of language skills, is the main problem in unravelling the meaning of a text. (Cook 1989)

To discover a text's coherence is the goal of the reader. Hearers, as well as readers, interpret texts on the assumption that they are meant to be coherent. Readers aim to 'recover information that is relevant' (Blakemore 1987, 238). In a way, they try to improve their representation of the world with the least possible effort. DeBeaugrande and Dressler (1981, 6) state that 'coherence is clearly not a mere feature of texts, but rather the outcome of cognitive processes among the text users'. Their approach to coherence is, however, rather text-based, as they define coherence as 'the ways in which the components of the textual world, i.e. the configuration of concepts and relations, which underlie the surface text, are mutually accessible and relevant' (DeBeaugrande & Dressler 1981, 4). According to Widdowson (1978, 44) 'A discourse is coherent to the extent that we recognise it as a representative of normal language use'. Our ability to perceive a text as coherent is also dependent on 'the way in which we are able to ascribe a function to the text as a whole' (Wallace 1992, 13). Readers interpret texts on the assumption that they know what the text is doing. Thus, successful reading depends on the reader's ability to assign appropriate communicative functions to texts. Herring (1999) has studied coherence in connection with computer-mediated communication (CMC). Computer-mediated communication suffers to some extent from loosened coherence, due to the high degree of disrupted adjacency[8], overlapping exchanges, and topic delay. However, the ability of the users to adapt to the medium and interactivity of the medium override these problems.

Cohesion (Halliday & Hasan 1976, 1989) is a semantic notion, which is related to the pragmatic notion of coherence. Cohesion comprises the semantic resources for linking a sentence with what has gone before and what is to follow. In a sense, it allows meaning to flow through a text. Cohesion distinguishes well-formed texts from a list of arbitrary sentences. However texts can also be said to be more or less cohesive. Cohesively related items are linked with ties (e.g. A girl walked in the street. She was going to school'.). Their length is not determined, hence the ties can in principle be indefinitely long. (Halliday & Hasan 1976). Halliday and Hasan (1976) name five methods to create cohesive ties: reference, substitution, ellipsis, conjunction and lexical cohesion. Although cohesive devices serve the structuring of a text, cohesion is not equivalent to coherence. Coherence has to do with the covert situational appropriateness of the text, even in the absence of formal links, whereas cohesion is created by means of overt formal links. Some things can be left unsaid, as a matter of fact in some cases it is even more

[8] Conversation analysis is interested in the sequential order of talk. In other words, C.A. sees that the turns that speakers take are not serially ordered but come in specific, orderly sequences. Certain classes of utterances conventionally come in pairs and are therefore called adjacency pairs. Examples of such adjancency pairs might include question-answer, greeting-return greeting, invitation response. (Hutchby & Wooffit 1998:30-40)

acceptable to leave a cohesive link implicit, and the discourse will still be perceived as coherent and accessible. However, if the writer cannot assume familiarity with the situation, she has to provide cohesive links.

In addition to the textual cues made available by means of cohesion and other devices, a text can make use of the frames in which we usually interpret the world. The background knowledge the reader draws on to interpret a text consists of schemata. "As for the concept of schema, the general idea is that the comprehender's representation of a given text is necessarily an amalgam of linguistic knowledge and general knowledge about the world" (Garnham 1987; 20). Readers employ both their knowledge of how texts are typically processed and their knowledge of the world in the process of interpretation of a text. (McCarthy 1991). People tend to have at least partially similar ways of making sense of the events in the world. Causation, the process of looking for causes and effects, is one of these ways. Another way of looking at events is their temporal arrangement. These are examples of the relations we supply to build a bridge between different concepts. If these relations are not made explicit in a text, 'people will supply as many relations as needed to make sense out of a text as it stands' (de Beaugrande & Dressler 1981, 4). Readers apply their knowledge of the world to bring a textual world together, in other words, readers make inferences (de Beaugrande & Dressler 1981, 6). We use text-presented knowledge together with our stored knowledge of the world to make sense of a text. We detect cues in the context. In other words we tend to contextualize texts. Consider the following example in and out of context.

“Heikki! Food on the table.”

It would help the reader a great deal to know that this piece of text comes from a note, from a mother to a son coming back from school. When the effect of context is strong, such linguistically minimal expressions are more acceptable than full explicitness (de Beaugrande & Dressler 1981). For Heikki, the primary reader of this note, this text, however minimal and lacking of overt links, is intelligible.

We need to be able to retrieve the appropriate content schemata when we aim at interpreting a text. Accessing a law book for instance requires, in addition to sufficient language skills, some knowledge of law as a subject matter. In a similar way we need to be familiar with the world of cooking, if we wish to understand recipes. In this respect schemata refer to structured 'knowledge of the world'. Text and schemata combine in text types. As readers, we have a general idea of how a particular text type is organised in order to access a particular text. Some text types, such as news articles, are quite familiar to us. We utilise formal news schemata daily while reading newspapers. We know, even if implicitly, what the function of titles and introductions is, and how to find the information we need. We are also familiar with the sort of language which is typically used in news discourse. According to de Beaugrande and Dressler (1981, 10) intertextuality concerns 'the factors which make the utilisation of one text dependent upon knowledge of one or more previously encountered texts'. Readers use their knowledge of how different types of texts are usually organised in the process of trying to understand a text. The more a reader reads, the easier it is for her to identify a text belonging to a certain text type and use this observation as a macro-level clue to interpretation. Intertextuality is responsible for the development of the notion of text types, 'classes of texts with typical characteristics' (de Beaugrande & Dressler 1981, 10). De Beaugrande and Dressler (1981,

186) add the further remark that a text type ' is a set of heuristics for producing, predicting, and processing textual occurrences, and hence acts as a prominent determiner of efficiency, effectiveness, and appropriateness'.

The reader's interpretation of the text type is not dependent on the features of text alone. Interpretation of text types is very much dependent on context. In the context of a newspaper or a magazine a text like 'As long as you're up, get me a Grant's' (de Beaugrande & Dressler 1981, 11) is easy to be interpreted as an advertisement. Slightly altered, 'As long as your up, get me a grant', and placed in the context of a door of a professor's office this text has to be interpreted quite differently as a joke. However, it must be emphasised that text types are not grouped into different categories on the grounds of contextual clues only. As we have seen, similar text types have similarities in structure as well, for instance in how they project time (see e.g., Faigley & Meyer 1983). Researchers have shown that texts which belong to the same category, are processed similarly in spite of their subject matter. Furthermore, they have shown that texts belonging to a different text type, even if they deal with the same topic or content matter, are processed differently. (Fayol 1991). Classifications according to text type have existed throughout the 2400-year history of rhetoric, starting from Aristotle. Such a long history further implies that these classifications reflect some fundamental properties of discourse. (Faigley & Meyer 1983). Thus, at least well defined text-types (such as 'scientific essay' and 'fairy tale') tend to call for different kinds of processing. The conventional structure of a text helps processing. Narratives, for example, are dealt with a prospective approach, i.e. readers tend to make hypotheses about the development of the narrative. Essays, on the other hand, are processed in a retrospective manner, relating current elements to previous ones. (Fayol 1991)

In addition to the cognitive notion of text-type, we can use the concept of genre, "the term which describes that aspect of the form of texts which is due to the effect of their production in particular social occasions (Kress 1987, 36)", when we want to discuss the 'typical' structure of a particular text type as a macro-level phenomenon. The 'genre school' linguists, for example Kress and Halliday, see genre as a social category rather than an abstract formal category. In accordance with the transaction theory of reading, genre theorist see language as a meaning potential, which can be drawn upon to create different kinds of meanings (e.g. Halliday 1975; 1976). Therefore static taxonomies about text-types cannot address the issue of how readers and writers as a matter of fact make meaning to a text. The problem with computer-mediated communication is that it does not represent a well-defined text-type, or genre for that matter, and thus readers tend to approach the text produced in learning platforms in various ways.

All texts have a history and they carry reminders of other texts with them. Texts draw upon 'orders of discourse', that is, those conventionalised practices that are available, for both the producer and interpreter of a text, in particular social circumstances. These practices include genres, discourses, narratives etc. These discourse types and genres are largely abstract and idealised, since most texts are generated by a mixture of the types. Such intertextual properties of a text are then realised by means of particular linguistic features. (Fairclough 1992.)

The text-linguistic and social semiotic perspectives to texts and their structure provide some angles to computer-mediated communication and computer-supported collaborative learning. The text-linguistic perspectives also point to the direction that even if texts do

carry different kinds resources for interpretation (i.e. the reader can make interpretations on the basis of such structural features as cohesion, text-type or genre etc.), their "meaning" is created anew in every reading situation. As will be shown in this thesis, computer-mediated-communication does not represent an established and well-defined genre or text type, however. Therefore different readers may make radically different interpretations on the textual exchanges. It must be concluded that an analysis of computer-mediated discussion should not concentrate on the text alone. The text is nothing but a reminder of a complex process of making meaning in a multimodal situation. However, the text in discussion platforms is an important clue in the process of unravelling the complex nexus of participant activity in computer-mediated situation.

This chapter considered reading and text-linguistics as theory, as computer-supported interaction involve textual interaction. However, as Baym (1996) and Herring (2003b) have also shown, computer-supported interaction is a hybrid form of communication, the next chapter will consider aspects of mediated communication.

2.2.2 Computer-supported learning as mediated communication

The term computer-mediated communication refers to a broad range of interdisciplinary study, which is interested in computer-mediated communication from different perspectives. Thus, CMC is a research interest in several different disciplines. Herring (2003a), for example, describes a language and language-use focussed approach to online research, which she calls computer-mediated discourse analysis (CMDA). The theoretical ideas behind CMDA come from linguistic discourse analysis. It is not, however, a paradigm independent of other linguistic research. Herring (2003b) lists several linguistic disciplines which contribute to CMDA starting from structural linguistics to pragmatics and ending up in critical discourse analysis and interactional socio-linguistics. For Herring (2003b), computer-mediated communication is typically a linguistic phenomenon as people interact via verbal language by means of typed words in screens. However, Herring (2003a) suggests that CMDA too, would benefit from moving towards multimodal perspectives, which points to the direction of semiotics.

It is clear that not all properties of computer-mediated communication follow directly from the properties of technology (Herring 2003b). However, the computer medium in itself creates variables according to which computer-mediated discourse (henceforth CMD) [9] can be examined. CMD can be either synchronous (real-time) or asynchronous (time delayed). The transmission of messages can be one-way or two-way. One-way messages are produced and then sent to the recipient. Two-way transmission resembles talk in the sense that both the sender and the recipient can monitor the production of the messages while it is being produced. Other variables that are due to the computer medium are: limits on message size, persistence of the messages (how long the message will be available until it is removed), the ease of incorporating previous messages in their

[9] The terms computer-mediated communication (CMC) and computer-mediated discourse (CMD) are used here in the same sense. Both refer to such written communication between people in which the computer mediates the interaction.

responses, whether anonymity is an option and whether other modes of communication are available. Herring (2003b) adds that there are cultural differences in popular modes of CMD (e.g., listserv mailing lists and newsgroups) which are due to their own particular histories and users. For example, Listservs are popular among academics, where as Usenet newsgroups invite different groups.

2.2.2.1 A hybrid form of communication

CMD is distinct from speaking, writing and mass communication. Herring (2003b) as well as Baym (1996) argue that computer-mediated-discourse is a medium of its own, distinct from writing or speaking. For Baym this interaction is “a hybrid between oral, written, interpersonal, and mass communication”. It is like writing, because the participants are temporally separated. Like in written communication, the writers cannot assume that readers have read the messages. Likewise, Herring (2003b) writes that CMD cannot be taken for writing because it is not typing distributed by electronic means. First of all, CMD exchanges are usually faster than other written exchanges.

Baym (1996, 321) argues that asynchronous newsgroup interaction also reminds speaking in the sense that it is contextualized and interactive. Writers can anticipate who their potential readers might be and even identify some of them. It is also possible that the text of the writer receives a response. This also means that messages are not necessarily closed. Like interpersonal communication single contributions may be built on by other people and have consequences on relationships. Unlike speaking, CMD allows multiple participants to communicate simultaneously. CMD, however, is notably slower than spoken exchanges (Herring 2003b). Even if CMD is limited to the visual channel and, thus, not as “rich“ a channel as face-to-face interaction, users tend to compensate for the missing auditory and gestural cues textually. Herring (2003b) points out that CMD can be richly expressive. Baym (1996) also points out that in asynchronous communication much of the information that would be carried by non-verbal cues must be made explicit by other means.

Both Herring and Baym draw links to mass communication. According to Herring (2003b) computer-mediated messages are distributed to an unseen and in many cases also unknown audience, even if it has a feel of being private. For Baym (1996) CMD has similarities to mass communication, since the writing is always directed to a large audience. It is, therefore, affected and affects the writer’s public image as well as the whole group. Herring (2003b) concludes that even if CMD is sometimes seen as a blend of writing and speaking it carries its own restrictions and potentialities.

Denzin (1999) conceptualises computer-mediated discourse or communication as ‘cybertext’: "the message that is written is a performance text, an attempt by one person to make connections to another person or to his or her text. This performance text, the thread, is messy and dialogical, tangled up in the writer's (and reader's) imagined interpretations of the other's text". In other words, it would be inaccurate to consider cyberwriting as a reflection of the conscious meanings and intentions of the writer. He continues that cybertext discourse is contextual and grounded in the concrete specifics of the situation. Text in a virtual environment does not reflect the conscious meanings and

intentions of the writer, although it is an attempt by one person to make connections to others (Denzin 1999). Every time a text is read in a new context by a new reader, it is given new meaning(s). A posting in a virtual learning environment is given meaning(s) when it is acted upon – inside or outside the virtual interaction.

2.2.2.2 Interaction management: multidimensional sequentiality

Garcia and Jacobs (1999, 360-361) have studied the turn-taking system of quasi-synchronous CMC. They show that it differs in many ways from oral conversation. Unlike face-to-face situations, utterance production is rarely intersubjectively accessible in CMC. Because participants generally tend to interpret CMC with the aid of organisational structure of oral communication, problems of interpretation arise. However, at times participants adapt to the interactional environment, which helps to reduce misinterpretations. Garcia and Jacobs (1999, 360) found out that the turn-taking options, or speaker selection, follow a multidimensional sequentiality rather than the linear sequentiality of oral conversation. Multiple speakers have the possibility of self-selection at the same time. Participants, therefore, cannot make sure that their message will be placed in the near proximity of its intended referent. Herring (2003b) brings up the issue of disrupted turn adjacency, which creates obstacles for interaction management. The machine "is blind" in the sense that it places messages in the order they are received and does not take into account what they were responding to.

However, Garcia and Jacobs (1999, 360-361) as well as Herring (2003b) see that CMC is not impaired. They argue that it is "differently abled" and, as it was with telephone technology, when the users become more familiar with CMC their ability to use the system will improve and the confusion due to the turn taking system will decrease. In other words, users will develop a kind of CMC-literacy. As messages cannot be located unfailingly, the participants will not assume that the prior message alone is or is not the referent. CMC has advantages over oral communication as well. For example, it is possible to conduct several discussion streams nearly simultaneously, due to the fact that text-based conversation can be read like a document. Since the conversation can be constructed in a non-linear fashion, participants have also the past messages available for a longer period.

The most important point that Garcia and Jacobs (1999, 363) suggest, in relation to this study, is that the researchers who do not take into account the multidimensional sequentiality of CMC may be mislead, if they do not have access to the process of production. Judging from the records of discussion it is easy to read a connection between two utterances, which may not be connected at all. Furthermore, access to the message input helps to explain sequences, which at first sight seem disorganised and void of meaning. They argue that in order to understand the CMC we should study the process of producing the interaction "through the eyes of each of its participants" (Carcia & Jacobs 1999, 363).

Susan Herring (1999) studied text-only CMC from the perspective of interactional coherence. She points out that the enormous popularity of CMC for social interaction seems to suggest that CMC cannot be seriously incoherent, despite the apparent

challenges in the processes of turn-taking and topic maintenance in computer-mediated environments. Writers have also developed practices, which help to manage interactions (Herring 2003b). Linking, referring explicitly to the contents or preceding message(s) supplies one possibility of providing elements for coherence in asynchronous communication. Quoting can also function as a type or linking. According to Herring, (2003b) quoting creates an illusion of adjacency by placing portions of two "turns" within a single message. However, it is rather problematic to equate one message with turn, since messages can effectively convey what would have been communicated through many turns in synchronous interaction. Turns can also be allocated to participants by calling a participant by name.

What a particular instance of CMD turns out to be is also shaped by social circumstances. Communication differs to a great extent whether we are looking at educational CMD or other virtual activity. The context of education brings certain expectations about participant roles and possible or preferred communicational patterns. Variation in the situational factors which constitute the context of CMD have consequences on the interaction. The participants' previous experiences also shape the ways they interact. In "older communities" norms for communication may also be developed. Discourse topic (for example sharing jokes or discussion of academic theories) and activity type (for example exchanging information) also bring about variation in discourse. (Herring 2003b.)

Thus, it can be concluded that computer-mediated communication or computer-mediated discourse is not a unified text-type or genre. Features of the medium bring in certain kinds of affordances and restrictions. At the same the context of communication gives rise to a broad range of variation in different situations.

2.2.3 Computer-supported learning as polycontextual activity

Computer-supported learning is polycontextual in several ways. First of all, it intertwines the physical contexts of computer network (on-line world) and off-line worlds. Secondly, the participants of computer-supported learning relate the activities into different contexts in their talk. The notion of polycontextuality is familiar from the activity theoretical framework (cf. Engeström, Engeström & Kärkkäinen 1995 and especially Leander 2002 in relation to classroom interaction). Here I will, however, use the term more generally to refer to the diverse scenes and situations of learning activities that computer-supported learning involves and which the participants themselves produce in their talk.

Research on computer-supported learning is easily restricted to the analysis of the activities on-line, instead of treating the topic as a more complicated combination of issues and phenomena. This trend may be due to the lively public talk around new environments of learning which deals with developing "modern" Internet-based learning and teaching in contrast with what is regarded as "traditional" classroom learning. Furthermore it was also assumed that the students' learning process would somehow be visible in the online interaction and other textual activity in the learning platform. In other words, it seems that such discourses are reflected in current views on what is

regarded as an appropriate field site for doing research. Figure 1 below illustrates the linking between on-line and off-line worlds.

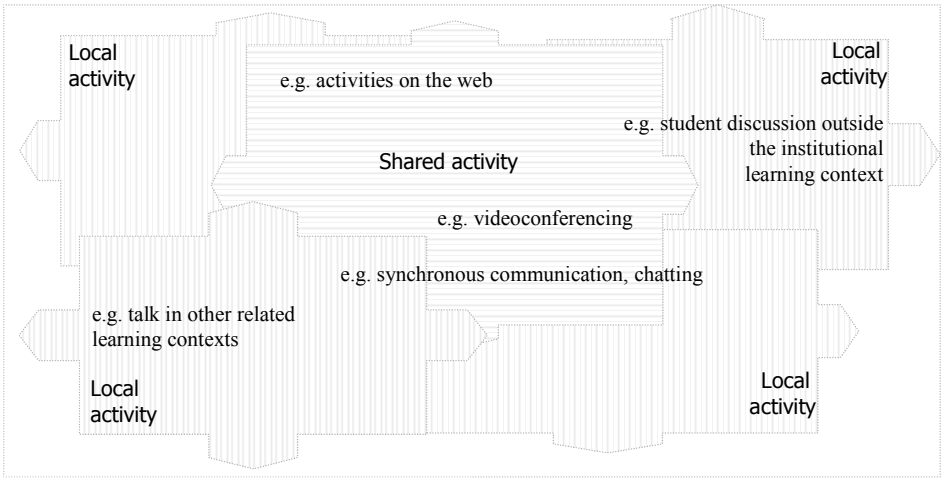


Fig. 1. Multi-layered connections between shared and local activities.

Jones (1999) points out that the on-line and off-line worlds are tied to each other and Internet users are as much a part of physical space as they are of cyberspace. Hine (2000) proposes two different directions for approaching the Internet as context: a) either by looking at it as a place where culture is constructed or b) as a cultural artefact. For the first viewpoint the appropriate field site would be the cyberspace as examined through the visual and linguistic cues in discussions groups and on web pages, for example. For the second viewpoint, perceiving the Internet as a cultural artefact, the appropriate field site would include the local contexts of interpretation such as people working on a computer. In order to reach the participant perspective, we should look for the place inside and as well as outside the on-line community for participant observation. In the case of on-line communities it is difficult to find a way to "live in this community" as Hine (2000) points out from the perspective of an ethnographer.

There is, indeed, a considerable amount of ethnographic and ethnomethodological research done on virtual communities that concentrates on life on-line (cf. Baym 1995a, 1995b; Markham 1998, Ten Have 2000). The discussion of how identities, for example, are negotiated in virtual interactions, provides useful perspectives to the research of computer-supported learning activities (e.g. finding suitable partners for activities through various processes of membership categorization). When developing functional pedagogies, research on a single medium does not cover a broad enough range of social contexts. This is especially true in mixed-mode learning projects, which integrate computer-supported learning with face-to-face interaction: the virtual learning environment is not divorced from other social spaces, such as classrooms and institutions. In such projects a great deal of the active negotiation of the purpose of the activities and interpretative work is done in various encounters between participants - students and teachers - outside the web environment. Therefore, only a limited interpretation of the richness and complexity of meaning-making processes can be traced in the computer-

mediated interactions (Kuure et al. 2001, 2002). To study learning interaction in mixed-mode projects means that we will have to record activities in formal and informal student gatherings and pair work on the computer. A wide range of data provides us with a richer environment for observation.

The complexity of context in web-supported learning activities is not a surprising revelation, however. It has been shown that even traditional classrooms are polycontextual. For Gutierrez et al. (1999) the classroom is polycontextual and constitutive of varied social spaces. They look at the context of learning with the aid of the concept of 'third space' (a concept also frequently used in the activity theoretical framework, see above). The third space for them means a locus of interaction where the official (represented by the formal academic lexicon or teacher speech genres, for example) and unofficial (home lexicon, local knowledge, joking and playing, for example) discourses meet. Third space is an important locus for negotiating new knowledge, because it facilitates movement across languages and registers toward particular learning goals. Third spaces emerge when the classroom practice supports diverse use of the cultural and linguistic resources of the participants. In such classroom practice, conflicts between the official and unofficial spheres are not treated as violation of norms but instead as a resource for learning. As an example Gutierrez et al. (1999) provide an analysis of one classroom community, where the teacher and the students utilise both the formal academic resources and their experiences from the unofficial contexts. The study of computer-supported learning would clearly benefit from the approach described above.

When considered from a discourse point of view the context of computer-supported learning cannot be described as a stable entity, which is structurally definable through a set of variables. Goodwin and Duranti (1992, 6) characterize context as "a socially constituted, interactively sustained, time-bound phenomenon". In connection with computer-supported learning this means that it would be a harsh simplification to describe the context of computer-supported learning as a combination of different activities in a virtual learning environments. The participants talk (and write, since a fair amount of the activities are accomplished in the written mode) contexts into being. A closer analysis of talk (and written interaction) around computer-supported learning would give us a fuller picture of the context as the participants conceptualise it. Each learning situation is unique: different participants in a seemingly similar constellation of computer networks and pedagogies produce different interpretations of the situation.

2.3 Situated perspectives to computer-supported learning

Chapter 2.3 will first discuss theories which emphasise the socially situated nature of learning, (chapter 2.3.1). Then aspects of computer-supported collaborative learning (CSCL) will be discussed in more detail (chapter 2.3.2). At the moment CSCL is the major field, which brings together researchers who are interested in the social aspects of learning in technology settings. Situated perspective in Lave and Wenger’s terms shifts the analytic focus from “the individual as a learner to learning as participation in the social world (1991, 43)”. The situated perspective puts into the fore the context in which

the learning activity occurs. Furthermore, situated perspectives share the theoretical assumption that society is produced and reproduced in people's everyday activities (Raudaskoski 2002, 174).

2.3.1 Learning as situated and socially constructed activity

In the following I will discuss current learning theoretical viewpoints that are commonly referred to in connection with computer supported learning. I will also review computer-supported collaborative learning at length, since it is the tradition where most research relevant to the perspectives brought out in this thesis is located in. I will concentrate on ethnomethodology-inspired CSCL research, in particular.

The social aspects of learning have gradually gained more space. The socio-cognitive (cf. Resnick & al. 1991; Resnick 1989; Salomon 1993) and socio-cultural (Lave & Wenger 1991; Rogoff, 1990) views to thinking and learning argue that most knowledge is an interpretation of personal experiences and also social in nature: In other words, knowledge is jointly constructed in interaction. Situated and distributed perspectives to learning as alternatives to the traditional individualistic view to learning, see knowledge (or rather knowing, if we want to accentuate the process of knowing instead of the product), as a "process distributed across the knower, the environment in which knowing occurs, and the activity in which the learner is participating". In other words, knowing cannot be detached from the context in which it occurs. (Barab & Kirshner 2001, 5). These contexts do not pre-exist, but learners contextualize actively and flexibly (O'Connor 2001, 285).

Lave and Wenger (1991), among others, have put forward the idea of apprenticeship (see also Collins, Brown & Newman 1989). According to this theory, learning is a process of participation in communities of practice, at first legitimately peripheral, working its way to the more central positions. Learning occurs in interaction through cognitive apprenticeship in real contexts, in authentic learning tasks. This learning theoretical framework puts forth interaction, i.e. the meaning-making and knowledge construction process, as a focal point for developing new educational solutions and redefining the role of teachers and students. This is not a recent development, however. Wittgenstein, for example, saw that thinking and language are intertwined to the extent that it is not possible to study one without another.

O'Connor (2001) makes a distinction between prescriptive (e.g., Brown, Collins, & Duguid 1989; Greeno 1997; Pea 1993; Salomon & Perkins 1998) and critical approaches (e.g. Engeström & Cole 1997; Kirshner & Whitson 1998; Lave 1988, 1991, 1993, 1996; Lave & Wenger 1991; Rogoff 1998; Wenger 1998) to situated learning. Prescriptive approaches apply the theory of situated learning in designing new learning contexts in school. Critical approaches, for their part, emphasize the critical analysis of learning and its relations to the reproduction and transformation of social order. Prescriptive approaches have attempted to renew the school practice by apprenticing students in practices modelled upon those in particular target communities or knowledge domains (i.e. mathematics and science). The goal of this process is improved participation in the communities in question. O'Connor (2001) suggests that all approaches to situated

learning are critical to a certain extent, since the primary aim of situated learning theory is to critique the dominant paradigms of knowledge, learning and schooling. The prescriptive approaches, however, do not seem to take fully into account the heterogeneity and complexity of social practice. O'Connor (2001) suggests a critical approach, which would take into account the fact that communities of practice are not always "stable, bounded and benign" (O'Connor 2001, 290), but, instead, as Lave (1993) suggests, local practices are in complex relation, constituting each other. Such critical approach would involve a more complex understanding of the contextualization, a look at the " subtle ways in which participants in activity draw on heterogeneous resources, both "official" and "unofficial", as they negotiate the meaning of the context, their ongoing activity, and their own emerging identities" (O'Connor 2001, 290). The kind of learning environments produced from the prescriptive perspective offer promising sites for critical analysis of the ways in which participants orient to these contexts and negotiate the meaning of their participation.

The major critique toward social-cognitive perspectives from the direction of socio-cultural theory has been, that the constructivist line of thinking does not take contextual factors into account to a sufficient degree. Hemmings, Randall, Marr and Francis (2000) look at situated learning from an ethnomethodological point of view in their study on how students, teachers and museum staff jointly organise a museum visit as an educational activity. Even if their analysis does not focus on computer-supported learning, they make several important points regarding situatedness, which are also applicable in computer-supported learning situations. Hemmings et al. (2000) offer a critical point of view at the theory of situated learning, especially as Brown, Collins and Duguid (1989) approach it. In particular they consider the notion of authentic learning context. The approach Brown, et al. (1989) support suggests, roughly speaking, that schools or other 'didacted learning environments' are somehow less authentic learning contexts than 'real life' situated contexts are. Hemmings et al. argue that according to the logic Brown et al. (1989) follow, classroom would involve communication strategies which somehow manage to avoid situatedness. Hemmings et al. take the position that no context is more authentic than another and that the participants jointly negotiate the purpose and appropriate activities in educational situations. Following ethnomethodology they state that all "social behaviour is constitutively interactive and irremediably situated" (Hemmings & al. 2000, 227). They continue "if learning is an unnoticed 'by-product' of other activities, activities whose primary participant recognised function is something other that the transmission of knowledge, then when (and on what grounds) is it correct and/or incorrect to say that 'learning' is (possibly, relevantly) taking place?" (Hemmings & al. 2000, 229). Also Arnseth and Solheim (2002, 104) point out in connection with CSCL that "activities are not just educational because they are conducted in an organised school environment, but they are made educational in and through teachers' and students' actions".

Hemmings et al. (2000, 223-243) observed several groups of school children and their teachers visiting a museum exhibition dealing with railway technology. In their data, the students and teachers worked with an experiment. In this experiment, the task of the students is to identify a right pair of wheels and explain why this particular set of wheels functions and why the others pairs do not. Thus, the task of the students was twofold: both to find the correct answer and to reflect why this should be the case. Hemmings et

al. (2000, 223-243) point out that the assumption that museum visits are somehow less structured and more authentic than classroom lessons is a misconception. Structuring is exhibited in various ways in these "authentic activities" as well. They show that visit scripts, organisation of text and design of the museum artefacts provide organisation by way of providing lessons to be learned. They ask how these lessons are oriented to in situ and how interventions by adults are significant features in shaping whether and what kinds of lessons were learned.

According to Hemmings et al. (2000, 241) available instructions seem to have a peripheral relationship to the activities of the group. They noticed that children tend to see tasks complete when they find the correct answer to the problem, in other words, identify the right pair of wheels. They do not stay on to discuss why this should be the case, unless there is an intervention by an adult. It also seems, that groups of students self-organise so that everyone gets an opportunity to try the right pair of wheels. Hemmings et al. (2000, 241) conclude that "whatever organizational imperatives are embedded in the instructions, it seems to be the timely, relevant and appropriate intervention of the educators that structures the process and the outcome. That is, instructions, artefacts etc do not determine the educational outcome." They come to the conclusion that acquisition of knowledge is an accountable phenomenon, i.e., participants treat it as "observable-reportable".

Hemmings et al. (2000, 243) sum up their critique concerning the kind of situatedness Brown et al. (1989) promote in the following manner: "To say that learning is 'situated' is, above all, to say that members of society, going about their activities situate it. Thus 'situatedness' is not a theoretical breakthrough, nor a policy option; it is a members' practice (or, rather, a vocabulary of practices), and as such is constitutive of the very possibility of knowledge transmission and acquisition". Reinterpreting the results of Hemmings et al. (2000), it would seem that taking education out of institutional contexts is not a solution when trying to implement new pedagogical practices. It would seem reasonable to assume that a kind of meta-work approach, where the students and teachers jointly would challenge their conceptions of what constitutes learning (cf. Kuure & al. 2000a) is needed.

2.3.2 Computer-supported collaboration

Computer-supported collaborative learning is a field of research, which is in search for new effective pedagogies with the aid of applying technology in education. As such it is not a discipline with clearly defined boundaries: there is no single unified CSCL theory to refer to. Instead the field of CSCL encompasses different kinds of multidisciplinary research approaches, which emphasize different theoretical concepts (cf. Lehtinen 2003). There have, however, been some attempts to define CSCL. In a recent paper Koschmann (2002, 20) suggested the following definition: "CSCL is a field of study centrally concerned with meaning and the practices of meaning-making in the context of joint activity and the ways in which these practices are mediated through designed artefacts". Researching joint meaning-making and mediation, thus, is important for CSCL. In the following I will discuss some key concepts related to CSCL research today. I will

concentrate in particular on such CSCL research that has a relation to the above-mentioned linguistic and methodological perspectives. Even though the field of CSCL today is largely lead by research, which brings into the fore the cognitive effects of collaborative technology, some interesting research is being done from a discursive perspective, emphasising the situated character of sense making (cf. Rystedt 2001; Ivarsson 2001; Arnseth & Solheim 2002, O'Neill, Martin, Al-Matrouk & Wastell 2002; Koschmann, Zemel, Conlee-Stevens, Young, Robbs, & Barnhart 2003; Ludvigsen & Mørch 2003).

The definition that Koschman (2002, 20) offers for CSCL has clear links to the discursive and situated approach adopted in this thesis. Emphasis on meaning and meaning-making practices distinguishes the field from the more traditional research approaches in education. This approach requires documentation of how learners do learning. This means that not even a close analysis of isolated learning outcomes would be able to offer sufficient evidence for understanding the practices of joint mediated activity. The enterprise of CSCL according to Koschman (2002) differs also from the study of language and social interaction. In addition to describing, "how things are", CSCL is interested in participating actively in the design and implementation of technologies for collaboration and learning.

2.3.2.1 Collaborative interaction and learning

Collaborative interaction and its analysis play a central role in the research in the field of CSCL. Although some attention is given to individual learning processes, for example in the current research on learning strategies, motivation and self-regulation (cf. Järvenoja, Hurme & Järvelä 2003, Salovaara & Järvelä 2003) in the field of CSCL, the social aspects of learning – collaborating and communication through and around computers - are very much at focus in CSCL. It is generally acknowledged that even if computer networks offer possibilities for learning interaction - peer and teacher-student interaction alike - not all interaction succeeds equally in supporting learning. The power of collaborative interaction is seen to lie partly in the learners need to be able to explain their ideas to others. In other words, they need to be able to externalise their thinking. Already the process of making internal thinking processes visible is considered to foster learning. It has also been shown in experimental settings, that two people working on a shared problem reach better results than those who work alone. The power of collaboration is also supported by theory of distributed cognition (Pea 1993; Resnick, Säljö, Pontecorvo & Burge 1997), which argues that cognition is socially shared. (Lehtinen 2003, 11-13)

The above-mentioned more or less cognitive perspectives locate learning mostly in the individual but at the same time acknowledge that social interaction fosters individual learning processes. Theories, which see learning as a fundamentally social process, located in social and cultural systems, are also employed in CSCL research. Such approaches as Lave and Wenger's legitimate peripheral participation (Lave & Wenger 1991) see learning as a process of socialisation in communities of practice. Learners do not only acquire facts, but also grow into a culture, its language and practices. CSCL has

also been interested in the developments within activity theory (Engeström, Miettinen & Punamäki 1999) especially form the perspective of organisational change. (Lehtinen 2003, 15). At the moment, however, there is a growing interest in theories, which take into account both the social and the individual cognitive, aspects of learning (cf. Salomon 1993).

Since CSCL builds on the idea that collaboration and interaction are beneficial for learning quite a lot of effort has been put into researching interpersonal communication. Several concepts and theories have been applied in this connection. Grounding (cf. Baker, Hansen, Joiner, & Traum 1999; Van Der Pol, Admiraal & Simons 2003), for example, is a term under which interaction processes have been examined. The discussion on grounding is based on Clark and Brennan's (1991) model of communication. Grounding refers to the process by which participants build and negotiate a common ground. By common ground, a necessary aspect of communication and collaboration, Baker et al. (1999) refer to a sufficient level of mutual understanding which has to be reached for successful collaboration. This discussion, however, has been criticised to some extent due to the lack of attention to the contextual aspects of communication. Arnseht and Solheim (2003) consider Clark and Brennan's (1991) model to retain a communication-as-transfer view of language, not taking into account the complex dynamics of joint activity. Furthermore, as Koschmann, LeBaron, Goodwin and Feltovich (2001) show in connection with an in-situ analysis of a surgical situation where the use of gaze and gesturing is restricted, common-ground and shared understanding are elusive to achieve, particularly in mediated situations.

As Koschman (2002) argues, much CSCL research is framed in denotative theories of meaning, which presuppose that utterances or speech acts have fixed meanings. These studies differ from discursive approaches, which operate on an understanding according to which meaning is constantly created anew in negotiations between interlocutors. Mutual understanding can, perhaps, be reached momentarily. The fundamental difference between these two approaches is that the first one considers that language has more or less fixed meanings and the latter one insists that language merely has meaning potential, which realises in interactions.

The perspectives that current CSCL research provides are in concord with current learning theoretical perspectives. Judging from a theoretical perspective it makes sense to provide learners with opportunities to interact, negotiate common goals and work with complex real-life tasks. However, the empirical research methods with which these suggestions for new pedagogical practices are arrived at need further attention. Experimental set-ups, which base their argumentation on cause-effect explanations, do not alone provide sufficient empirical evidence for drawing these conclusions. What we need also is courage to look at the whole complexity of computer supported collaborative learning situations. A look at the real experiences of real students – the whole range of variety – is needed. In particular we would need more such research, which takes the situational meaning-making into account.

2.3.2.2 Collaborative pedagogies

Learning is sometimes referred to as knowledge building in CSCL pedagogies (cf. Hakkarainen, Lipponen & Järvelä 2002; Scardamalia & Bereiter 1994). This approach is based on a constructivist epistemology, according to which knowledge is not an artefact, but something which indeed has to be constructed in interaction with people and tools. The idea is to face students with complex problem situations and to facilitate their learning process with the aid of peers, teachers and different kinds of technology tools. What is noteworthy here is that also the creation of knowledge is dependable on interaction between people. One central application of the idea of collaborative knowledge construction is the Progressive Inquiry model (Hakkarainen, Lipponen & Järvelä 2002). Progressive Inquiry (PI) simulates the process of scientific inquiry, in which students' work is scaffolded with knowledge building categories. The categories prompt the students to reflect the nature of their contributions, for example whether they have written their own working theory or reflected theory (see Muukkonen, Hakkarainen & Lakkala 1999, for a more detailed discussion on the procedure).

Ludvigsen & Mørch (2003) have interpreted the PI model from a situated perspective as locally produced activity by means of an analysis of videotaped discussion of students working on an inquiry. On one hand they conclude that students do orient to and their work is guided by the knowledge building categories. However, they generate the meaning of categories in different ways. On the other, they criticize the PI model for being too rationalistic and not being able to take the situational character of local meaning negotiation into account (Ludvigsen & Mørch 2003).

Computer-supported collaboration is often based on problem-based pedagogies, where participants work trying to solve joint problems. Just as shared understanding(s) has to be negotiated and maintained, shared problems also need to be worked out interactionally. In an analysis of a problem-based tutorial conducted via a chat interface with medical students Koschmann et al. show (2003, 38) that problems do not appear naturally, but they, too, have to be collaboratively constituted and discovered. Koschmann et al. (2003, 38) maintain that in order to meet a problem in understanding students will first have to articulate a shared understanding. A shared understanding is made problematic through what they have termed a 'problematising move', which is the first pair part of an adjacency pair. A problematising move needs to be followed by an 'uptake move' in order for a jointly negotiated and recognized problem to appear. The participants in problem-based learning situations make visible what they know and what they find problematic. Koscshmann et al. (2003, 38) argue that through such members' methods the participants actually do learning.

Building or supporting virtual communities has been a strong trend in developing pedagogies for computer-supported learning activity (cf. Renninger & Shumar 2002). The interest in learning communities may be due to the recent learning theoretical discussion, which emphasizes the social aspects of learning (cf. Resnick & al. 1991; Resnick 1989; Salomon 1993; Lave & Wenger 1991; Rogoff 1990). Results from the field of collaborative learning (cf. Dillenbourgh 1999) as well as the theory of learning as participation in communities of practise (Lave & Wenger 1991) have given further theoretical support for these accounts. The argumentation around the notion of learning

communities builds on similar grounds as a great deal of CSCL research. According to these views shared goals and the process of grounding are among the key elements of successful collaboration.

The most optimistic visions seem to assume that if we offer a joint virtual space for a group of students, a virtual learning community emerges automatically. Current thesis shows, however, that even in virtual pedagogic contexts students first of all portray themselves as members of their local, physical communities and only secondly, orient towards a membership in a virtual community. Whether these communities are constructed by the participants as "learning communities" or simply as "required participation in another university course" is another interesting question.

Thus, the importance of interaction is widely emphasised in computer-supported collaborative learning and there is an abundance of research that focuses on interaction in learning with computers (cf. Littleton & Light 1999). How collaboration is negotiated is a much less applied perspective, however. We still need research, which would relate web-based study more strongly with its surrounding educational contexts, in its official and informal arenas. Furthermore, such “data-driven” research, which would shed light on the participant perspective, seems to be lacking, too. The voice of the students reflecting their learning experiences and conceptions is crucial when making pedagogical conclusions, but also in confirming our interpretations of the data.

Many CSCL researchers have been eager to show that technology has positive consequences on learning. However, Säljö (2003, 2), for example, points out that the new media do not necessarily make learning any better, but they certainly transform it: ”The new media have found a place within institutional practices, but their impact has been considerably less than argued by the enthusiasts. However, the significance of new technologies does not lie in their enhancing learning in a linear sense. Learning does not become better or more efficient. Rather, the important point about new technologies is that they, if they are powerful enough transform basic features of how people communicate knowledge and skills in society and how information is organised” (Säljö 2003, 2).

2.4 Synthesis

Chapter two has reviewed the theoretical framework of this thesis. The range of different theories introduced was rather wide and in some cases the approaches could be argued to be marginally relevant for the present study and applicable in the analysis (e.g. the perspectives offered by text linguistics are not in all respect compatible with the social semiotic ones). However, such a wide range of theoretical perspectives serves as important resource in trying to describe and understand the multimodal and polycontextual scene of computer-supported learning.

Chapter two started with a discussion of meaning as socially constructed. It was concluded that text, in the sense of language, is a resource for meaning-making, which waits for the readers and hearers to interpret them. Words and sentences, and other linguistic phenomena, are not the only resources for semiosis. Particularly in the context of computer-supported learning and interaction other modes (e.g. image, layout) should

be taken into account as well. The second subsection considered computer-supported learning as a form of interaction. Because of the hybrid nature of computer-mediated communication, theories of reading and text were discussed first. In accordance with the treatment of meaning, it was concluded that readers do not decode fixed meanings from text, but, instead, readers use text and other semiotic resources for meaning-making. As a form of interaction, computer-mediated communication could be termed as a hybrid of speech and writing, which displays multidimensional sequentiality. Computer-supported learning is also polycontextual. Already the physical environment exceeds limits of the computer-screen. Furthermore, several other contexts "are talked into being" in textual activities by the participants.

As for the learning perspective, theories, which emphasise the socially constructed nature of learning, were discussed. Learning, too, was seen as a situated and socially constructed activity. Furthermore, this chapter discussed in more detail the computer-supported collaborative learning and the learning theoretical rationale it often builds on. It was argued that there seems to be space for more such CSCL research, which is not based on denotative theories of meaning, but which, instead, operates on an understanding that meaning is constantly created anew in the interactions between the participants of computer-supported learning projects.

3 The context of participant activity

Chapter three will outline the pedagogic contexts from which the data utilised in this study were collected. The pedagogic approach of the courses, or to put it differently, the teaching philosophies of the teachers, will be described. Also the participants will be portrayed in some detail. In addition, the meditating technologies (the learning platforms used in the courses) will receive some attention.

The description of the context is partly based on participant observation and partly on recorded data. The pedagogical model will be explained as the teachers in different situations outlined it: in classrooms, in student instructions on the web. The teachers also wrote regularly about the pedagogical arrangements, because these courses, in addition to being real university teaching, provided data for research. Hence, the pedagogical approach was also described in grant applications, research plans and conference papers, for example. On the other hand, I will also provide some evidence from the recorded data: both numerical and qualitative. This chapter serves as a kind of ethnographic description of the activities and people in the context of this study. It outlines the two different approaches to web-based teaching applied in the three different university language courses, from which the data for the current thesis come from.

3.1 Context one: case-based conferencing on the web

Data-set one was collected in the SHAPE-project at the Universities of Oulu and Jyväskylä in Finland, during two different courses between 1998 and 2000. In the beginning, these two Finnish universities collaborated with the University of Indiana (U.S.). Later on, other international partners (e.g. from the U.K and Korea) joined the core group for shorter periods of time. The web-work was flexibly attached to the local curricula. The common denominator was the context of teacher education and the topics of the courses in the different sites varied from foreign language education to cognitive psychology. As for the Finnish students and teachers, the subjects of this study, the topic was language learning. The titles of the courses from which these data were collected ranged from “language and society” to “foreign language studies”. The total number of participants in the web-work was 136 students (106 from the USA and 30 from Finland) and 13 mentors (7 from the USA and 6 from Finland). Even though the whole group in

case-conferences on the learning platform was sizeable, this thesis will concentrate only on the cases the Finnish students originated. The American students, for their part, had an opportunity to act as peer mentors for the Finns. Not all of them chose to do so, however. Thus in reality the number of the participants from the American side who visited Finnish cases was much smaller.

3.1.1 The pedagogic context

In the following I will describe the pedagogic approach. The description aims at giving the reader a general picture of the context in which this study was carried out. This description is necessarily a teacher and researcher perspective to the course of events and does not aim at discussing how the activities were interpreted by the students. The pedagogic approach made use of a combination of asynchronous web-discussion and face-to-face classroom situations. The web-work was built on a problem-based approach (Saarenkunnas, Häkkinen, Järvelä, Kuure, Taalas & Kunelius 2000; Kuure, Saarenkunnas Taalas 2000b; Järvelä & Häkkinen 2002; Bonk, Malikowski, Angeli & Supplee 1998). The approach in the classroom situations could be described as 'consultative' (cf. Soini & Tensing 1999): the classroom sessions were never designed by the teacher alone, but instead the agenda for the meetings was built on issues the students raised. In the following the pedagogic activities are described in more detail (see also figures 2 and 3).

In the first classroom sessions in the local sites the students together with their teacher discussed the course contents. In practice, the participants formulated the topics for the web-discussions (topic building). This work was started with examining the problem area from the student perspective. The students were asked to bring up problems in the fields of teaching and learning, investigation of which at the moment would be meaningful and topical for them. These discussions also aimed at supporting the grounding process as they aimed at lessening the differences in the participants' (teachers' and students' alike) conceptions of what this course and the studied subject were about. The participants discussed, among other things, about relevant learning theoretical concepts for describing the problems they brought up, thus trying to develop a common language for the "learning community".

After the topics were negotiated and agreed upon the students started to write case-descriptions onto the shared learning platform. The students' assignment was to collaborate in creating joint theory-based cases in different areas of teaching and learning. The students were asked to provide descriptions of problematic instances they had met with while teaching or studying. The construction of these cases was often based on the students' field-experiences. These cases involved issues such as "how to teach science" or "how to approach a student who has a difficult situation at home". During a period of approximately two months, all participants, international and Finnish, then discussed these problems in the asynchronous learning platform. The case discussions were collaboratively constructed by adding comments, agreeing and disagreeing with the others, sharing experiences, referring to a theory, providing help for each other etc. The cases were closed with summaries by the authors of the problem-descriptions. Towards the end of the web-work the students wrote a reflective report based on the discussions

around their problem. This pedagogical approach to web-based discussion has also been described and discussed in other research by, for example Bonk, Malikowski, Angeli and East (1997); Järvelä and Häkkinen (2002); and Saarenkunnas et al. (2000). Figure 2 describes the "case-conferencing" process.

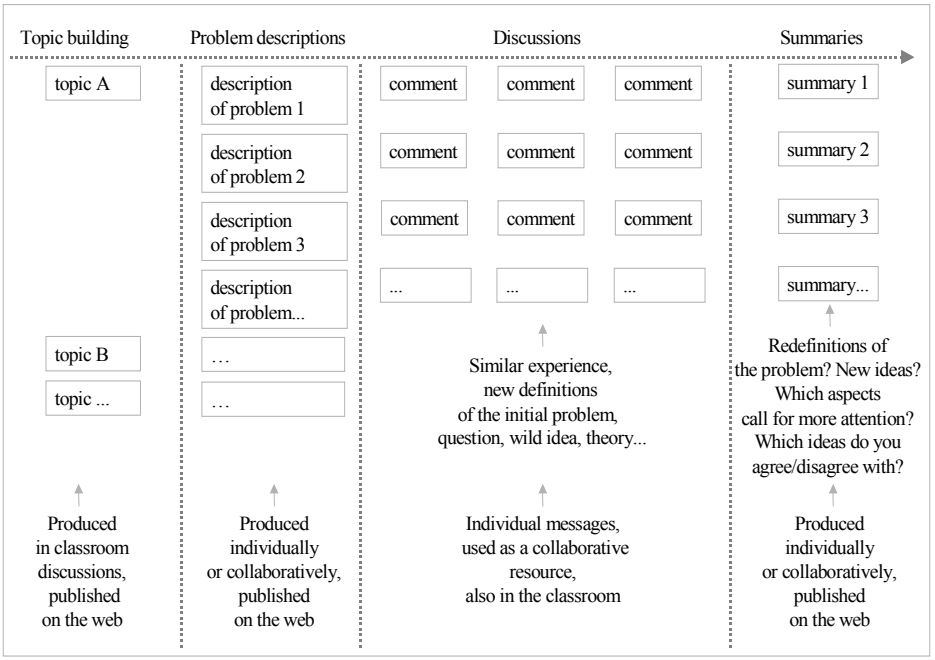


Fig. 2. The case-conferencing process.

As one announced aim of the project was to apprentice students into the culture of teaching and learning through engaging them in joint problem-solving concerning issues and questions in everyday educational work, several experienced mentors were recruited to participate in the discussion. The teaching staff, mentors and responsible teachers for the course, represented a wide variety of professionals. They came from different fields of education (educational psychology, learning research, applied language studies, field schools) both with theoretical and practical knowledge on learning and teaching. The mentors (experienced teachers, researchers, peers) were instructed to give feedback and to provoke the discussion by taking different roles: e.g. a devil's advocate, pessimist, and supporter. Their task was not only to support the ongoing discussion by expert knowledge, but also to guide the process.

To support the web-work, several strategies were used to bring the participants' views and work into the foreground and, thus, make it accessible for reflective discussion (metawork). First of all, the local groups met regularly face-to-face even though the focus of the work was on the web. The sessions (ten altogether) took sometimes place in the computer class and sometimes in a lecture room.

The function of the meetings in the computer class was to let the students work on the web, and, simultaneously, provide tutoring in technical questions, linguistic and stylistic issues as well as content matters. The students worked in pairs at the computer, which was a conscious choice from the perspectives of both pedagogy and research methodology (cf. Silverman 1993): In such a situation, the working partners tend to explicate their problems and questions in speech to each other, which makes it easier for the teacher to observe the need for individual tutoring or joint elaboration of thoughts. Moreover, the data gained through this kind of methodology emphasize the interpretations of the researched, rather than impose the researcher's categories on the phenomenon under scrutiny (Cameron, Frazer, Harvey, Rampton, & Richardson 1993; Alasuutari 1995).

In other classroom meetings during the web project, the focus of the work was on group discussions and shared workshop-type elaboration of issues brought up by the students and facilitated by the teacher. The activities of these sessions ranged from deciding on the topics of the web conference (topic building) to assessing the activities. As the course in the Finnish universities covered English as a foreign language, the theme of academic writing and features of asynchronous communication in a foreign language also occurred frequently. The following figure provides examples of the kind of topics discussed during the meta-work sessions in the classroom.

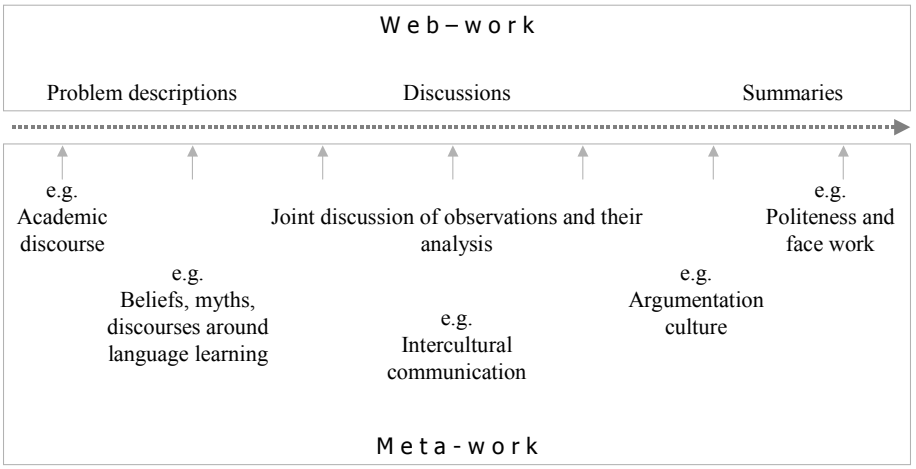


Fig. 3. Meta-work as a support for the web-work.

As was pointed out above, meta-work appears to be an essential aspect of learning support which, despite a long tradition of research and teaching method development on awareness (cf. Van Lier 1995), still needs attention. Therefore, special attention was paid to the teacher approach on the course, not only on the web, but especially in the accompanying face-to-face meetings. It is well known that traditional classroom discourse patterns tend to persist despite genuine attempts by teachers to assign power and initiative to their students, and, indeed despite their students' eager efforts to accept

the challenge (cf. Sinclair & Coulthard 1975 on the interactional dynamics in the classroom). Similar observations were made by Silverman (1997) about interactional dynamics in counselling sessions. In order to break the persistent patterns of pedagogic interaction, a teacher approach was adopted that could be described as consultative. This means that in the face-to-face meetings the teacher consciously avoided taking initiative in the discussion until it was certain that even the quieter students had had a chance of sharing their observations on the web work with the whole group. The observations were elaborated in the group by the help of the teachers and the two participant observers with their theoretical and practical perspectives (see figure 3). The observers were members of the research group, and experienced teachers, who were present in the classroom meetings. In addition to taking notes they were also "legitimate" participants occasionally engaging themselves in the collaborative analysis of the student observations, and, thus, supporting the teacher as a consultative facilitator. This work was demanding, and therefore also reflective discussions between the teacher and the participant observers were arranged after the classroom situations. These were recorded for research purposes.

3.1.2 Mediating technologies

The case-conferencing courses were carried out in two different learning platforms. The first of these platforms, COW[10], is an asynchronous computer conferencing system, which was designed to support computer-mediated communication. The main functions of this software included that participants could start discussion threads and reply to them. A thread made up one document, in which all postings by different participants were attached, in a temporal sequence. ProTo[11] as a learning platform was much more versatile. In addition to asynchronous discussion list it made document sharing and commenting possible. It also offered a possibility to construct an electronic resource library. There were several other features to in addition to these, but those were not utilised in SHAPE project.

[10] ProTo (Project tools for learning) is a learning platform, developed at the Unit of Educational Technology, University of Oulu. Currently it is not in use, since new products have been developed on the basis of the early development work. The learning platform is, however, described in detail in Pulkkinen and Peltonen (2000).

[11] COW (Conferencing on the web) COW was developed for the San Francisco State University Community. COW is available as freeware. More information is to be found at http://thecity.sfsu.edu/COW2/about.html.

COW	ProTo
Message 1	Message 1
Message 2	↳Message 2
Message 3	↳Message 3
Message 4	↳Message 5
Message 5	↳Message 6
Message 6	↳Message 4
Message 7	↳Message 7

Fig. 4. The difference between the discussion tools in COW and ProTo.

The biggest difference between these two learning platforms was the way in which they structured discussions (see figure 4 above). COW listed all postings to one single document, whereas ProTo placed them individually in a thread. In ProTo the main thread could consist of several sub threads. Messages were organised both in terms of temporal order and message hierarchy, which caused some confusion. The simple system in COW was beneficial in many respects. As all messages were placed in one single document, every time a participant accessed the discussion in question he/she was given an overview of the whole thread. In a sense, the reader was forced to browse all messages in the thread. ProTo required much more effort in building a sense of what has been said so far, because of the disrupted adjacency. However, it is also possible to say that the discussion tool of ProTo quite truthfully indicated that coherence has to be consciously worked out: it does not reside in the text. In a way, COW gave a "false sense of coherence" as it placed the messages in a book-like fashion. However, COW – in its simplicity – was easier to use.

3.2 Context two: computer-supported collaborative research

3.2.1 The pedagogic context

The computer-supported collaborative learning project, which forms the second context in this study, was organized as a joint activity between two universities in the autumn term 2002. Like the first data set, this context involved both web-work and face-to-face meetings. In addition to the web-work, the two groups had individual small group meetings in their local sites, with unique programmes. Furthermore, one videoconference between the universities was organized towards the end of the course. However, the internet-based shared working space was by far the major scene for shared activity. The aim of this shared web project was to examine concepts and issues that are connected with the domains of culture, communication and virtual environments.

The main participants were undergraduate students from two Finnish universities (location A and location B henceforth). During the joint web activity this key group had some visitors from other locations as well, but essentially the activities were shared between the original groups from the two Finnish universities. The participants in

location A consisted of future teachers of English who were currently engaged with their pedagogic studies. The joint activities formed a part of their teacher training. The members of location B were university students majoring in English language studies, participating a course on cultures and communication in virtual environments. The students in location B started to work with the topic two weeks earlier than group A. Furthermore, some of the participants of group B were not campus-based student, but joined in the work from their work place or home. The visitors in the joint working space were students from two foreign universities and language teachers, who worked in a language centre of one Finnish university. The teaching staff consisted of three teachers (one from A and two from B) and 4 participant observers, who in addition to making field notes also took part in the discussion. All together 53 participants visited the shared The SHAPE environment, out of which 44 more or less actively participated in the study process.

SHAPE 2002 was organized around a "doing research with" metaphor (cf. Cameron, Frazer, Harvey, Rampton & Richardson 1993 on a discussion on research ethics). The idea was to involve students in a research-like knowledge building process, which was arranged loosely around the themes of technology in language education and communication in virtual environments. The overall theme was gradually narrowed down to specific questions the students wanted to have a closer look at. The teachers did not predetermine these questions, but instead, the students were helped to find issues they were prepared to research on and get involved with during the course. Collaboration was one significant pedagogical principle the teaching staff wanted to enhance: collaboration between peers, students and teachers as well as other participating experts. One might also describe the activities in terms of legitimate peripheral participation (Lave & Wenger 1991) as an attempt to apprentice the students into a community of practice of research on language.

The work done during the course could be classified roughly under three partially overlapping phases: orientation, research and evaluation. Figure 5 below gives an overview of the structure of the course. The linear representation of the process and events in such a complex context as SHAPE provides rather a sketchy picture of the course of the activities. One reason for this is that the activity in text-based asynchronous learning platforms approaches the structure of hypertext rather than linear narrative. The function of figure 5, as well as this chapter, is to provide the reader with an overall picture of the structure of the events.

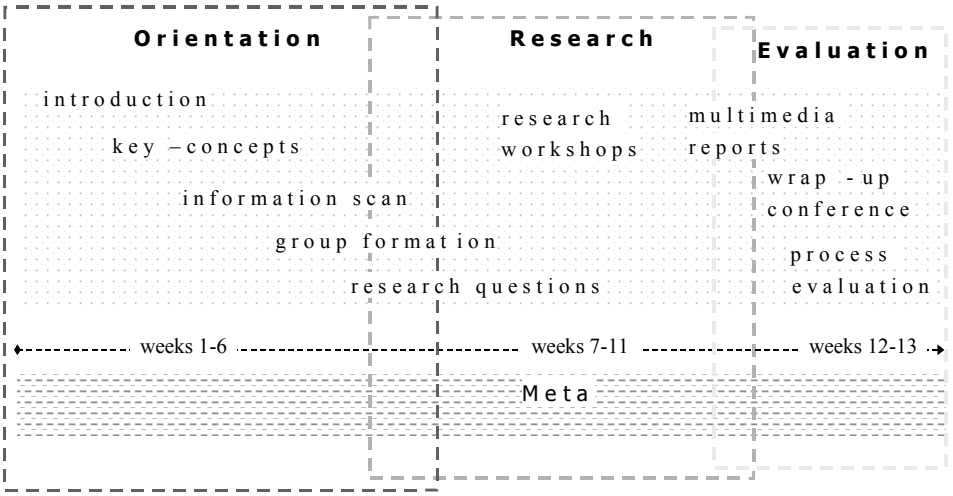


Fig. 5. The overall pedagogic framework of SHAPE 2002.

The objective of the orientation phase was to explore "who we are", the members of this emerging “community” and "what we are interested in" in relation to our “shared” topic. To put it differently, the idea was to try and outline shared goals for the group and negotiate common language. The orientation phase started with introductions. After the initial introductions by the participants, the teaching staff asked the students to consider, which concepts connect to the themes of the course and which of those they would be interested in exploring in more detail. This "key- concepts -discussion" not only clarified the topic of the course but also helped the participants to form a more detailed picture of the participating community. In the orientation phase the students were also encouraged to bring in any background material they found interesting. The teaching staff participated the discussions. The idea was to encourage the students to draw from their own experience. The staff also provided a rather extensive library of readings for the students to choose from.

The second phase, “research”, was initiated by group formation. The participants were encouraged to find people with similar interests judging from their experiences in the preceding group discussions. When a group was found the members were to start to look for a joint research problem. The purpose of this phase was not to look for full-scale research questions as such, but such questions or topics that the students would like to dig deeper into the general framework of technology in education and communication in virtual environments. Once the groups (of three to four members) were established joint working spaces for discussions and document sharing were created. These working spaces were called "research workshops". All together seven groups were formed. These tools used for the collaboration and communication consisted mainly of asynchronous discussions and documents sharing. However, in addition to the joint web-based working space, these groups were offered an opportunity for desktop videoconferencing. Some of them also meet regularly face-to-face.

The final phase was “evaluation”. In order to pass the course the students were expected to produce a report on the work they had done in their groups. Use of multiple representations, both visual and written, was encouraged. The teaching staff recommended that the groups would use more than one mode of representation in their reports. These reports were introduced in a wrap-up videoconference between the two participating universities. The process was closed by a process evaluation meeting, where the students were asked to reflect on the semester and to jointly draw a picture of the whole process. The "metawork" element encouraged the participants to reflect on the working process on meta-level. The idea of metawork is to distance one-self from the working process in order to analyse it. Especially in situations, like ours, where the topic and the tools (technology in education and communication in virtual environment) are indistinguishable, metalevel discussion and reflection are fruitful in enhancing the learning process. An example of metalevel activity in our case would be when the students use their own activity in the learning space as data for their research work.

3.2.2 Mediating technologies

SHAPE 2000 made use of a learning platform called Optima[12]. Optima, like ProTo in the previous data set, consisted of different kinds of tools for studying. Optima itself as a learning platform aims at being rather neutral. It is a set of text and discussion tools, which offer many possibilities for the user to mould it towards desired direction. However, its features, for example the way it structures discussion, have a bearing on its pedagogical use. When the teachers and designers first enter the environment its appearance is crucially different from the final jointly produced environment. Teachers and designers mould the workspace first. They have the right to create user profiles, which distribute rights to the other participants. Teachers and designers, for example, decide a) which elements the students have a right to access and b) what kinds of objects (links, documents, folders, lists) they are allowed to create. Typically this would involve decisions concerning issues such as the right to access user and reader statistics or the right to create new folders in the workspace.

The discussion tool in Optima offers several possibilities to approach a thread. First of all, when a participant enters a discussion list, she/he is as a default option offered a list of messages, which she has not accessed so far. These messages are in temporal order.

[12] The predecessor of Optima, Telsi was created at the Continuing Education Centre of the University of Oulu. The latest versions of the learning platform have been developed by Discendum PLC (cf. Http://www.discendum.com/english/optima/).

However, if the participant wants she/he can change the view to a threaded list, which presents the topic opening message first and all adjacent messages second. These options yield totally different meaning potentials (see figure 6 below).

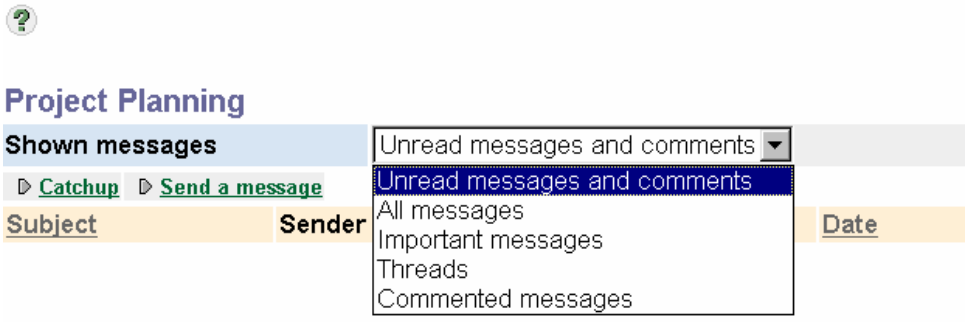


Fig. 6. Possible approaches to the discussion tool in Optima.

When accessing the messages in temporal order the reader jumps from one thread to another. She/he most likely collects "resources for her meaning-making process" from several different threads and possibly mixes these in her/his response. However, if the reader approaches the discussion through the threaded list, he/she meets the text not in the temporally arranged order, but in a hierarchy built by the learning platform. This hierarchy is based on the logic of which "buttons were pushed and when". The machine is blind to the contents of the messages and as such does not create logical connections between messages. However, the way the messages are presented to the reader suggests that at least logic of time – a sequential order – is being followed.

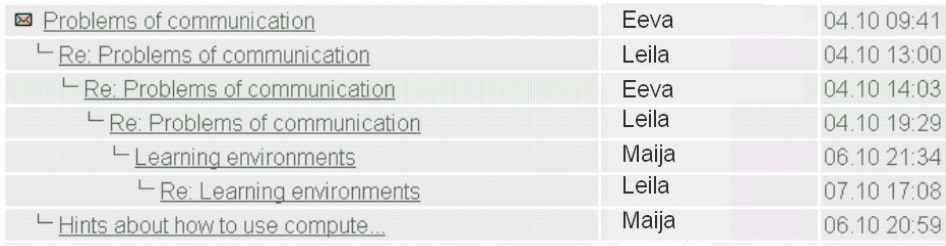


Fig. 7. An example of a thread in Optima.

The example above (figure 7) shows how Optima arranges messages in threads. The last message in the thread by Maija was not the last to arrive on the platform even if its placement in the thread might suggest so. After Maija's message two other messages arrive: Maija's second message and Leila's last message.

Highly flexible discussion forums provide the participants numerous ways in which to approach the collaboratively built meaning potential the messages, threads and discussions yield. Bulletin board systems, which place all messages in a thread to one file

(for Example COW is based on text-file), offer a possibility to a kind of book-like or print-like reading. The message threads are to be read from top to bottom and left to right. The materiality of the two different systems thus provides different potential. Adamant struggle for a sense of organization against disorder might be wasted energy in systems, which do not provide the sense of continuity and temporal order easily. The possibility that platforms like Optima offer is that it enables users to connect ideas and messages in several different ways and thus helps to prevent premature categorisations. Brainstorming, for example, suits such systems well.

The courses researched in this thesis aim at knowledge building discussion. The underlying idea of the applied pedagogy is that students and teachers jointly build knowledge of the researched topic in discussions. As the aim is to create new contributions to threads of discussion the process is dependent on reflecting the previously presented ideas. However open and flexible Optima tries to be, the default options it offers support particular kind of pedagogical activity. When a student enters a discussion he/she is first faced with a view of unread messages and comments the rest of the thread being hidden at that moment. This first view is fixed, since neither the student nor the teacher can alter this default. In order to reach the previously created discussion, teachers and students will have to actively change the view to show the thread. One possible reading of the kind of pedagogy Optima indirectly suggests is that it is meant to be an information delivery channel between teachers and students. The default option of "unread messages and comments" seems to imply, that once a message has been read, you need not go back to it again. To see the discussion in its entirety, the users will have to actively change the view. In other words, the kind of collaborative knowledge building discourse the teachers in this study would like to enhance is to some extent spoken against by the potential meanings the medium offers. It remains yet to be seen, whether the interpretations the students give to Optima enforce this.

The teachers in SHAPE 2002 course decided to use the document sharing option, synchronous chat and asynchronous discussion lists for the course. When SHAPE 2002 finished the environment was full of documents, pictures, discussion lists and statistics of the activity (visual and numeral). The teachers and designers of SHAPE 2002 gave the students relatively free hands. The students had access to most information in the environment: documents, discussion lists and statistics. Statistics were one source where the community and its activities were represented. Students had information about participant activity available. They, for example, were able to check how many messages a user had sent and read, how many objects he/she had opened, and how many documents were created. In addition to this numerical information, the students had access to diagrams about discussion in a particular discussion list. Those students who had use of the statistics reported the statistics helped them to check how they were doing in relation to others. The following data samples give evidence that these tools were actually used at least by some of the participants. A student in her final evaluation of the course wrote in the following manner:

Example 1. Student in the final evaluation of the SHAPE2002 course

> "The statistics (as a tool) about my activeness versus general activity were reassuring because I could check how I was doing" (Year 2002, data B4) [13]

The participants had also access to 16 discussion lists (all together 797 messages), 66 folders and approximately 300 documents (written as well as picture and mp3 files). The folders included links to resources outside the learning platform, which were brought to Optima both by the students and the teachers. This should give the reader some kind of a rough idea about the magnitude of different resources the environment consisted of. However, it must be emphasised that this is not the whole picture of the richness of semiotic resources SHAPE 2002 included. Encounters outside the environment, computer-mediated chats as well as face-to-face meetings, provided further resources for making meaning to the activity in and around SHAPE 2002. In relation to the discussion lists and folders the students had access to the information of who had accessed the messages, folders and documents. These functions, however, only provide information on who had opened the text - not who had read it. But, as will be shown later in this thesis, these small seemingly insignificant texts are also oriented to when making meaning to the activities.

3.2.3 Participant activity

During the three-month process the participants wrote altogether 797 messages. The most productive staff member had produced 136 messages whereas the most productive student had send 133 messages. From the other end of the scale the ratio was 6 and 1. This variation is true also when looking at reader statistics and document production (see tables 2, 3 & 4). In sum, it was indeed characteristic of student, as well as staff, participation in SHAPE that the degree of activity varied a lot. Some students were highly active and some participated minimally. The following table illustrates the activity in the shared working platform in terms of written and read contributions. However, this is not the whole picture of student and staff activity in SHAPE, since a fair deal of the work was done outside the platform in face-to-face situations, for example.

[13] The data samples will be coded in the following manner. In "1998 B1", for example, the first number indicates the year from during which the data was collected and B1 tells that it is discussion data. "1998 A2", for example, tells that the data comes from the videoed classroom situations. Tables five, six and seven, in chapters 4.2.1 and 4.2.2 contain explanations of the codes.

Table 2. Participant activity in 2002, in the light of sent messages.

Number of sent messages (range 136-0)			Total
50 or more	2 students	2 staff	4
10 or more	10 students	4 staff	14
5 or more	6 students	1 staff	9
Less than 5	10 students	4 visitors	15
None	2 students	6 visitors	8
Total	30	17	47

Table 3. Participant activity in 2002, in the light of created documents.

Number of created documents (range79-0)			Total
50 or more	-	1 staff	1
10 or more	4 students	4 staff	8
5 or more	4 students	-	4
Less than 5	9 students	2 staff, 1 visitor	12
None	9 students	10 visitors	19
Total	29	18	47

Table 4. Participant activity in 2002, in the light of accessed messages.

Number of read messages (range 97-0)			Total
500 or more	8 students	7 staff	14
250 or more	64students	-	6
50 or more	14 students	-	13
10 or more	2 students	7 visitors	9
Less than 10	1 student	4 visitors	5
Total	29	18	47

At the beginning of the process the number of sent messages increased rapidly. 486 messages out of 797 were written during the orientation phase. The teacher in charge sent 95 of these messages, which makes nearly one fifth of the messages in the orientation phase. The teacher's messages largely signalled acceptance and encouragement, since the need for such guidance is largest at the beginning of activities, when the students try to form a picture of what they expected to work with.

Example 2. Teacher Leila, message in the joint learning platform.

> Hi Laura - no wonder you are a bit confused, but do not worry - things will become clearer little by little soon. – Leila (Year 2002 data B1)

The messages sent in the orientation phase were revisited from time to time even after they were archived. When the students "retired" to their research workshops, the activity seized a little. The messaging was done in small groups, which meant that not all students

were addressed in every message unlike in the orientation phase. By the end of the research workshops the group had produced 712 messages, out of which the teacher in charge produced 124. The seven research-workshop groups created nine discussion lists all together.

In concordance with the writer and reader statistics, the activity between the groups varied a lot. Some groups were really productive and the discussion was lively. Some groups had severe difficulties in getting their work going. Some groups seemed to concentrate on working outside the learning platform. It is also a noteworthy fact, that the members of the most active group checked out all discussion lists whereas three groups did not visit any discussions apart from their own. However, the students were not expected to visit each other's workshops, unless they wanted to. The role of the teacher in charge of these discussions was played down as the research problems were already defined. However, she gave guidance in face-to-face meetings as well as desktop-conferences.

Chapter three gave a description of the participant activity in the two slightly different pedagogic contexts researched in this thesis. In the final stages of writing this thesis the observations and analyses from the different contexts, which in reality were three separate university courses, were arranged around the research questions. Thus, they will not be handled as separate entities in the analysis and discussion of the results. Chapter four will move on to describing the data retrieved from the above-described contexts. It will also discuss the research methodology and methods applied in this thesis.

4 The qualitative research approach of this study

This chapter will consider the challenges of computer-supported learning from a methodological perspective. First of all, the chosen qualitative approach and the sources from which it draws upon will be introduced. Second, the data and data collection methods will be explicated. Third, methods of analysis will be discussed. Since one aim of this study was to develop research methods for analysing pedagogic activity in computer-supported learning, this discussion requires a considerable amount of space.

The foundation of the approach applied in this thesis is based on the perception of the nature of language as shared meaning-making. In other words, interaction is not constituted through an exchange of linguistic items with fixed meanings. Instead, meanings are negotiated in interaction (see chapter 2.1). This theoretical standpoint bears consequences on the choice of the corresponding research approach and research questions.

The range of methods used in this thesis is wide, as it will analyse both written and spoken interactions, student activity and the mediating tools. Such a multimethod approach is a conscious and necessary choice because of the nature of the studied phenomena. The analysis moves between macro- and micro perspectives to data thus providing a richer view to the activities. Since the amount of data in this study is rather large, the macro perspectives help to reach the general picture. The micro perspectives for their part are crucial in providing a participant perspective to the data. Looking at the data from a micro perspective helps in providing evidence for the participants' meaning-making processes. Since computer-supported learning involves several modes and media, it is important that both textual and face-to-face interactions around the pedagogic activity are analysed.

Also the aim of drawing pedagogical conclusions calls for a wide perspective to the context of activities. Developing new pedagogies involves a wide scene of interacting activities, which are in intricate relationships with each other. Therefore, what research devoted to developing new holistic pedagogies needs to focus on are the details of participant activity from a wide perspective. Such research, however, cannot reach for causal explanations between applied pedagogies and learner performance. In addition, the research questions have to change. We need to ask: How and what kind of meanings do the participants negotiate in the activity? What are the resources they draw from?

Learning, as any social activity, is indeed "constitutively interactive and irremediably situated" (Hemmings, Randall, Marr, & Francis 2000, 227). The next chapter will take a look at the theoretical foundations of the chosen qualitative approach.

4.1 Discourse as situated constitutive use of language in social settings

CSCL research still relies on experimental settings and coding schemes to a considerable extent (Cf. Strijbos, Kirschner, & Martens 2004; Koschmann, R. Hall, & N. Miyake 2002). However, applying various theoretical and methodological perspectives would provide a richer view to the phenomena at hand. To understand computer-supported learning in its complexity, we need to apply various kinds of research approaches. To produce new understandings of how real people act in real situations of computer-supported learning, we should search for new methodological solutions in data-collection and analysis. To reach the participant perspective we should consider the benefits of more data-driven approaches.

As the chosen perspective in this thesis is discursive, it seeks information on how people interpret the world, engage in meaning-making, rather than whether the reality exists and how it looks like (Jokinen, Juhila & Suoninen 1999; see also the discussion on meaning and meaning-making in chapter 2.1). Such an approach is interested in, for example, how people describe certain phenomena, what kind of attributes they attach to these and how they classify them. Studying cultural articulations, or how people make meaning, is not equivalent to dividing the data into classes defined by background theory set in advance. Classification schemes are typical for theory-based approaches and usually involve categorization of large amounts of data. Such etic-type distinctions are set by the researcher where as emic-type distinctions emerge from the data. (Alasuutari 1993, 89-90).

Even though the aim of the chosen research approach is to let the data speak, pure emic-type of research does not exist as such, because "to do research always entails concepts used as tools in making sense of the object of research, no matter which way it is approached in the first place. The emic approach means that one is trying to get a grasp of the members' conception in order to make sense of practices and phenomena, but even in saying that one resorts to many analytic or 'etic' constructs" (Alasuutari 1995, 68). It is quite clear that the researcher is not a tabula rasa when s/he meets with the data. S/he is also a member of different cultures or discourse communities. The world cannot be met without classifications, since that is how we make sense of the world, and especially nothing that deals with language can be analysed without words (Mäkelä 1990, 56). The task of the researcher is to try to question and look behind cultural stereotypes.

This thesis approaches the data analysis from two directions. On the hand, pre-mature categorisations are consciously avoided and the approach comes near to data-driven. On the other hand, theory, such as the current CSCL discussion, serves as a certain kind of a field guide in the analysis. The issues of meaning-making and virtual community, for example, are also widely addressed in other CSCL research from a theory-driven perspective. This thesis, however, asks how these categories are oriented to by the participants.The chosen approach is critical: this thesis seriously attempts to avoid taken-

for-granted understandings of the nature of computer-supported learning and interaction. In a way, the aim of this thesis is rather to falsify than to verify existing notions (for example the discussion of ‘virtual communities’).

Some conversation analysts and ethnomethodologists argue that only naturally occurring data are acceptable in terms of research. However, as Silverman (1993, 106) states, "the opposition between naturally occurring data and artificial data is a methodological red herring. Neither kind of data are intrinsically better than the other; everything depends on the analysis". Thus, the acceptability of the data depends on the nature of the research questions and the method of analysis. All kinds of data are appropriate if we bear in mind that the data and the method of analysis are compatible. Furthermore, "whether the material is good or not depends on its relevance to the questions addressed" (Alasuutari 1995, 93; see also Speer 2002).

In this study, the role of the researcher involved participation in the described pedagogic activities. Participant observation sets a special challenge as it according to Alasuutari (1995, 135) may be difficult to see beyond the self-evident, to study the phenomena we master in practice but are not reflexively conscious of. Building the pedagogic approach on the principle of involving students in dialogue concerning observations and interpretations will provide help in this issue. Whether the researcher chooses to do research 'on', 'for' or 'with' the researched transforms the research questions, data collection and methods of analysis (cf. Cameron & al. 1993). Participant observation involves sharing people's lives while attempting to understand their world.

The discursive approach has bearings on the methods of data analysis as well. It implies that the goal of the study is rather to achieve a deeper understanding of the phenomenon and its diversity than to make generalizable observations on a range of preliminarily established factors. Coding schemes, for example, which Alasuutari (1995) sees only as the first step in the path to a full-fledged analysis of social action, may prevent the researcher from seeing potentially meaningful issues outside the predetermined frame. As much of previous CSL research relies on such coding methods, there is a strong need for studies with discursive orientation. We can start our analyses by asking which discourses or frames the participants use to make sense of the world. This should then be followed by further analytical questions such as how these categories are used, when and which functions they serve (Silverman 1993). The main function of data collection and analysis is to make the researchers underlying premises as visible as possible and to challenge the initial framework. In the kind of research approach outlined here, the responsibility of the researcher is to try and prove the obtained results false rather than verify them.

Thus, an orientation towards a "data-driven" approach does not mean that it is free of theory. The relationship between data and theoretical understanding could be described as dialectical. Alasuutari (1996) discusses the interplay between theory and empirical research in constructionist approaches, in particular from the perspective of cultural studies. He regards initial theoretical understanding as an essential phase in research. At worst, a lack of methodological perspective will result in the researcher's inability to see anything at all in the data. A broader theoretical framework also places the object of research in a larger context and validates its choice. However, it should be emphasized that in the fieldwork phase, the object of study should be analysed as a world of its own. A particular theory or hypothesis should not prevent the researcher from making

observations. When one assesses and discusses the results, the research process advances towards a discussion of broader entities again.

Together with a new approach, a new set of questions becomes interesting. Constructionist or discursive approaches are not interested in providing universal or general explanations of certain phenomena. Instead, as Alasuutari (1995) points out, constructionist approaches aim to particularize understandings of the social: to provide detailed descriptions of local, historically and culturally specific systems. The function of theory is that it provides lenses or a reflexive perspective to the mundane reality. The aim of the qualitative analysis of empirical material is to provide new insights into the cultural premises of social life: how people make sense of the world they live in and what the rules of interpretation are that members use. In other words, instead of trying to verify preset hypotheses of the outcomes of specific pedagogic arrangements (e.g. Does this instructional method inflict deeper learning?), we should look for "surprises" on how people construct the activities in question (e.g. What is happening here?).

The question of context cannot be bypassed by a pre-defined set of variables either: it, too, has to be reached and analysed from a “data-driven” perspective. We should have open eyes for the questions of where is it that the phenomena we are looking for may occur. In other words, we should avoid premature definition of the context (e.g. by labelling an activity as "a virtual community performing a computer-supported collaborative learning project"). Rather, we should look at how participants orient to the context of learning and, for example, produce this context in their talk and actions as "an obligatory study assignment". We should thus ask the data what the context, indeed, is and not let the researcher's initial assumptions restrict the perspective of the study (see Jones 2002 among others for a treatment of context in computer mediated communication).

According to Hine (2000), the focus of research on the Internet from an ethnographic perspective is on the practices through which technology is understood rather than on the technology itself as an agent of change. Such ethnography is interested in the locally situated, occasioned character of Internet use. A central question would be, for example, how the status of the Internet is negotiated in the local context of its use. Accordingly, we ought to study the practices through which the virtual community becomes meaningful and perceptible to participants. Instead of asking what the effect of technology is on learning we should examine how the context shapes the use and effects of technology.

4.1.1 The multimodal perspective

Widening the scope of analysis from text to the analysis of mediated multimodal action is especially relevant in the study of computer-supported activity. Such an approach would help us to understand the diversity of real-life situations of learning and work in technology-mediated settings, which typically involve numerous modes and media. Instead of presuming that the text in computer screens is the primary resource for the students’ meaning-making process, we should ask what and where the resources for meaning-making in computer-supported activity really are. When the perspective broadens, the relevant unit of analysis changes from discourse to what Scollon (2001b,

3) treats as mediated action. He points out that there is no action without participation in different discourses, and, vice versa, no discourses without concrete, material actions. The focus is on social actors as they are acting, not linguistic detail alone. Jones (2002) shows, that the uses and meanings of computer-mediated communication have in fact very little to do with the actual words typed into computer screens. His study also pointed out that the context of computer-mediated communication is often much more important than is regarded in most work on CMC. Jones (2002) suggests that analysts need to adopt a polyfocal perspective: a perspective, which encompasses multiple modes and makes use of multiple methods, which begin with people's actions and experiences around texts.

Computer-mediated communication is multimodal. Even if Kress and VanLeeuwen (2001) do not forcefully emphasise the situated perspective, they are co-responsible for opening the discussion on multimodal meaning-making in linguistic study. They outline a theory of multimodal communication. Multimodality for Kress and Van Leeuwen, from a social-semiotic –perspective, means "the use of several semiotic modes in the design of a semiotic product of event, together with the particular way in which these modes are combined (Kress & Van Leeuwen 2001, 20)". The modes may, for example, reinforce each other or fulfil complementary roles. Even if they mainly concentrate their analyses on multimodal text and discourse and not on local meaning negotiation, communication for Kress and VanLeeuwen is a process in which a semiotic product or event is both articulated or produced and interpreted or used.

The importance of multimodality is also suggested by the work of Ron Scollon (2001b, 4) on the theory of mediated discourse analysis. Mediated discourse analysis (MDA) aims at keeping the complexity of social action alive in the research of discourses produced in and around social actions. For MDA, discourse, in the broad sense of language, is among the means through which society and culture are constituted. However, every action involves multiple mediational means. Scollon (2001b, 7) points out: "the production of shared meanings is mediated by a very wide range of mediational means or cultural tools such as language, gesture, material objects, and institutions which are carriers of their socio-cultural histories". The picture becomes even richer with new representational technologies, which produce new forms of mediational means and forms of representation. These include complex combinations of text, image, sound and colour (Scollon 2001b, 170).

A further support for the need of a multimodal approach in the study of social phenomena is provided by Scollon's (2001a) critique of Critical Discourse Analysis (Wodak & Meyer 2001). MDA sees that we cannot say whether public texts and discourses play a role in producing changes in behaviour unless we take a closer look at the social action people engage in. From the perspective of CSCL this would mean that for example the discourses around CSCL are rather irrelevant unless they are embedded or produced in the social action of "doing CSCL". A similar position is taken by the ethnomethodological approach represented by Silverman (1993). Silverman sees that what we ought to look at is what people do instead of what they say they do. In other words, a situational perspective of interpreting and producing text and discourse is needed.

From the perspective of this thesis the theory of multimodal communication makes one particularly important point. Even if language (as words and linguistic structures) is an important form of communication, the increasing prevalence of multimodal texts and

multimodal communication point toward the necessity of taking the multiple modes into account, especially when researching learning and communication. The analysis in this thesis might not be able to answer to the call of the multimodal theory of language in full, yet. However, it clearly makes a move in that direction. In practise this means that in addition to the actual text produced by the participants, other more visual features are paid attention to. The structure of discussion threads is discussed on several occasions, for example. Also the visible but unintended and largely computer-generated marks that the participants leave on the learning platform are discussed on several occasions from the perspective of activity.

In sum, this thesis applies a discourse approach, which emphasises the participant perspective. This approach will take into account the multimodal nature of language. In addition to discourse (linguistic), this analysis will consider other forms of mediated action. The aim is to produce a deeper understanding of the complex and diverse context of computer-supported learning. The idea is as much to challenge than to verify the initial understandings.

4.2 The data and the data collection methods

This study makes use of three different data sets and several different methods. Similar ”multimethod” approaches have been applied in other research as well, for example in ethnomethodological ethnography (see, for example, the work of Michael Moerman 1989). The mixing of methods is justified and even necessary for several reasons. As was argued above in chapter two, meaning-making in computer-supported learning activity is multimodal and polycontextual by nature. Therefore a single source of data will only provide a partial view to the activities. The necessary data include both written and spoken records of activity, even if the written accounts of activity in the learning platform receive most attention. However, the interpretation of data benefits significantly from, and would be partial without, analyses of face-to-face interactions. Our previous experience in researching web-supported learning activities (e.g. Kuure, Saarenkunnas & Taalas 2002) had showed that much is lost when the analysis of computer-supported collaboration concentrates on the textual products in the web alone. Especially when the aim is to apply the obtained results in improving pedagogical activity, we ought to be able to look at the whole diversity of activity: the complex meaning-making resources and practices in a larger context. Pedagogical activity never occurs in a vacuum, but instead, is linked in complex ways to the larger context in the life-worlds of the participants. Interesting analyses of the linguistic resources, which bring the students’ resources into the focus, have been provided by Gutierrez et al. (1999), for example. The classroom, virtual or not, is always polycontextual. Taking into account this complexity is not simple, however. In the following the attempts of reaching this complexity with multiple data-collection methods and approaches will be described. The approach draws mainly from ethnographic, ethnomethodological and constructionist discourse perspectives. The approach is inductive rather than deductive.

The data for the current thesis were collected in the Finnish Academy funded SHAPE research project together with a research group. The first data set comes from university

courses, which applied a case-based approach in web-based learning (cf. Järvelä & Häkkinen 2002; Bonk, Malikowski, Angeli & Supplee 1998; Bonk, Daytner, Daytner, Dennen & Malikowski 1999). The approach in the second data set was described by the teacher with a "doing research with" metaphor. The third set was collected outside formal institutional teaching and studying contexts to complement the analysis. These data consist of interviews of different professionals who use foreign language in their work daily. These interviews enabled the researcher to take some distance to the culture of formal language teaching contexts. In a sense they provided a lens with which to see beyond the self-evident. This chapter will provide a view to the data and the applied research methods. The data as well as the practical steps taken in the analysis will be described also with some detail in connection with the empirical analyses in chapters five and six.

An important feature of the courses, which provided the data for the research group, was that they were part of the regular curriculum of the participating institutions. This has the advantage of studying the phenomena in natural settings during longer periods of time instead of solitary test situations. This is essential from the point of view of the qualitative research approach adopted for the study, which emphasizes the situated perspectives of interaction (cf. Hine 2000; Silverman 1993).

The data come mostly from naturally occurring situations: The teaching and learning contexts described in this thesis would have existed without the research project. Some data, such as the online interviews and group evaluation situations come closer to elicited data, although gathering student feedback would have been a natural part of the teachers' pedagogic activity without the research setup as well. However, the role of the participant observers, of which I was one, as well as the research agenda, were openly explained to the participating students. I am well aware that participants contextualize actively and therefore the presence of the research set up must have at least given additional flavour to the activities. This is also evidenced by the data. Sometimes students, for example, refer to the video cameras and microphones as "big brother" (data 1998). In some occasions they report that they monitor their speech because of the recorder's presence, as is shown by the following data extract:

Example1. Student working on a computer.

> Paavo: vaarallisia asioita paljastettavaksi varsinki kun on tuo mikki nii lähellä ("Dangerous things to reveal especially when the mike is so close"). (Year 2000, data A1, student working on the computer)

Thus, the students clearly monitored their speech at least in some occasions because of the research set-up. Rather than producing a problem, this talk, however, produced an interesting resource for the research. Such accounting, as in the above data extract, provided the researcher useful perspectives to what the students considered as a delicate issue (see chapter six for a more thorough discussion of accounting in connection with this particular data extract).

4.2.1 Data-set one: case-based conferencing on the web

The data set one was collected in the SHAPE-project at the Universities of Oulu and Jyväskylä in Finland, during two different courses between 1998 and 2000. In the beginning, these two Finnish universities collaborated with the university of Indiana (U.S.). Later on, other international partners (e.g. from the U.K and Korea) joined the core group for shorter periods of time. SHAPE 1998 involved 70 participants and SHAPE 2000 69 participants. A more detailed description of the pedagogic contexts and the participants was provided in chapters 3.1. and 3.2, where the activities were analysed from the perspective of the teacher.

A variety of data-collection methods were applied. Because the context of web-based learning extends beyond the web-work, the individual postings and collaboratively produced discussion threads constitute only a fragment of the students' studying activity. If we are interested in the student activity (e.g. where and how they participate the activities) and experience (e.g. how they interpret the activities), rather than their learning outcomes (e.g. what have they learned during the course) or the quality of their learning products (e.g. do they write high quality reports of the discussion), we need multiple sources and types of data. In the current thesis, participant observations and recordings of class sessions, together with recorded peer interviews, provided valuable information on the student experience of the web-work. Table 3 describes the variety of data in the first phase of data collection.

Table 5. Data in the first phase of the SHAPE project, from the year 1998.

A. Video and audio recordings of communicative situations	B. Written data
1. Collaborative work at the computer 5 meetings, 1.5 hours each).	1. Discussions (342 postings, 25 threads) in the asynchronous international web-conferencing environment (COW, conferencing on the web).
2. Videoconference situations (3 meetings, 1.5 hours each).	2. E-mail correspondence between the teachers and co-ordinators of the international web-work.
3. Peer interviews (6 groups, half-an-hour each).	3. Pre- and post-collaboration questionnaires (one per participant).

The first attempt to document a web-supported learning project already included some material, which provided a possibility to reach meaning-making in situ. However, the main body of data still consisted of written material: web-based discussions between the students, e-mail exchanges between the participants and questionnaires.

In the second phase it became clear that the web-based discussion data did not provide a clear enough window to the activities and scenes the students were involved in during the web-work. Therefore, the amount of recorded face-to-face interactions in the data was increased. The discussion data were important, since we were interested in reaching a better understanding on what kind of meanings the web-based discussions and the work process are given by the participants. Participant observation also had an important role in making initial interpretations of the situation. Therefore, the second phase includes a wide range of video and audio recordings of communicative situations, where the

participants “talk the studying process into being”. Table 4 describes the data collected in the second phase.

Table 6. Data in the second phase of the SHAPE project.

A. Video and audio recordings of communicative situations	B. Written data
1. Collaborative work at the computer (twelve 45-minute sessions). 2. Videoed classroom situations (ten 90-minute sessions in two different groups) and one videoconference. 3. Reflective discussions between the teacher of the course and the participant observers after the classroom situations (eight 15-minute sessions).	1. Discussion (476 postings, 38 threads) in the asynchronous learning environment (ProTo), 2. Complemented with computer-generated database logs for identifying when a particular posting was accessed and by whom. 3. E -mail correspondence between the teachers and co-ordinators of the international web-work. 4. Unstructured participant observation notes (~50 handwritten pages). 5. Written documents produced by the students in the classroom situations

4.2.2 Data set two: computer-supported collaborative research

The computer supported collaborative learning project, which forms data set two in this study, was organized as a joint activity between two universities in the autumn term 2002. Like the first data set, this project involved both web-work and face-to-face meetings.

One obvious body of data are the automatically recorded activities in the joint learning platform. The research group had access to the discussion, documents, statistics and visual representations of student activity. The amount of information these provide for the researcher is enormous. This could be illustrated, for example, by the fact that together with every discussion list and individual message, we would get a list of all participants who had accessed the list and the messages in it, and a visual representation of the communication patterns. The list of message readers was utilised in the analyses in this thesis. The other computer-generated data merely helped the researcher in forming a clear picture of the activities, but is not referred to in the actual analysis.

Researchers in the field of CSCL have been interested in applying ethnographic approaches (e.g. Pöysä, Mäkitalo & Häkkinen 2003) to the study of computer-supported collaboration. Methods such as “online-diary” have been developed in order to reach the participant perspective. From the perspective of reaching the participant perspectives these methods seem to have some potential, but at the same time they pose some problems when applied in real-life contexts. Computer-supported learning activities are mostly text-based and presence in these environments is dependent on the activity of the students. In other words, participation in these projects is mostly done through writing. As writing is extremely time consuming it seems unreasonable to ask the students to write more than they already have to perform for the actual collaborative learning tasks.

Furthermore, writing for the researcher may also distract the principal task of studying. However, if writing diaries is merged into the study process as one meaningful learning task, as a tool for reflecting the process on a metalevel, and if the work load they place on the student is carefully considered, their use is well justified.

Group A in SHAPE wrote on-line diaries. However, for group B it was decided that it would be better to leave diary writing out. The students had a considerable amount of work with their rather sizeable projects. They also agreed to fill in four different questionnaires concerning the study process, which meant that they were already to a reasonable extent involved in "off-task" activities. Our previous experience had also shown that when a research set up is involved in a course, which for the students is not an experiment, but instead a genuine part of their studies, researchers have to be really sensitive and considerate not to put too much pressure on the students. It is important that the students feel that the research project is as much 'for them', as it is 'about them' for the researchers. A wired "big brother is watching you" environment does not create an open atmosphere for collaboration.

Instead of asking the students to write diaries we decided to involve the staff, the teachers (3) and two participant observers (2), in writing down ethnographic observations. In addition to the staff, also one student volunteered to make notes on her observations. This particular student worked from a distant site (several hundred kilometres away) and did not participate the local meeting in either site A or B. The observation logs were loosely structured with an instruction to respond to two questions (see below) at least once a week. Those who were more active in writing these logs sometimes produced new text daily, depending on the height of activity in the environment. The questions asked were: 1. Where have you been today? Which discussions have you taken part with? Which discussions/documents have you read? 2. Which issues particularly caught your attention? Impressions, thoughts, observations, feelings? The function of the first question was to give a rough description of the activity that was going on at the moment the participant observation log was filled in. This question proved to be useful when a need to attach a particular event to particular interpretations arose. The second question encouraged to make interpretations of the process and also to write down impressions and feelings during the process. The main function of the participant observer logs was to provide a collective memory, which could be drawn from in analysing the data when the actual buzz of activity had seized. Writing these diaries was also the first step in the analysis of the activity. These six logs produced 97 pages of typed data.

In our previous projects (cf. Kuure, Saarenkunnas & Taalas 2001) we collected a large body of videotaped group situations both on the computer and in the classroom. However, during the data collection in 2002 the teacher responsible for the teaching arrangements was worried about the effect it might have in the learning situations. Therefore, we recorded only some general views of the classroom activity, which are capable of telling us about the activities that the students partake at that particular moment. In site B the meetings were optional and few. In site A these meetings provided the basic structure for the course: most work was done during meetings in computer labs. Even if the quality of this data does not allow detailed analyses of group discussions it proved to be useful as a visual memory of these events. The wrap-up-conference, which was done through a video link, provided more detailed conversation data. Finally, the

group evaluation discussions (two groups) in site B were videotaped. The students were asked to reflect on the process and to jointly draw a picture of the most important phases during the course.

Some groups chose to have desktop-videoconferences for the purpose of negotiating their project. Since the quality of voice, when delivered through the Internet, is not good, these groups supported document sharing with telephone conference. Two desktop-videoconferences by one group were audiotaped. These discussions resulted in three hours of audio taped data.

The students were asked to fill in a questionnaire, which concerned the collaborative study process, four times during the 3-month period. The function of these questionnaires related not only to the research process, but also to the studying process. The questions asked were meant to support meta-level reflection of the activities in the learning environment. In this thesis, the questionnaire data is not discussed in detail. Its role in the analysis and interpretation of the activities in SHAPE 2002 was mainly to provide the researcher a general picture of how the activities developed.

The table below summarizes the data produced during the second data collection phase in the SHAPE-project. The modes included both written, including visuals, as well as spoken data. Most of it consists of naturally occurring data, which was produced as an integral part of the studying process. However, the participant observer notes and videotaped group evaluation sessions bear a resemblance to elicited data. Especially the participant observer notes do not only record the activities but also include interpretations of the "raw data". It must be emphasised though, that every observer was a legitimate member in the collaborative knowledge building process. Therefore this data, too, is an account of the authentic activities.

Table 7. Data set two (2002) in the SHAPE project.

A. Video and audio recordings of communicative situations	B. Written data
1. Videotaped face-to-face group sessions.	1. Web-discussions and documents produced by the participants (383 objects),
2. Videoconferences (one and a half hours).	2. Complemented with computer-generated database logs.
3. Audio taped group situations. (three hours)	3: Participant observation notes (including samples from synchronous chats) (88 typed pages).
4. Videotaped group evaluation situations (two 45-minute sessions)	Pre- and post-questionnaires.
	4.Email exchange between the participants.

4.2.3 Data set three: language work context

The analyses of the first two data sets painted an interesting picture about how students interpreted language-learning tasks in institutional context. The third data set was collected for the purpose of complementing and comparing the picture that emerged from

the institutional learning contexts to the perspectives in the context of language work. It was an attempt to find new perspectives to formal language learning contexts by looking at it from a distance, through working-life context. The first two data sets approached language learning through the discourses of language learners in institutional contexts. The third set widens the scope of analysis from formal language learning situations to settings in which language related problems are solved on a daily basis. Alasuutari (1995, 135) suggests that such cross-cultural comparison may help the researcher to generate why-questions in a situation were she is a member of the culture she is researching.

The data collection was carried out through an online-interview of 18 professionals who use foreign languages in their work frequently. The approach to this data comes close to qualitative content analysis (cf. Silverman 1993, 9), as no quantification in terms of 'researchers' categories' was applied. It aims at investigating the language tool related practices of language work.

4.2.4 Data examples in this thesis

The amount of activity these contexts involved was vast and therefore also the data are extensive. All of these data obviously cannot be examined in detail within the scope of one thesis. Figure 8. below describes the relationship between the different data sources in this study.

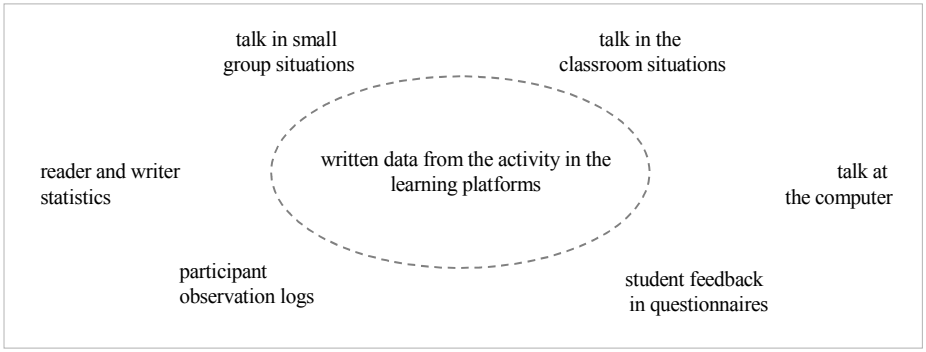


Fig. 8. The relationship between primary and secondary data.

This thesis mainly concentrates on analysing the written data retrieved from the learning platforms. The written data serves as starting point for the analyses in most cases. The other data receive less comprehensive attention, but they still are crucial for the analysis. The recorded situations on the computer and in the classrooms, for example, are important as the interpretations made on the web-based activities are checked against them. These data provide the richness of perspectives as well as the necessary resource for data triangulation. However, I am well aware that the different data come from different instances of meaning making and are situated in different contexts. In other words, the accounts that the students produce about the activity in the learning platform afterwards (e.g. in small group discussions) are not factual descriptions of the state of the

events. Nevertheless, these accounts are important as they help the researcher to question the reading of the event the written text on the platform at first glance seems to support.

In addition, the language work interview data (which will be analysed in chapter six) are used as a tool for the researcher to distance herself from context of higher education. As was pointed out already in chapter 2.3.1, students and teachers create and recreate educational contexts in their talk (Hemmings & al. 2000; Arnseth & Solheim 2002; Goodwin & Duranti 1992). Such contextualisation makes developintg ducational practices a difficult task. Alasuutari (1993, 179) suggests that in such cases analysis might benefit from learning more about the studied issue in a different context. Therefore this study will also try to see beyond the self-evident and familiar discourses of institutional language learning by analysing interview data from the context of language work.

A wide range of data is also a strength. Having the opportunity to participate and observe these different courses proved to be truly beneficial. The slightly differing pedagogic approaches and various learning platforms helped the researcher weigh computer-supported communication and collaboration from a wider perspective. For examples, the pedagogic approach applied in context one seemed to produce differently structured discussions than the approach applied context two. This observation was crucial when drawing pedagogical conclusions on the basis of the results.

4.3 Methods of analysis

As one aim of this study is to develop suitable research methods for studying computer-supported learning activities, this chapter discusses methods of analysis at length, referring to data examples. First the suitability of data classification according to predefined classification schemes will be discussed. It will be concluded that a more data-driven approach proves to be more applicable, especially when the aim of this thesis is to try and reach a wide perspective to "what is going on" in computer-supported learning. Secondly, I will discuss the widely used metaphor of computer-supported 'discussion'. It will be argued that asynchronous computer-mediated communication (CMC) differs to a great extent from face-to-face discussion, in terms of sequentiality, for example. Therefore methods developed for analysis of face-to-face interactions (conversation analysis, for example) are not applicable as such in the analysis of computer-mediated interaction. Even if this fact is acknowledged in the research of computer-supported learning for the most part, the actual research methods applied do not necessarily reflect what was recognized in theory. In order to reach the situated meaning-making in asynchronous CMC a multimethod approach is needed.

In order to develop new instructional practices such research approaches that would provide us with a broader understanding of how the participants make learning activities meaningful are needed. To provide new insights, we should, thus, try to better understand how the phenomenon of CSCL is culturally constructed: how people talk and wrote computer-supported learning into being and which resources they draw upon in meaning-making. What such an approach looks for is not the causes of actions and events. Instead, it places the ways in which participants of learning events make the activities meaningful as the object of inquiry. This, in turn, may shed some light on the actual practices of

learning and teaching. Instead of chasing for new learning solutions as the primary task, we should stop and have a look at how web-environments are being used and incorporated into the daily lives of our students. Gaining a better understanding of how students make computer-supported learning activities meaningful will in turn help us to develop new pedagogies. The questions this thesis asks do not aim at establishing fool proof explanations of the nature of reality. Such discourse approach (cf. Jokinen, Juhila & Suoninen 1999, 85) that is advocated in this study, sees research as one turn in an ongoing dialogue, which aims at stimulating new discussion.

4.3.1 The problem of classification

Classifying data into predetermined categories is suitable for some purposes. However, when reaching the participant perspective is at focus, methods that rely solely on theory-based classification prove to be problematic. At the beginning of the SHAPE research project, the applicability of various approaches into the analysis of interaction was weighed. A theory-based classification scheme, for example, was tried out. Regarding the complex nature of studying human activity and meaning-making processes, a more data-driven approach proved more suitable since the aim was to gain a deeper understanding of the interaction at hand. Special emphasis was put on trying to let the data "speak" and avoiding imposing the researcher's categories on it (cf. Alasuutari, 1995, 67 – 68). As for the relationship between theory and empiria, it is assumed here, however, that theory is always present in interpretation in one form or another through our preliminary knowledge. In other words, even in a data-driven approach it is possible to utilise data and theory in interaction for a better understanding of the phenomenon under scrutiny (Alasuutari 1995; Strauss & Corbin 1990). Yet it is especially important that the researchers take a conscious effort in avoiding premature theorising when collecting data (Glaser & Strauss 1967), in particular when the aim is to understand the participants' perspective to the issues at hand.

Even if it was clear that meaning is a result of a process of negotiation, and that interpretations by different readers may differ (cf. the discussion of recipient design in C.A.), in the initial stages an attempt was made to apply a structural discourse analysis on the data along the lines of early studies on exchange structure (e.g. Sinclair & Coulthard 1975; Edmondson & House 1981). Special attention was paid to teaching and mentoring discourse, largely because the study involved a practical interest in producing some kind of a guideline for teachers on how to participate computer-supported study projects. One aim in the SHAPE-research project was to finding out, whether particular kinds of teaching or mentoring discourses would prove to be more successful than others. The idea of analysing the discussion according to mentoring moves (linguistically articulated intentional interventions with the aim of guiding the process) however, proved to be problematic.

Attempts to classify the data according to three functional categories (e.g. Bonk, Appelman & Hay 1996) were made. In the first category, 'the process move', the mentor would prompt the student to provide further details of his/her case. A process move would concentrate more on the work process than the content of the studied phenomena.

By the second, ‘the content move’, the mentor would provide theory or an expert opinion. The third, an ‘interactional move’ would direct towards involving the students in the interaction and work. Another possibility that was considered was based on Bonk and Kim’s (1998) twelve forms of learning assistance. Soon, however, it became evident that the above kinds of mentoring moves overlap to the extent that almost every explicit comment could fit more than one category. The problem of categorisation is discussed through the following data excerpt, which is a message sent by one of the mentors to the students in response to a student’s posting. The names of the participants are changed. Martta is a mentor on the course and Tiina, whom she addresses, is a student.

Example 3. Message from a mentor to students in the COW learning platform

6. Author: Martta Mäki (mmaki)

Date: Feb. 25 3:18 AM 1998

Tiina (and others),

I fully agree.

A couple of questions I think we ought to think about in here,

or things that I would like to discuss:

What would this cultural awareness that EFL teachers need be like?

What would our teacher studies at the university be like if we took

English as it is, a world language?

--Martta (Year 1998, data B1)

First of all, it would be possible to categorise this teacher intervention as a process move. The questions that the teacher here asks can justifiably be interpreted as invitations to provide further details for the case the student had presented if we interpret the question to mean the first pair part of the adjacency-pair question-answer sequence. At the same time these questions provide a particular theory of the English language as the teacher here categorises English as a world language, denoting a particular kind of lingua-franca approach to the language (Scollon & Scollon 1995; Pennycook 1994). Thus, this message could also be read as a content move. Thirdly, the address form “Tiina (and others)” that the teacher uses, could be interpreted as inviting all students to participate in the textual interaction and, therefore, be categorised as an interactional move as well. Furthermore, the above analysis does cover but a fraction of the meaning potential of this message. This small piece of text could readily invite various other interpretations as well.

In a sense, classifying single messages into solitary categories defies the whole idea of web-based learning interaction, if we are indeed speaking about interaction, which by definition is exchange between people or people and objects (e.g. text). Analysis, which takes messages out of their interactional context of “a discussion” between several participants would not talk about computer-supported interaction. Instead, it would focus on mutually unrelated messages. Even in cases were the research questions justify the use of categorisation as a method (see for example the discussion of the uses of first person plural in chapter 5.3.3.1), it would make sense to consider sequences of messages.

However, trying to figure out the links between messages in such loosely structured texts as web-based discussions in most cases are is also a rather challenging task. Most messages link to several other messages with overt cohesive links (see chapter 2.2.1.2) and thus could be interpreted as replies to several messages. Furthermore, some messages do not seem to make overt links at all, but still cohere with the overall exchange of messages. Herring (1999) has made similar observations on the coherence of web-based interactions. Furthermore, the sequential organisation might be difficult to uncover, since writers do not necessarily write their contribution as a response to one message, but as reaction to the whole discussion, synthesising several different online and offline resources, as the following data example shows.

Example 4. Student Katri replies to mentor Martta in the learning platform.

Subject: Re: Do you talk to me or do you talk to us?

Sender: Katri

Recipient: Martta

Date: 11.10.2002 00:49

» Maybe we are wrong when we look at this interaction as

» interaction between people and messages. As in "you

» wrote this comment", "I built on it", "he continued".

» At least my experience as a participant (in shape now,

» as well as before in other similar contexts) is that I

» write most of my contributions for many recipients,

» collecting the stimulus for my contributions from many

» messages, from different people. What I mean here is

» that I feel I talk more to/with the whole community

» than to/with single people.

» What do you think?

I don't know why but I feel I talk to one person (or several, if the message contains pieces of several messages) when I'm answering a message (sometimes with the idea of other people possibly reading my thoughts in the back of my head)... and sometimes I do try to address the whole community (questions etc.) The 'who I am addressing' sort of fluctuates, even during the writing of one message. The 'one person' feeling is at its peak in answering direct questions ... in jumping in, the addressee circle sort of widens. Interesting. I also think that the community is reflected and built also by using exactly those 'he continued', 'MARTTA:' etc. -types of expressions. ---omitted text----

Katri (Data 2002, B1)

Thus, classification does not seem to be sufficient enough as a method, when we are interested in the wider frame of activities in computer-supported learning projects. However, also sequential analysis faces some difficulties when applied to asynchronous computer-mediated interaction, as chapter 4.3.2. will show.

4.3.2 The metaphor of discussion in web-based interaction

Computer-mediated communication is often termed as discussion. We, for example, talk about 'discussion forums' and 'discussion tools'. The word discussion ('keskustelu'), in particular in the Finnish language, creates associations with spoken language. However, asynchronous CMC has a specific kind of sequential structure, which is different from the adjacency-pair sequence of face-to-face interaction (cf. Sacks, 1987, 55). The basic mechanism of turn taking – controlling the floor and co-ordinating action - in spoken interactions was first described by Sacks, Schegloff and Jefferson (1978). The following example from Silverman (1996:123) highlights how the interpretation of pronominal reference can be traced in the hearer's turn in spoken interaction.

D: It sounds as if generally you're having a difficult time

M: Her temper is vile

D: She with you and you with her

M: Yes. And her control of the diabetes is gone, her temper then takes control of her (Silverman 1993:123)

This is a discussion where a doctor and a mother talk about a child's diabetes. In his first turn, the doctor uses the pronoun 'you'. Whether 'you' means singular or plural here is ambiguous until it is given meaning by the interlocutors. In her turn, on line two, the mother chooses to interpret the doctor's turn, as "the daughter's temper is vile". In the repair sequence "she with you and you with her" the doctor tries to redirect the discussion to talk about the relationship between the mother and the daughter. However, in her last turn the mother rejects this interpretation. The kind of negotiation that is going on here, in the face-to-face discussion, can seldom be seen in asynchronous textual interaction. The sequential analysis of asynchronous web-discussions cannot therefore solely rely on approaches similar to the analyses of spoken 'in situ' interactions. The reason for this lies in the difference between perceived sequentiality and the actual realised sequentiality in the interaction. In a web-based discussion forum the messages may appear to accumulate into a sequence of turns. Reader access information, however, will reveal that "adjacency pairs" may be organised according to other principles than proximity (see also chapter 5.2.3 in this thesis). Indeed, the turns may proceed from one forum (e.g. discussion 1) to another (e.g. discussion 2).

In web-based interaction the interpretation of turns (i.e. if we can justifiably call a message in a web-based discussion forum a turn) cannot solely rely on the analysis of "what follows". In our data, for example, the moves that the teachers made were seldom explicitly referred to in the later stages. Thus, it was often impossible to trace what kind of interpretations the intended audience might have made. This, in turn, would have been

the only source to reach the so-called participant or reader perspective to the activities as in this case there was no tape-recordings of students working on the computer available. The following data example illustrates such a situation.

Example 5. Mentor Martta invites students to discuss in a the learning platform.

2. Author: Martta Mäki (mmaki)

Date: Feb. 17 5:34 AM 1998

Thank you for the very first Finnish case (you won the race)!

As we trying to connect theory with the practice of teaching, I'd

like to know a little bit more about portfolio assessment from the

point of view of your learning/teaching experiences.

Have you ever used portfolio assessment/ seen it used at schools?

Where? Could you describe a concrete situation? What are the

possible advanteges/disadvanteges in connection with portfolio

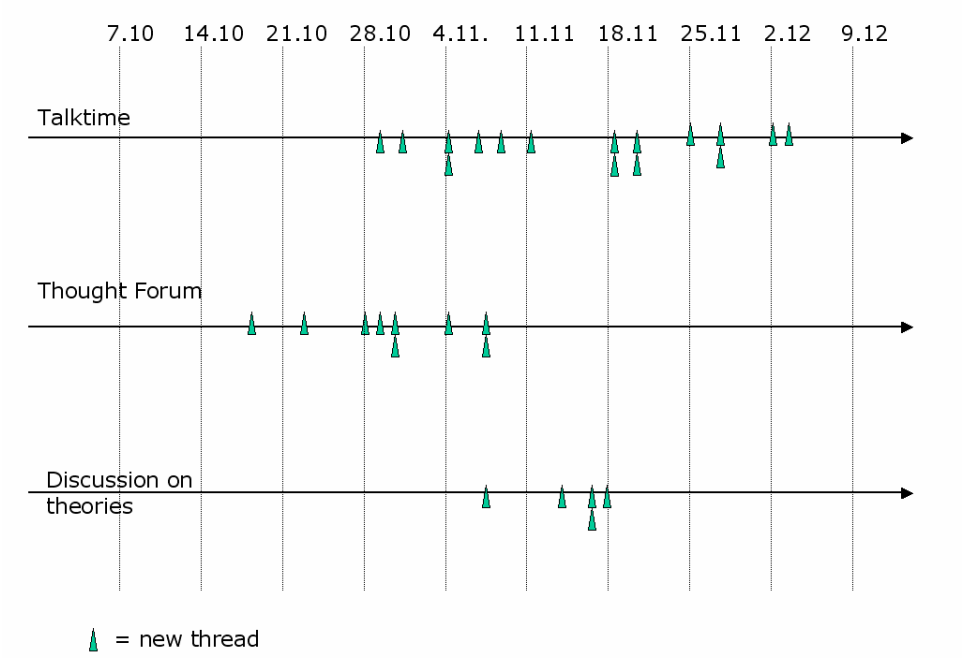
assessment?

--Martta (Data 1998, B1)

The message above was written by a teacher as a second comment to a case-description written by two students. The message seems to be an attempt to actively guide the discussion. The teacher here asks the students to give further concrete details to support their case. However, judging by the contents of the 25 messages that follow in the thread, it does not receive response that could be interpreted as a direct answer. Since interaction is a process of meaning negotiation, it must also be observed that messages may be interpreted in several ways depending on the reader. For example, a comment meant as social acknowledgement could be understood as criticism (see chapter 5.2.2 on an analysis of how students interpret messages). From the writer perspective, it is thus impossible to find out what kind of thought processes individual moves evoke in the reader. This becomes crucial in web-based asynchronous communication because of the delay in the pace of exchanges and the lack of most extra-linguistic means for communicating and interpreting pragmatic meaning (cf. Herring 2003a; Stubbs 1983).

Thus, computer-mediated asynchronous interaction is not conversation or discussion in the same sense as face-to-face interaction, even if it does allow interactivity to some extent (see chapter 2.2.2 for a discussion of CMC and CMD). In such asynchronous multiparty communication contexts as the current data display, the number of messages alone makes it difficult to make interpretations on how the textual work (producing and interpreting text and images) actually proceeds in time. As an example I will provide a description of the textual work of one student group from the year 2002, data set two. This particular group used the asynchronous discussion in Optima as their primary tool for accomplishing their joint research project, because they were a distributed group: two members worked in location B and one in location A (for a more thorough description of the context in question, see chapter 3.2).

At first, it was relatively easy to follow the sequence of messages as it unfolds in time. However, as soon as their work really got started the structuring of their jointly produced text became less transparent. They, for example, started and edited several folders and documents simultaneously. Thus, reading their joint accomplishment as linear text became impossible. First of all, building a chronologically developing narrative of the shared activities on the web-based platform was not possible, as the group was working in several locations. Secondly, they were also negotiating several activities at the same time: negotiating group roles and the topic, organizing their work (from practical and technical perspectives), negotiating the rules of communication etc. A good example of this non-linearity of the process is portrayed in figure 9. A detailed description of the



pedagogic situation can be found in chapter 3.

Fig. 9. Discussions lists and threads in Eeva's, Sanna and Katri's group on a timeline[14].

The three horizontal lines refer to the three discussion lists Eeva's, Sanna's and Katri's group set up. The triangles stand for discussion threads and their place on the line indicate the time when the thread was started. The figure shows that this particular group conducts several discussions simultaneously on different discussion lists and threads. At first Eeva's, Sanna's and Katri's group start only one discussion list, which they call 'Thought Forum'. After two weeks of intensive work they open one more and a week

[14] This figure was drawn by Katriina Vakkila.

after that, a third one. The second list, which they call “Talktime”, lives the longest span. The third list, “Discussion on theories”, is active only for two weeks, but it however contributes to the complexity of the events, since it is founded in a situation where the two previously founded lists are already in active use. Figure 9 also demonstrates that the group sometimes opens several new discussion threads on the same date. In addition to the asynchronous discussion, this group creates text-documents, web pages and even photographs for their project. When the two-month course ended this group had produced altogether 135 messages and 43 documents.

Raudaskoski (1999, 69) states that “ whether the language or other signs interpreted in situ are asynchronously or synchronously produced, the user has to make them work synchronously in the activity s/he is involved in”. In theory it would be possible to trace the sequential structure of events in the learning platform, in these data. In particular it would be relatively easy to trace the exact time when these texts and images were produced, but the order of receiving (or reading) them is not traceable from the product (the traces left into the learning platform). Moreover, in the case of asynchronous interaction the sequential order of events would be different for different participants (for a more thorough discussion of the way the asynchronous platforms used in the context of this study structure the discussions, see chapters 3.1.2 and 3.2.2). Furthermore, the participants might merely click around the platform, not paying much attention to the text. Thus, it is also possible that some of these documents where clicked open but not really looked at, not to mention read thoroughly. To trace the whole activity in all its complexity, moment-by-moment, access to a video recording of a participant activity would have been necessary. Such documentation, however, is not plausible when real courses with numerous participants and a huge buzz of activity are under consideration.

One reason for the non-linearity of the text is that the learning platform (Optima) used in SHAPE 2002 enables multidimensional sequentiality. The textual product Eeva’s, Sanna’s and Katri’s group produce is non-linear. Making interpretations on the process that this group undergoes based on this textual work is difficult. However, this difficulty in a sense is the true nature of computer-supported asynchronous communication, since it is something that every reader faces: it is the reality where participants of computer-supported learning projects work. Making sense of the textual process requires effort. It is a rich resource, which allows several possible interpretations. To sum up, creating narratives of the life span of a virtual group does not necessarily describe the nature of the activities as they are for the participants. This is especially true in projects, which are relatively long and where the number of messages and documents produced is high.

These above analyses show that if we aim at analysing web-based interaction as a joint accomplishment of the participants it would be a fundamental mistake to analyse the messages by categorizing them into single predetermined classes. First of all, texts do not carry meaning as such, but instead, the meaning of texts is negotiated in use (see chapter 2 for a more detailed discussion). It is clear that in order to achieve a satisfying picture of instructional interaction in a web-based learning environment, a fuller account of the whole institutional and interactional context is needed. Secondly, as interaction is to be understood as a process, which involves more than one participant, looking at isolated messages would not yield much information.

The above discussion shows, however, that sequential analysis of the asynchronous computer-mediated interactions between the participants faces some difficulties. The

tenets of conversation analysis, which was developed as a method for analysing face-to-face interactions on a micro-level, are not applicable as such in the analysis of asynchronous computer-mediated interaction, because of the multidimensional sequentiality of the interaction (for a discussion of these terms, see chapter 2.2.2.2). Computer mediated communication is, as was already shown in the discussion of CMC in chapter 2.2.2 a hybrid of spoken and written language and this is exactly what methods of analysis should take into account. An approach, which would try to find some evidence of how a particular text was received by a reader(s), would enable the researcher to catch the situated meaning-making process at least to some extent. In that case, the sequential analysis could, for example, focus on face-to-face interactions on the computer, instead of analysing the asynchronous online data. On grounds of what was pointed out above and in the theoretical framework this thesis has laid out, in particular in chapters 2.1. and 2.2, the following conclusion can be made: in order to analyse computer-supported learning and interaction a multimethod approach is needed. This is true in particular if the analysis tries to capture a larger frame of activities instead of focusing on a more restricted area. When developing new pedagogies both, the broader picture and attention to the detail is needed.

4.3.3 The multimethod approach applied in this thesis

The data in this study is large as it involves three different university courses complemented with observations and interview data from the work context. Therefore, the data analysed in this thesis was narrowed down in several sequences of observation and analysis. All observations were checked against several data sources. Figure 10 presents the cycle.

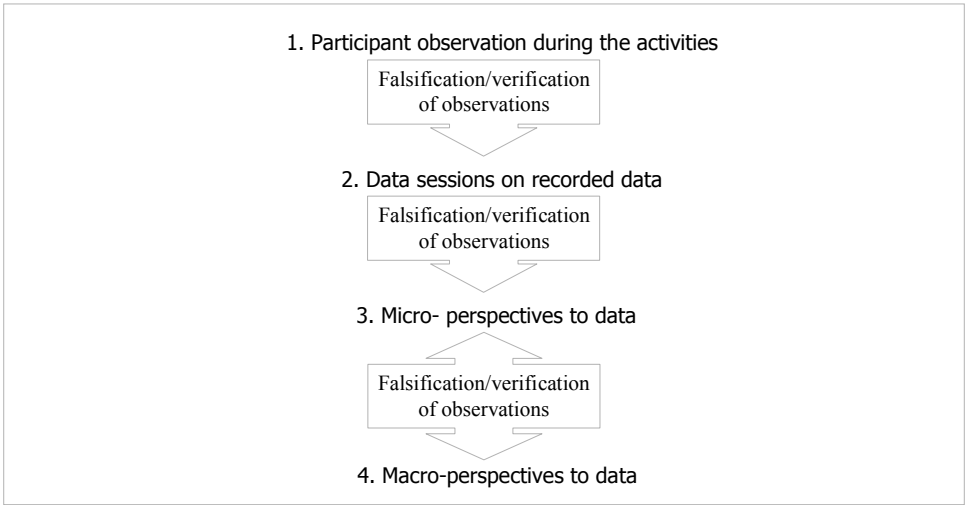


Fig. 10. The research process in the present study.

First observations were made while collecting the data as well as participating the teaching and studying activities. These observations were discussed with the staff of the courses and other participant observers. After the buzz of participant activity had seized the written data was read through in several intensive reading sessions. These written data provide the primary data source for this study. The interpretations made on these data were checked against the audio and videotaped material. The participant observation together with the first analyses of the written data (e.g. the web-based discussions) helped to pinpoint those instances of audio and videotaped situations, which seemed to call for a more careful analysis. Based on these viewings the data were also partially transcribed. This cycle of macro and micro perspectives to the data was repeated several times. In practice this means that both detailed analyses of particular events as well as rough analyses of the entire data to illuminate the overall sequence of events were conducted.

The rough analysis of activity from a macro perspective to grasp the general picture was done, first of all, via participant observation and field notes (referred to as participant observation logs above). Secondly, after the activities had seized, preliminary analyses to try to illuminate the studying process from a participant perspective were conducted. The two previous chapters (4.3.1 and 4.3.2) present examples of such preliminary analyses. Also narratives from different perspectives were written. Chapter 5.3.3.4 provides an example of that. Third, simple counting of sent and read messages and of documents was used to get directions for what to concentrate on with more detailed analyses. Chapter 5.4, for example, provides examples of such a procedure. However, since this study is interested in the complexity, diversity and heterogeneity of participant perspectives, quantitative measures are not used to describe how frequently occurring the discussed phenomena are. In connection with the kind of research questions asked in this study, such reasoning is neither relevant nor applicable. Figures also tell something about the activities in general and as such are useful in describing the context of activities. However, alone – without the mirror provided by the detailed analyses of locally produced meaning – their information value is minimal.

Detailed micro level analyses of written, spoken and other data (e.g. structure and layout of the learning platforms) form an important part of this study. In addition to the analysis of the text the participants produced during their web-activities, this thesis makes use of transcribed working situations in order to catch the situated meaning-making in fuller detail, and most importantly, in situ. As argued throughout this thesis, analyses of the web-interactions alone would give only a partial picture of the whole activity in and around web-supported learning activity. However, the computer-mediated discussions provide the primary data. Face-to-face situations were used in order to check (falsify as well as verify) the interpretations made on the basis of the data from the discussions.

Only a fraction of the broad range of data is reported in this thesis. Why, then, such a multiplicity of analytic perspectives and data? The research process, as was already partially established in the theoretical discussion, clearly indicates that the context of computer-supported learning (CSL) that the participants construct reaches far wider than the interactions in the learning platform (chapter five will provide more evidence for this claim). Furthermore, the aim of this study is to try and tackle the complex and messy reality of computer-supported learning in order to discuss “what are the resources the participants have available”, “what is the context of computer-supported learning from the participant perspective” and “how participants participate”. Such a perspective cannot

be reached by relying on a narrow range of data. A holistic view to the activities is believed to be necessary in particular when one specific aim of the research is to develop teaching. Moreover, it seems that such a perspective to CSL is lacking at the moment.

When developing new pedagogies for new technologies, we should start with a look at the contexts and categorisations the participants produce. Instead of assuming that there is a learning virtual community at work, we should consider, for example, what other group identities the participants refer to. The resources the participants have at their use for meaning-making are an interesting question as such. We have to bear in mind, that the resources that the teacher intentionally brings into the environment represent only a fraction of the resources that are actually used by the participants. Only after we have reached a picture of "what is going on" in and around the learning activities can we start to consider the pedagogical implications of our research. Development of instructional practices is thus very much on the agenda, but unlike in experimental settings, only after we have gained an understanding of the ways in which the participants make the learning activities meaningful (cf. Vehviläinen 1999, Silverman 1993). The approach is cyclical, since we should be ready to falsify any interpretations we make and look for new explanations, and thus we need to engage ourselves in a long-term research process.

The large number of participants and hence the vast array of different interpretations of the pedagogic activities, provided the researcher with multiple perspectives. Also, the slight variations in the applied pedagogies proved to be important. In the first data set the student's task was more structured than in the second, for example. This structuring seemed to produce certain kinds of interaction patterns. Without the second set, it would have been rather easy to assume that these interaction patterns were due to the nature of the medium (asynchronous conferencing), for example. Looking at the same phenomenon through the second set of data it was possible to conclude that the pattern was at least as much due to other "intervening" issues, such as the nature of the given task. Also the three different learning platforms that were involved in this study, helped to examine the issue of web-based interaction from a broad array of perspectives. Thus, the two different sets of data enabled a "falsifying" rather than "verifying" approach to the data.

Research does not have to settle for describing how things are, however. Researchers should pay attention to the practical use of their work as "application is very much on the agenda and should not be relegated to an optional extra" (Potter & Wetherell 1987, 175). This study also aims at improving teaching: it wishes to provide concrete explanations of and recommendations for pedagogical practices and solutions. Silverman (1997, 34) sees application as a question of timing. Analysis should begin by paying close attention to how participants locally produce context for their interaction. After that we can fruitfully move onto why-questions about institutional and cultural constraints. Such analysis can help us to understand the possibilities and limitations of advancing new pedagogical practices. If we have an understanding of how students interpret the pedagogical set up, we have a possibility to negotiate the goals of instruction anew: This makes change possible. The application of research findings is here seen as achieved through a process of dialogue, weighing the gains and losses of different pedagogic approaches. As Silverman (1997, 36 -37) points out in relation to conversation-analysis-inspired research on counselling, interpretations and applications need to be weighed against the goals as well as the adopted theoretical and methodological standpoints in question. In other words, suggestions and recommendations for instruction and learning are to be seen as

results from continuous dialogue between participants in the activity - be they researchers, teachers or students.

4.4 Trustworthiness

Quantitative research, which builds on the principles first developed in connection with empirical natural sciences, requires that strict protocols be followed in data collection (Silverman 1993, 107). This is done to secure the truthfulness, validity and reliability of the data. However, the kind of qualitative approach applied in this study is interested in the ways in which the informants construct "the world", and not in the truthfulness of the accounts the informants produce: "if we only accept as valid those accounts which are plausible and credible, then we are unable to be surprised and condemned to reproduce existing models of the world" (Silverman 1993, 155).

The reliability of a quantitative study is tested to see whether the results stay unchanged if the experiment is repeated. If we are to look at "multiple realities" it is not meaningful to test the reliability of a qualitative enquiry in this manner, but dependability instead. By dependability Lincoln and Guba (1985) mean that it is necessary to analyse the process of research so that the researcher herself is aware of and takes into account the factors that influenced course of the research. The concept of objectivity includes the preconception of the existence of truth and its availability. If we are convinced that we are dealing with interpretations of multiple realities, subjectivity is inevitable. Research attains angles to the world, rather than the truth as such. (Tynjälä, 1991)

There are several suggestions how to secure the reliability of an enquiry, triangulation - methodical, data or theoretical - being one of the most widely used. However, Silverman (1993, 152) points out that "triangulation of data seeks to overcome the context-boundedness of our materials at the cost of analysing their sense in context". According to Mäkelä (1990) a well-defined approach secures the reliability of qualitative research. Silverman (1993) suggests that simple counting could be added to qualitative analysis to increase the reliability. Popper states that falsifiability and not verifiability is the criterion of a scientific statement (Silverman 1993, 155)

In this study trustworthiness is sought after with the following methods. First of all, the research process is described in a detailed manner. Second, a lot of data will be shown, which aims at helping the reader to make their own conclusions. Third, a wide range of data was collected, which was used to falsify as well as verify the analyses. Fourth, simple counting will also be used. Fifth, the analyses of the data have also been compared in discussions with peer researchers.

5 Participating computer-supported learning projects

Chapter five will move gradually from the analysis of the semiotic resources the participant have available in the contexts at hand (chapter 5.1), through an analysis of reader interpretation (chapter 5.2) to an analysis of computer-supported learning activity on a more abstract (and less linguistic) level (chapter 5.3).

Chapter three already provided an ethnographically inspired description of the pedagogic context. The narrative of the activities in the two slightly different pedagogic contexts was supported by data analysis. Chapter six will dig deeper into the detail of participant activity. Chapter six opens with a discussion of the nature of virtual interaction in reference to research question one, "what kind of virtual interaction do the participants construct". Then it will turn to the question of "what is the context of computer-supported learning" (research question two) in these data. Finally, the question of participation will be considered: "how do participants participate computer-supported learning projects" (research question three). The division of labour between the three different chapters is not clear-cut, since the presented data in most cases is capable of shedding light onto several research questions at the same time. A more detailed description of the research question was presented in the introduction of this thesis.

5.1 Resources for meaning-making

In the initial stages of this research project in 1998 the analyses involved mostly written data, which did not make reaching the situated meaning perspective easy. The first analyses focussed on the web-based platform, discussions as well as other textual elements. This analysis was to some extent supported with in situ interactions. However, the analyses mainly involved discussion of the interpretative resources that participants have at their use in computer-supported learning. Initial interpretation of this data was discussed in Kuure, Saarenkunnas and Taalas (2002). Kuure et al. (2002) listed the following interpretative resources that the participants of computer-supported learning projects have at their use: Elements induced by the learning platform (visual and textual elements on the screen), authorial choices in frequently appearing textual elements, sequencing and the contents of web-discussions as well as signs of participation in other

related learning situations (formal and informal). Thus, when constructing common goals or shared understanding for the learning activities the students have multiple resources of interpretation available, both visual and textual, in the web-environment alone. At this stage, it became evident that the context of computer-supported learning reaches far wider than the online activities. Here the data will be discussed and analysed further in relation to the theoretical background and the special focus of this thesis.

Guidelines for web-based learning projects often suggest that clear and logical instructions for participation would be a major success factor. Some approaches rely on heavy structuring of the activities and go as far as promoting "cognitive tools" or "scripts", which help the student to keep track of the activities. (cf. chapter 2 on inquiry learning). Normative guidelines for particular kinds of teacher participation have also been written. Some recommend active participation, others instruct teachers to participate minimally, depending on the kind of pedagogic ideology that the approaches represent. However, the data have shown that conscious teacher interventions are not the only sources of guidance for the students in computer-supported learning environments. The resources for meaning-making are much richer than that. It would be a naïve generalisation to assume that learning and meaning-making only occur when the teachers are involved. The question follows, what might, the resources that the students utilise to make sense of the activities be then. In the following I will turn to an analysis of the case of mentor M, through which the resources for meaning-making will be discussed.

5.1.1 The case of mentor M

Chapter 5.1.1 presents an analysis of the participation and role of one particular participant in the 1998 asynchronous computer-mediated discussion data. This analysis is supported by interpretations yielded by interview data. It investigates, which resources it is that the participants seem to utilise in making sense of the pedagogic activities, participant roles and their expected behaviours. The data clearly points out that also seemingly insignificant text, such as address forms and definitions after participant names and signatures on web pages, contribute to the interpretations of particular roles and social rank conventionally implicated by them.

The data analysis shows that presence in the web-environment – of teachers and students alike – is not built with active interventions alone. In the talk around the study experience one of the mentors (referred to as M from now on) was reconstructed as having strong presence in the web environment. This became evident in the transcribed evaluation discussions among students, for example (see example 6).

Example 6. Student in a peer interview session.

> I think it could have gone somehow differently so that M would not have been so quick to answer comments because as far as I am concerned it happened that when I wanted to comment something s/he had already been there and then I did not bother

any more because s/he had said it already (Student in peer discussion, translated from Finnish). (Year1998, data A3) [15]

Initially, it was assumed that a high number of postings would be the reason for the students seeing M as strongly present in the learning platform, COW (for a description see chapter 3.1.2). The student's comment in example 6 clearly points towards that interpretation, as she comments, "when I wanted to comment something s/he had already been there". However, the actual number of the postings revealed that M had written six messages in the space reserved for the Finnish students, whereas the most productive mentor had produced 19 messages (average number of postings by mentor was 8.5). In conclusion, the impression about active and powerful participation was constructed by other factors than the frequency of postings. What might these resources be then?

5.1.1.1 Seemingly insignificant text as a resource

The leading philosophy or ideology behind the teaching in 1998 (see chapter 3.1.1) was what could be described as student centred. The students initiated the problems discussed in the environment. Peer tutoring was also one important principle. Thus, the teacher's role was not intended to be in the centre of attention. It was a conscious choice to call the teachers mentors, whose role was to participate in the activities as more or less equal participants. It was acknowledged that the teaching staff had obviously more power due to institutional status and experience, as the term 'mentor' also conveys. University teachers are also gatekeepers, since they have the power to pass or fail students. However, the general idea was to hand as much power as possible to the novice students or the "journey folk" in Lave and Wenger's (1991) terms.

Despite these efforts M, for example, gained a rather central role in the activities. There are several explanations for M's strong presence in the learning platform. Firstly, some of M's visibility was due to the features of the conferencing system. M was visible in several different important locations on the platform. For example, the front page of the whole case-conference visibly talked about M's central role in the activities.

All choices were not for the teachers to decide. The software required assigning certain administrator functions to those responsible for putting up the web-environment and creating the platform. For example, in putting up the environment we had to name one instructor for the course. These administrative functions were then visible as text in different places in the environment. M was assigned the function of "instructor". Other people who were given administrative responsibilities were called "fair witnesses". Not only had these people access and control rights over the whole environment, but also their role was stated on the opening page of the Finnish conference. Appendix 1 shows the opening page, which had to be accessed each time at entering the Finland Cases conference (see appendix 1).

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[15] The data examples are translations from the original Finnish texts. I have tried to be true to the original, but something is always lost in translation. The original Finnish data are available in appendix 1.

The screenshot from the opening page of the conference names four participants by name. Others are referred to collectively and anonymously as “you” or “students, faculty and teachers”. Three people (--- ---, --- --- and --- --- in the picture) whose role is described as “fair witness” are given names. These fair witnesses are all members of the teaching staff. As for their role, it is stated that they have access to all messages, whereas some areas are restricted for the other participants. In other words, these people are assigned more power than the average participant and this power is openly stated on the front page of the conference. The page does not give other definitions for fair witness than that they have wider access rights than others do. At the bottom of the page a text “Instructor Dr. M (email xxx@xxx)” is presented, separated from other text and link buttons with two blue horizontal lines. Only “Instructor Dr. M” is referred to by his name, role and academic rank. It is reasonable to suspect that some of M’s visibility was due to his permanent position on the opening page, through which all students entered the learning platform.

5.1.1.2 Authorial choice in frequently occurring textual elements

Secondly, the authorial choice in producing various frequently occurring textual elements such as signatures, profiles or participant instructions seem to carry meaning potential. Signatures (see figure 11) were attached to every posting in the COW-environment. These signatures included at least a participant name together with a login name (e.g. Author: Jane Smith (jsmith)). The signatures involved a lot of choice, except for the login name. The login name was not a choice for the participant, since it was the Unix administrator who created it. However, the participant had the opportunity of including other textual elements in the signature. The example of signature in figure11 shows how indicators of participant role, status or academic rank (e.g. Dr. M - Project MOO Supervisor (userid)) could also be attached to it. In addition, the author had the opportunity of giving more personal details about him/herself, which could be accessed through a hyperlink on the login name in the Signature. While most profiles included only minimal information including name, university and study subjects, or no details at all, some participants had designed more extensive homepages.

Profile: *Dr. M – Project MOO Supervisor (userid)*
Last login: May 5. 7:49 PM 1998
Real name, PhD.

I currently teach at x University in the school of education. My Ph.D and Master’s degree are from the University of x in x. My web page is at http://xxxx.xx/~xx

Among my professional interests are x, x, x and.

I have been involved in COW (Conferencing on the Web) project for over two years now and there are so many interesting research avenues to pursue. I would like to create a guidebook on electronic mentoring when we are done.

Fig. 11. An example of a user profile.

M's signature included quite a lot of information about himself and more was to be reached via the hyperlinks in the text. His status is enforced by indicators of academic rank, "Dr., PhD. and "university teacher". He also tells us about his experience in similar activities in the COW learning platform. His expert status is also revealed by the fact that he announces that he aims at writing a guidebook for other teachers who wish to create similar electronic learning activities.

These authorial choices, partly constrained by the conference system, are raw material for interpretations on the hidden and explicit structures and practices of institutional culture (cf. Fairclough 1989; Peräkylä 1998). Participants, however, are not passive receivers of the meaning potential these texts carry (i.e. "cultural dopes"). Instead, how strong different people perceive presence is dependent on their own backgrounds, beliefs and values. However, in the case of Mentor M, it could be argued that his central visibility and frequent use of indicators of academic role and status did not lessen his presence. On the contrary, they provided elements for a sense of stronger ownership and more power over the joint learning platform. All the attributes attached to M pointed towards an experienced academic with clear institutional power.

5.1.1.3 Teaching discourse

Thirdly, the nature of actual mentoring discourse visible in the text produced by M and other mentors offer a further explanation for M's strong presence in COW. One possible explanation for M's presence could be the location of his postings. Out of M's ten postings two where topic-opening turns (see chapters 2.2.3.2 and 5.2 on a discussion of turn-taking), and others otherwise posted in the initial phase of the discussion. Even though the number of M's teaching contributions was not particularly high, comparing to other members of the teaching staff, M was rather active in the International Café, a conference area set up for socialising. Often chats and free discussion lists are considered "off-task behaviour" and as such not interesting data from the perspective of pedagogy. The data in this study would seem to imply quite the contrary. It seems that the informal chatting could have been one possible resource for making interpretations on M's role. In his postings in the cafe M took the role of "the host". He invited people to participate and welcomed them, thus conveying ownership of the environment. This was of course natural since, M was one of the driving forces in planning the activities and improving the environment. The following data extract from the COW café opening discussion illustrates this.

Example 7. Mentor M in the learning platform.

> Author: Dr. M (Project MOO Supervisor) (xxxx)
>
> Date: Feb. 3 4:18 AM 1998
>
> Hello, Flower Power people. Welcome to COW! COWs do their part for fertilizing plants and making them grow far beyond what was expected. I hope you will all learn and grow in COW as well. We have had more than 350 preservice teachers discussing in COW here in Indiana during the past year and there are lots of interesting stories

> that they have created. We saved 4 of their case discussions in the practice cases in the Cultural Immersion conference--go there and read some interesting stories in the US about paddling, drugs, motivation, and so forth. That is all for now as the Project MOO Supervisor needs to go to bed. Suffice to say, we are glad to have you in the COW conference this spring. It is Spring in Finland, right? Very warm winter we are having here in US this year. Not much snow at all (have yet to shovel). Have a barnful of fun in COW. Bye. (Year 1998, data B1)

The centrality of M's role was reinforced by talk in other related learning events, such as small group meetings and videoconferences, which M chaired. This suggests the importance of social discourse in shaping the participant roles. The following chapter provides a summary of the ways in which M's central role was reinforced in the shared web-based learning environment and other related situations.

5.1.1.4 Summary: the resources for meaning-making

So far it has been shown that active teacher intervention constitutes only one resource which students draw from when negotiating the meaning of the activities: what our role in reference to others is and how we are supposed to behave. As an example I used the analysis of the role of one particular participant, mentor M. It was shown that active interventions in the web-based discussions contribute to the construction of participant role. However, it is also clear that the resources reach wider than that. The conferencing system itself may force some participants into particular roles, which is made visible in text in several different locations. Participants themselves may choose to tell about their academic status and rank. When these elements occur frequently and in central spaces in the learning platform, it is reasonable to assume that they have a role in building an image of the participant's role in the activities. Who it is that opens the discussion in the initial stages of activities is also meaningful. Furthermore, the contents of teaching discourse convey ownership of the activities. In addition to the above-mentioned online discourse, participant role is constructed in the related off-line activities.

Table 8. Interpretative resources available for constructing M's role and presence.

1.Choices forced by the conferencing system	e.g. the demand to express administrator functions in the opening page
2. Authorial choices in frequently appearing textual elements	e.g. academic status and rank shown in signatures and profiles, which are attached to each message; as well as in the descriptions and instructions for the students in the opening page
3. Choices in sequencing	e.g. taking topic opening turns
4. Choices in the contents of web-discussions	e.g. invitations & welcomes convey ownership of the environment; mentoring approaches
5. Participation in other related learning situations (formal and informal).	e.g. taking the role of a chair in classroom sessions

Table eight above demonstrates the complexity of constructing interpretations and drawing conclusions around teaching and learning, especially in electronic learning environments. The participants in web-supported learning projects have a wide range of resources available for interpreting the activities during the working process. These resources are not restricted to the web-environment alone. Rather, the students relate these events to the whole educational context that they are part of and they thus draw from their previous experience. Furthermore, it is not only the official but also the unofficial stages of action that provide opportunities for meaning-making and elaborating the shared understanding concerning the goals of learning and desirable learning and teaching actions. In the chapters to come a closer look will be taken at the context the students produce.

The observations of Sarangi (1998, 90,106) and Nunan and Lamb (1996, 34) support the above interpretations. They point out that in pedagogic situations a multiplicity of social and interactional relationships is negotiated, which shapes the practices of learning, and which teachers and students rarely are aware of. On one hand, there are the institutionalised statuses of teachers and students with their expected and predictable behavioural patterns, and, on the other hand, there is a variety of roles and tasks negotiated by speakers and hearers in situ. From the teacher's point of view this requires constant research and challenging of his/her teaching practices and pedagogical choices. As the interpretations that the students make on pedagogic interventions sometimes differ drastically from the intentions of the teacher, it would seem wise to arrange situations where these interpretations could be discussed on a meta-level. Asking the students every now and then how they see the activities and which issues have in particular caught their attention, provides helpful feedback for the teacher.

In the above, I have focussed on examining the interpretative resources available in the whole learning context that may contribute to how participants of computer-supported learning projects conceive of the activities. This I have done with the help of an example case of mentor M. The data of the study came from data set one, an international case-based conferencing project. The research approach adopted relied on the notion of discourse as situated, constitutive use of language in social settings and was thus primarily data-driven. The analysis singled out five different types of interpretative resources: constraints of the conferencing system, authorial choices in frequently appearing textual elements, sequencing and the contents of web-discussions as well as participation in other related learning situations, formal and informal.

5.2 Reader perspectives to the resources

The previous chapter investigated the online and off-line resources the students have at their use when they make meaning to computer-supported learning projects. This was done with the help of analysing one case. As chapter 5.1 tried to establish, researching web-based discussion data alone gives only a partial picture of what is going on in computer-supported learning projects. In order to reach some understanding of the situated meaning-making, talk around the web-based activities need to be researched as well. From the very beginning this thesis was guided by the notion of meaning as

negotiated. It was understood that texts do not carry meaning as such, but instead, that the meaning of texts is negotiated in use (see chapter 2.1). What came as a surprise, though, was how different the interpretations that different readers give to a text can be. Without the analysis of a wide range of different data these observations would have been difficult, if not impossible to make. The following data examples illustrate well the range of interpretations that texts can receive.

This chapter concentrates on the reader perspective to computer-supported learning. The analyses focus on the multiple meanings readers make to the text produced in computer-supported collaborative learning activities. These computer-supported discussions are examined in the light of other data sources, which enforce the understanding that the monomodal research frames only cover a fraction of the meanings made. Especially when developing new pedagogies a wider perspective is needed.

First, the quality of web-discussions and how it is perceived from different reader or participant perspectives will be discussed (chapter 5.2.1). The second analysis (chapter 5.2.2) shows how seemingly neutral text in computer-mediated discussion can invite strong reactions and rather surprising interpretations. The third analysis (chapter 5.2.3) concentrates on the participants' reading activity by comparing the computer-generated logs of reading activity to the produced textual interaction. The fourth reader perspective shows that in addition to writing the participants treat reading, or more accurately, accessing as a form of participation. The aim of the discussion in chapter 5.2 is to avoid taking the most immediately visible interpretations of the computer-mediated discussion data for granted, and instead, to dig deeper into the multiple possible reader perspectives.

5.2.1 Quality of interaction from different perspectives

One important theme in analysing the data set one from year 1998 was the quality of web-based discussion. During the course of the activities Student H's case development showed such participation, which the teachers of the course considered of good quality. The problem case she introduced described a concrete teaching experience from her life as the teachers encouraged. H described a situation were she had lost her temper, which led to a rather long discussion on the notions of personality and teacher role. Looking from the perspective of pedagogic framework this kind of problem case was considered as valuable. As the problem came from her life, it could be thought of as authentic. Being authentic, it also offered the valuable possibility of linking theory and practice together: The problem offered a good opportunity to consider teaching practice in the light of educational theory and vice versa. Furthermore, H was by no means passive in the discussions. She did not remain a bystander or silent reader in the construction of her own case, but instead, took actively part in the discussion and tried to guide it to the direction she saw worth examining. She was also visibly involved in the dialogue as she also took the initiatives that others had taken into consideration. She synthesised the discussion considering several aspects that were brought up during the two-month case-conference. The following excerpt from her case-discussion (message 11 in the 32-message-thread) is a good example of the kind of active, reflective and synthesising approach she has:

Example 8. Student H's message in the learning platform.

> "Thanks for everyone for your support and comments. Now I would like to take the discussion one step further. All of you thought that I had done the right thing except Jonathan who thought that perhaps I should have tried to stay calm a little longer. I do agree that shouting to students should be the last resort in classroom management. But I am not afraid to use it when I think it necessary. Regis said in his reply that you have to earn the students respect. This is something that I would like to hear a little more discussion of. I think that ---omitted text ---. Lauren was asking about the teacher role and thought itmight have something to do with this respect thing, but I do not agree ---omitted text---. I would like some more comments about the teachers role in the classroom from you guys." (Data 1998, B1)

Thus, judging from the contents of her case discussion, it was easy to conclude that the student has been successful in the learning process. H, however, interpreted the same discussion in the following manner in the peer interview session.

Example 9. Student H in the peer interview session.

> H: That one thing that interested me and about which I wrote my case did not produce such response or commenting that the kind of real discussion I was after would have evolved.
>
> H: Most of the comments were more like personal opinions.
>
> H: I invested time in trying to make the commentators to say more about my case. (Year 1998, data A3)

The student clearly expresses discontent with the treatment of her case. Even though her case-discussion consisted of 32 messages and it was longer than the discussions on the average were, she felt that the responses she got did not correlate with the idea she had in mind. She did not see the value of others' contributions and for her the comments equalled personal opinions. She also sees that she had tried and invested time and effort in the discussion. Figure 13 summarises the two different interpretations from the perspectives of two different kinds of data and participants.

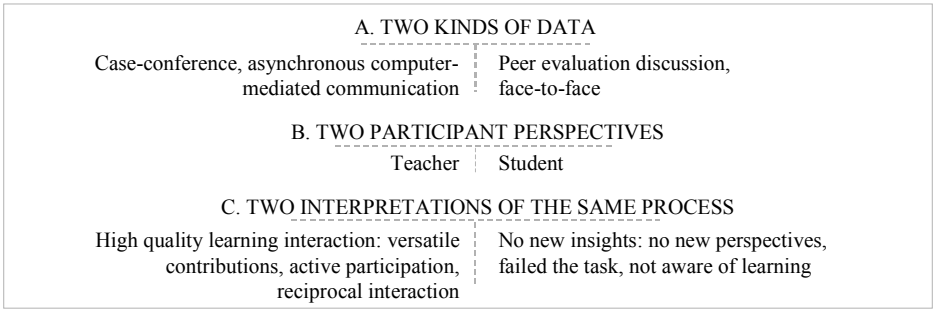


Fig. 12. Two different perspectives on the quality of interaction.

We can conclude that the criteria for quality in learning are not necessarily the same for the teacher/researcher and for the student. Therefore direct conclusions about the quality of learning, or about the learning experience, cannot be made on the basis of one source of data alone during a restricted time span. Chapter 5.2.2 will provide further analysis of computer-supported interaction from the reader perspective.

5.2.2 Making meaning to a thread

Web-based discussion can invite surprising interpretations. The following data extracts come from the web-based discussion data in the year 2002 (see chapter, 3 and table 6 for a detailed description of the data). This exchange of messages was conducted during the orientation phase of the course in a discussion, which was called “key-concepts”. The three participants here include both staff and students. Eeva, who initiates the discussion, is a student. Leila, the second participant in the thread, is a teacher in university B. Looking from Leila's point of view Eeva as well as the second student Maija are distant members on the course, since they are not physically present in Leila's home institution. Other participants in this discussion include 20 students who participate with reading the discussion. Later (see chapter 6.2.4) it will be shown that in some circumstances reading can be interpreted as active participation as well.

The students' task in this particular phase of the orientation to the course was to discuss issues and concepts they found relevant to examine in connection with the topic (the overall structure of the activities during the whole course was explained in more detail in chapter 3.2.1). The instructions for the “key-concepts -discussion” invited the students to "brainstorm around the key concepts connected with cultures, communication, and virtual environments. “What is a key concept is not a clear thing - it is a matter of negotiation. So, there are no "correct" or "wrong" answers here. Just throw in concepts and ideas, which we can later elaborate and study further “ (Year 2002, site B instructions for students). The purpose of the phase was also described as, "sharing expectations about the topic & the course" (Data set 2, site A instructions for students). Thus, the students were instructed to bring up issues, which they were particularly interested in investigating further. By labelling this phase of the studies “key-concepts” and asking the students to initiate discussions on issues they found important, the teachers wanted to convey that the student point of view to the studied topic is important (Year 2002, participant observation). It seems to suggest that the students, not teachers or linguistic theory, first and foremost define the starting point for this course on cultures and communication in virtual environments. The teachers saw that it is important to understand where the students stand in relation to the discussed topic: what is their conception of the issues studied. Only after their voice has been heard is it possible to bring in other conceptualisations from the perspective of teacher (expert) – knowledge and linguistic theory.

To help the reader to follow the cause of events in the exchange the following figure provides a view to the overall structure of the discussion.

⇒ Student Eeva (04.10 09:41)
⇒ Teacher Leila (04.10 13:00)
⇒ Student Eeva (04.10 14:03)
⇒ Teacher Leila (04.10 19:29)
⇒ Student Maija (06.10 21:34)
⇒ Teacher Leila (07.10 17:08)
⇒ Student Maija (06.10 20:59)

Fig. 13. Eeva's thread as displayed by the learning platform.

The discussion is opened by Eeva. Depending on the approach to the exchange, we can say that it consists of two or three sub-threads (see chapter 2.2.3.2 for a discussion on the multidimensional sequentiality of computer-mediated discourse). The learning platform itself offers a possibility to several different readings (see chapter 3.2.2 for a discussion of the discussion tool in Optima). Judging both from the temporal order of the messages (that is, when they arrived to the data-base) and their placement in the original thread as well as their contents (overt cohesion and linking), it seems fair to conclude that this discussion consists of three sub threads: the first starts with Leila's response to Eeva, the second and the third by Maija's response. In the following, Eeva's, Leila's and Maija's joint accomplishment in the computer-mediated key-concepts discussion will be analysed in more detail.

Eeva, a student of English and a future language teacher opens the discussion (example 10). She gives her message the title of "problems of communication". Eeva's message sets the topics of discussion. Even though Maija's comment is the last to arrive in this thread in a sense Eeva closes this discussion by a comment on a face-to-face situation.

Example 10. Student Eeva's message in the learning platform.

Discussion list: Key Concepts

Subject: Problems of communication

Sender: Eeva

Recipient: All

Date: 04.10.2002 09:41

I am looking at this course from the viewpoint of a teacher-to-be. I do not have any experience of these kinds of web environments, chats etc. (I even don'tquite know how to call them). However, I see them as a media of teaching worth considering. You know, alternative teaching methods, experimental learning, project works... That's what is (supposed to be) in fashion in this age of constructivism.

Teaching and learning are not easy in these kinds of environments. When compared to clasrooms, there are several differences that may hinder learning. I can bring into discussion the aspect asynchrony: It takes time to correct misunderstandings, for example. I bet there are several others which I am not aware of. You people, who are more used to these kinds of "computer things", please help a techer-to-be who is keen to learn!

> What should one take into account when communicating (giving instructions, for example) via "these things"? What kinds of problems may arise?
>
> And, if you want, you can try to assure me of the excellency of learning in a web environment by telling me what kinds of benefits you think there are in this kind of learning?
>
> *Eeva (Year 2002, data B1)

The title of the message ("Problems of communication") together with its contents suggests that Eeva wants first and foremost to discuss the challenges of asynchronous computer-mediated communication. She says that she is a novice in web-based environments, but that she sees them "*as media worth considering*". In her second paragraph she brings up the problem of asynchrony in connection with computer mediated communication and suspects that there are several other problems, which she, however, says not to be aware of. She invites more experienced others ("You people, who are more used to these kinds of "computer things", please help a techer-to-be who is keen to learn!") to discuss these problems and share recommendations for communication ("What should one take into account when communicating (giving instructions, for example) via "these things"? What kinds of problems may arise? "). In the last paragraph she concludes the message by writing that she would be interested in discussing the possible benefits and problems of computer-supported learning.

The discussion continues by a message from Leila (example 11), who is a teacher of the course. Leila responds to Eeva's topic opening turn by giving a list of three advantages and three problems. Her message ends up with "well – there were some initial thoughts", which could be interpreted as conveying a sense of "incompleteness" and as such, an invitation to contines the discussion.

Example 11. Leila replies Eeva's message the learning platform. [16]

> For certain purposes ((web-based)) projects are useful ((gives a list of three items)) --- omitted text--- Problems, things to take into account ((gives a list of three items)). Well - there were some initial thoughts. (Year 2002, data B1)

Eeva takes up Leila's invitation to continue the discussion (example 12) and at the same time challenges what Leila wrote. She seems to suggest that Leila's message does not answer her initial question. Her question "how about children" seems to indicate that the examples and experiences Leila described are not applicable in the context she will be working in the future, namely, the school. By providing her critique in the form of a question, she seems to ask for further discussion on the topic.

Example 12. Eeva writes back to Leila.

> How about if you think about children, or young people, whom we'll be more probably teaching in the future? (Data 2002, B1)

[16] Since some of the messages are rather long, some text, which did not seem particularly important from the perspective of shaping the events, was omitted. A short researcher's interpretation of the contents of the omitted text will however, be given in double brackets. The whole discussion in its full length can be found in the appendix three.

Leila comes in again (example 13) and contests Eeva's interpretation of her previous message: she suggests that looking from her point of view her earlier ideas would be applicable also in school contexts with young people. This message closes the dialogue between Eeva and Leila. Eeva does not come back to evaluate what Leila has said so far.

Example 13. Leila writes back to Eeva.

> I checked what I had written and now I think that basically everything I said is valid on a general level - even in the case of young children ---omitted text---We ran a web course for language teachers a few years ago. The focus was on supporting them to use the net with their pupils. There were participants from all levels of education from primary to professional ---omitted text--- - (Data 2002, B1)

A new participant, Maija enters the discussion at this point (example 14). She renames the discussion, which Eeva had earlier called "problems of communication" as "learning environments". Maija suggests that Eeva would try using a learning environment. In a sense, this does not answer Eeva's initial question, which mostly seemed to invite people to reflect and debate the possible benefits and disadvantages of communicating in computer-mediated learning environments. However, Maija's interpretation of a relevant response to Eeva's message is also possible. In her topic opening turn Eeva did write that she is looking at the issue of learning environments from a novice teacher-to-be perspective and asked for help from her more experienced peers. Thus, it would seem that Maija here shares from her experience in particular to the novice Eeva.

Example 14. Maija enters the discussion.

> There are some commercial environments that you can buy and start using in web-learning ---omitted text--- (Data 2002, B1)

After Maija's contribution, Leila re-enters the discussion. Her message challenges Maija's suggestion (example 15). After having rejected her idea, Leila shifts to another topic, where she apologizes and explains that she is tired. After this message she does not re-enter this particular discussion again, and nor is her new topic taken up by other participants.

Example 15. Leila replies Maija.

> There are indeed quite a few "learning environments" around - and there are fierce promotion campaigns going on. My principle is that I don't believe anything before I've tried to work with it in practice. Sorry - I'm exhausted and I need to go home---omitted text--- -(Data 2002, B1)

So far, we have thus seen that Eeva has received several responses to her request to discuss the "media of teaching" from the perspective of "the communication problems they involve as well the advantages these might have". She has also participated in the discussion with an attempt to re-direct it towards the issues she finds relevant. The last message by Maija (example 16) in the thread seems to provide yet another response to Eeva's request.

Example 16. Maija's final message on the learning platform.

> Hi,
>
> There are some magazines that offer practical teaching hints in using computers. It could be a good idea to follow the OTE- magazine (opetus ja teknologia) and for example Tempus - a magazine for language teachers by Sukol (Suomen kieltenopettajat). Do you know any other good ones? Maija (Data 2002, B1)

Looking at the text Maija seems to provide a successful response to Eeva's first discussion opening message, which invited people to discuss the pros and cons of educational technology. Maija offers two possible sources of information, which could help in finding practical teaching hints. However, Maija, unlike other participants in this discussion, does not respond to Eeva's request to discuss learning in web-environments critically. What she seems to be doing with her two messages, is giving advice to Eeva. Later on it will be seen that Eeva does not find Maija's contributions as suitable responses to what she had requested. Maija's last question tries to keep the discussion going. It is unclear, however, who the "you" Maija refers to are. However, the discussion thread stops here, since her message does not attract new responses. What is noteworthy here is that Eeva does not engage in dialogue with Maija, who for her part writes two replies to Eeva's topic opening message. The whole discussion could be summarised in the following manner (see figure 14).

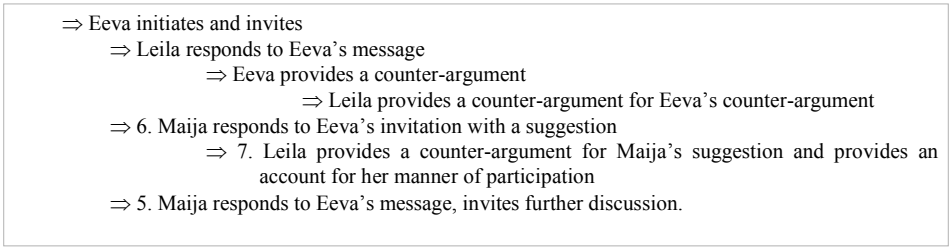


Fig. 14. The structure of Eeva's thread.

On the basis of the textual analysis of the exchange of messages in this thread we could conclude that Eeva has asked for discussion, and that she has received. The responses her initial message has received at least partly answer the question she posed, even if they approach the questions from a different angle. It would also be possible to say, that Leila responded successfully to Eeva's invitation to critical discussion, whereas Maija's responses were less critical and more straightforward, but still provided an acceptable response.

The participant observation logs provide new material for interpreting this thread. In one of the face-to-face meetings in location A[17], Eeva starts to talk about this particular

[17] The names of the two universities are changed because I do not wish to accidentally disclose the identities of the students in question.

discussion. The participant observers write about her reactions to this discussion in their participant observation logs in the following manner:

Example 17. From observer M's participant observation log.

> However, it has turned out that some location A students have really had difficulties in participating. And some location B students as well. Some students have read a lot between the lines - been offended a little (Eeva about a comment a fellow student had made)? Thus, there is a crisis. But I guess it is clearing up now. " (Participant observation log 17.10., 15.15, Observer M) (Data 2002, B3)

Example 18. From observer P's participant observation log.

> "K has been collecting interesting stuff about the students' discussion experiences, which we ourselves in our dreams would never have realised. For example, one student had been in tears about a comment, where she was encouraged to read the OTE-magazine and Tempus. She had been so hurt, that she had decided not to write anymore… But then the business started to go forward again when the worst pressure had been let out and the compensation agreed. (Participant observation log 16. 10 16:44, Observer P) (Data 2002, B1)

Thus, once again we have seen, that the text in computer-supported discussion is indeed a resource for meaning-making – and merely a resource. Computer-logs of web-based discussions are incapable of telling us about the meanings made. These meanings are made in the interaction between readers and the text, often with a delay. Thus, computer-supported "discussion" is not "conversation" in the same sense as face-to-face discussion is, because it does not offer us the possibility to investigate interaction in situ. What it does offer are hints about how meaning unfolds in the interactions between the participants. It might also be that the time delayed turns are not restricted to the computer-mediated discussion. In Eeva's case it would be possible to argue that the last turn consists of what Eeva said in the face-to-face meeting referred to in the participant observation logs.

In the next chapter a longer and therefore more complex thread will be analysed with the aid of reader statistics. Unlike Eeva's case the analysis will concentrate mostly on participant activity with the aid of computer-generated statistics of "reading", or more accurately accessing, activity. The collaboratively produced textual product, the thread, will also be analysed but not with so much detail as in Eeva's case.

5.2.3 Multidimensional sequentiality and reading activity

Methods of analysis often assume that threads in computer-mediated discussions are read like text in a book: from top to bottom. This is how we have grown used to approaching text and this is also the reading implied by most user interfaces. Chapter 3 already discussed to some extent the learning platforms (Cow, Optima and ProTo) and their discussion tools referred to in this thesis. Much analysis approaches the threads in the above-described linear fashion: the researcher makes conclusions on the basis of how a thread develops, in a rather similar manner as the textual product in Eeva's case above

was discussed. The quality of collaboration, for example, is in many cases judged against the "joint product", the collaboratively produced text on the the screen. But are the threads really fruits of collaborative effort and do all readers pick similar fruit?

As the following analysis will show, when we look at real people acting in real situations, however, we notice that linear reading is not the manner most participants of computer-supported discussion act. Text in computer-supported discussion is approached more as a complex entanglement of messages rather than linear, time bound sequences. Readers move from one thread to another and do not necessarily read whole threads through. The following analysis of text and participation in a threaded discussion exemplifies the multiple ways in which students join the discussions in a web-based environment.

The data-samples analysed here come from the case-conferencing data from year 2000 (data-set one, see chapter 4.2.1 for a detailed discussion). The analysis moves around one particular thread of the several dozen that were produced during the case-based conference between Finnish and American university students. First, three different possibilities of approaching this thread will be analysed. Second, the thread will be analysed as text, focusing on the flow of discourse as cohesive and coherent. Third, the patterns of participation as portrayed by the reader logs retrieved from the database will be analysed and discussed.

The discussion thread involved ten participants: five Finnish students, three American students and two Finnish teachers. The ten participants produced altogether 14 messages, out of which the case-author (participant A) wrote four messages. Participant A initiated the discussion by writing a case-description of a problematic issue in education, as was instructed by the teachers. Later in the thread A wrote more, as the assignment lead the case-writers to provide a mid-phase synthesis and a final summary of what came out of the discussion. The other writers (CEGDFHI) in the thread are participants, who have written their own cases elsewhere in the electronic learning platform or act as mentors for the group. J is the teacher and B is a participant observer, who was also actively involved in the discussions. Figure 15 shows the temporal order of the messages in the thread: the order in which they were received on the learning platform [18].

1. A. Early specialization - an advantage? : 2000-03-03 12:00:48
2. B. No decisions too early : 2000-03-03 14:55:02
3. C. Child's or parent's intrests : 2000-03-04 18:25:46
4. D. the child's own interest : 2000-03-09 15:32:40
5. E. Parent's intrests rules!! I want my little boy to be ice-hockey star! 2000-03-27 19:38:09
6. A. In-progress report : 2000-04-06 14:08:54
7. A. Parents as future-makers! : 2000-04-06 14:15:13
8. D. advantages of education : 2000-04-11 15:53:23
9. F. decision age : 2000-04-12 04:00:34
10. G. A couple of viewpoints : 2000-04-13 19:51:59
11. H. Early specialization-an advantage : 2000-04-16 06:48:44
12. I. Priorities.... : 2000-04-17 04:13:24
13. J. Are we creating a monster? : 2000-04-19 08:22:08
14. A. CASE SUMMARY : 2000-05-04 09:53:42

Fig. 15. The temporal order of messages in the early specialization –case.

[18] The whole text is available in the appendix.

The learning platform (ProTo) does not list the messages according to their temporal order, but instead places them in a thread. Thus the participant view to this thread, when the thread was completed, resembled figure 16 below. The figure presents the thread as it looked like when it was completed.

1. A. Early specialization - an advantage? : 2000-03-03 12:00:48
    2. B. No decisions too early : 2000-03-03 14:55:02
        6. A. In-progress report : 2000-04-06 14:08:54
            7. A. Parents as future-makers! : 2000-04-06 14:15:13
                8. D. advantages of education : 2000-04-11 15:53:23
                    12. I. Priorities.... : 2000-04-17 04:13:24
            9. F. decision age : 2000-04-12 04:00:34
        10. G. A couple of viewpoints : 2000-04-13 19:51:59
            13. J. Are we creating a monster? : 2000-04-19 08:22:08
    3. C. Child's or parent's intrests : 2000-03-04 18:25:46
        5. E. Parent's intrests rules!! I want my little boy to be ice-hockey star! : 2000-03-27 19:38:09
    4. D. the child's own interest : 2000-03-09 15:32:40
    11. H. Early specialization-an advantage : 2000-04-16 06:48:44
    4. A. CASE SUMMARY : 2000-05-04 09:53:42

Fig. 16. The threaded sequence of the early specialization case.

In addition to the above-described two views to the thread (the temporal and the threaded sequence), several others were encountered by the participants in the course of the activities, when this particular thread was just developing. Even though these messages make one unified thread when looked at from the perspective of the finished textual product, it would also be possible to say, justifiably, that this thread consists of six sub-threads. Interpreting the sequence of messages from the computer-generated data with the aid of message IDs and indications of their parent messages we could equally well produce the following figure and narration of the events.

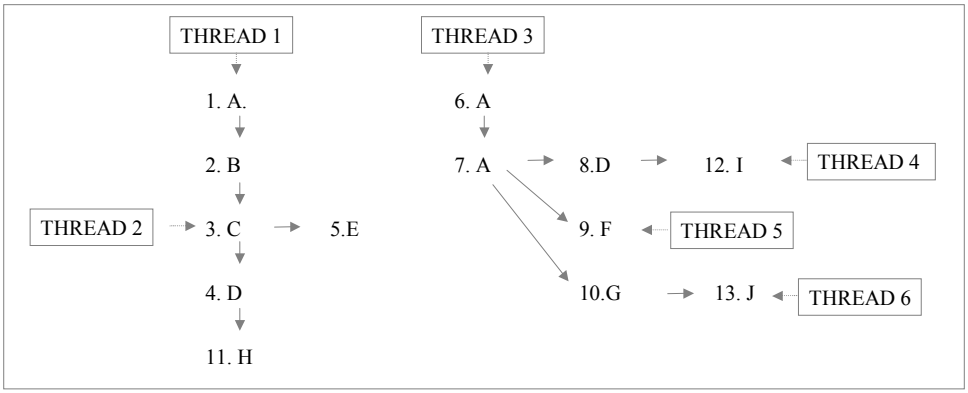


Fig. 17. The six sub-threads in the early specialization thread.

The computer-generated reader statistics show that the first message written by A is replied to by B, C, D and H. These messages comprise thread one in the figure. The second thread is constituted of two messages as E replies C's messages. The third thread is made up of two messages sent by A and the three replies she receives from D, F and G.

Thread four is a chain of postings, in which the parent message is still A's message (in temporal order, message number 7). A is replied to by D and I. The fifth thread is built on the same parent message, but now replied to by F. The last thread again starts from A's seventh message and this is replied by G and J. Thus, the thread, which from the researcher perspective looks as if it was one unified sequence, could be approached from different angles. Even such a rough analysis of the textual product indicates that the participants have a possibility to approach these messages in many different ways. The first problem the researcher encounters while analysing a thread like the "early specialization case", is that the temporally ordered sequence of messages is not the same sequence the participants meet with while engaging themselves in the activities. The threaded version is not a picture of the participant reality, either. Neither is the third version, since during the learning activities the thread is in continuous fluctuation: it changes by every new posting. The end product, the finished thread, is red by a relatively small group of participants as a whole, as will be shown later.

Textual analysis, which concentrates on cohesion and coherence, would yield rather a different perspective to this sequence of messages. Analysing the thread, message by message in temporal sequence it seems clear that this thread appears as cohesive and coherent to reader (see chapter 2.2.1.2 on cohesion and chapter 2.2.2. on coherence in CMC). The messages sent by different participants seem to connect with each other and build on previous contributions. Lexical cohesion is clearly visible for example in lexical chains such as "parent, my little boy, child" and "specialization, specialized curriculum, specialized school". Such chains progress through the whole thread. Also messages, which according to the reader statistics do not have a connection at all, clearly show overt cohesion when judged on the basis of the linkage devices such as pronominal and lexical reference.

In the following, two such unrelated messages will be analysed in search of cohesive links. According to the computer-generated reader statistics the writer of the second message has not accessed the first message in the thread at all. Thus, we have a reason to believe that the writer therefore does not refer to the topic-opening message. However, in spite of the evident unconnectedness of these two messages it is possible to claim by means of textual analysis that these two messages link to each other.

Example 19. Two "unrelated" messages in the early-specialization case.

1. Early specialization - an advantage? : 2000-03-03 12:00:48

Teachers and educators have recently discussed widely about curriculum and the importance of different subjects at school. Especially mathematics and natural sciences have been a popular topic among people who study pedagogy: should there be more weekly lessons in math or biology? Should we have special shools or classes for those who are mathematically talented or interested in math? Todays society supports early specialization. Finnish comprehensive schools compete with each other: others have music classes, others give more lessons in foreign languages. There is hardly any school in our town that hasn't at least one specialized class - why? I understand the need of different education in upper comprehensive school and Finnish high school, but nowadays almost every lower comprehensive school is also somehow specialized. In my opinion an eight-year-old child is nor ready to decide between

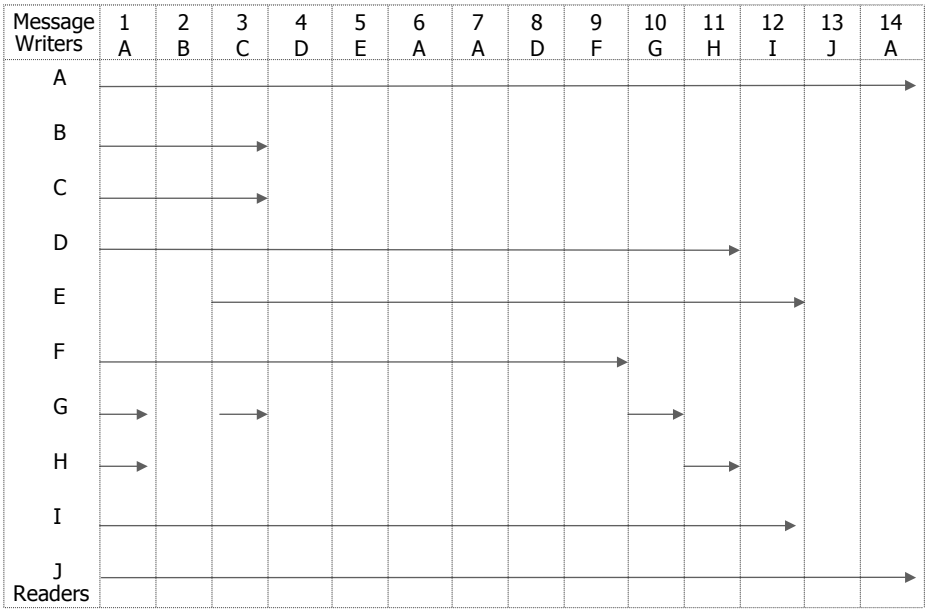
> different subjects and alternatives. Or is specialized curriculum only the way to attrack parents or people who finance the school...? Participant A
>
> 5. Parent's intrests rules!! I want my little boy to be ice-hockey star! : 2000-03-27 19:38:09
>
> My opinion is that this problem starts to grow up much more earlier than in the school. There are many parents wanting to take full credit for childs intrests and hobbies. "My two year old Anna is so fantastisk violinist... We have paid a lot of money since she... She takes four privat lessons in a week and teacher is best in this area..." Even this was a little provocative it's also reality today. (I suppose that My three year old boy will be a ice-hockey superstar after some year...) Participant E

Devices for both lexical and grammatical cohesion can be identified in these messages (see chapter 2.2.1.2 for a theoretical discussion of cohesion). As for lexical cohesion both reiteration and collocation are used. An example of this could be the repetition of a lexical item such as ‘parent’. ‘Parent’ as a hyponym also collocates with ‘child’ and ‘my little boy’. There are also several other examples of collocation, such as ‘music’, which collocates with ‘violinist’. Grammatical cohesion is also visible. For example, in the anaphoric reference created with pronominal reference through ‘this problem’ in the second message. Even if its referent is not clear, readers could easily connect it with the problem of early specialization introduced in the first message.

These examples provide only a fraction of the cohesive linkage in the thread. There is also an abundance of different lexical elements, which cohere with each other. On the basis of the analysis of the textual elements it thus seems that the messages in this thread form “a collaboratively produced coherent and cohesive exchange of ideas”. If the analysis concentrates on the textual product alone the researcher is thus easily mislead to making the conclusion that the whole thread is a collaborative product by the writer group. In reality, as will be shown in the following analysis of the computer-generated reader statistics, readers and writers move flexibly in and out of the discussion thread. In addition to the case-author and the teacher of the course, the researcher is among the few who read the whole thread message by message. Thus, from the researcher’s reader perspective the sequence of messages provides a coherent whole, turn by turn. This is, however, rather a rare perspective to the activities since most of the participants in the thread read only a fragment of the whole discussion.

What would this same exchange of messages look like, if it were inspected from other perspectives in addition to the textual analysis? Basing the argumentation on what we know of the pedagogic situation it could also be said that messages 6 and 14 are, in addition to being messages in this particular thread, a response to a text outside this discussion, as the teacher of the course had instructed students to write an in-progress report and a summary of all discussion that had gone by so far. These instructions were both discussed in the classroom and distributed in a written form on the web-based platform. Thus, the teacher has participated in the production of this thread both by participating in the discussion in message 13 and by structuring the activities. This, however, is not visible in the text itself. The teacher’s instructions bear an important and visible consequence in this sequence, and therefore, it is possible to argue that they, too, participate in this exchange.

From the perspective of reading activity we get yet another interpretation of whose collaboration this exchange of messages is. The figure below illustrates the same conversation thread from a different perspective. The capital letters (from A to J) in the figure above stand for participants and their postings in the thread.



ACEG students (local site), DFHI (students, distant site), B participant observer, J teacher

Fig. 18. Participation in the early specialisation case.

On the basis of the textual analysis it would have been easy to assume, that this textual product reflects the process of the whole group as such. However, a look into the database to find out who had actually accessed the messages changes the interpretation radically. Patterns of participation among the writers of this case discussion vary a lot. The reader statistics show that the researcher's first interpretation of whose collaborative construction this thread of discussion was, was inadequate. According to the data, only A, who initiated the discussion, and J, who was the teacher of the course, have read or accessed all messages in the thread. Several people, who never contributed to the thread later on, accessed the first messages in this thread and left the discussion.

Participant E does not read the topic-opening message, and still provides a coherent contribution as a response to C's message. D seems to be rather devoted to the case, since she writes two times in the thread and does not leave the discussion until message eleven (as indicated by the arrow symbol in the figure above). Participant G reads the first message and leaves. She does not read the second message, but comes back to the scene in the third message, which she accesses and leaves again. Participant H drops in to read the first message, leaves the discussion to appear back later on to write his own contribution. Interestingly, he had not accessed the intervening messages in the thread at all and, in spite of that, had managed to produce a coherent contribution, in the middle of

the discussion thread. As the figure shows, he only produced his comment and left the discussion.

There are several possible explanations. Participant H could have read the preceding messages peeking over the shoulder of another student. It is also possible, that he just read the subject lines of other contributions in the thread and decided to contribute on the basis of that and that it was just a coincidence that the message linked to the flow of other messages so fluently. However, this clearly indicates that student participation takes many forms and that students approach texts in computer-supported learning platforms in various ways. For participants A and J, the discussion formed a coherent whole when judged on the basis of the access (reading) statistics. Other participants, both readers and writers, peek in and move to new arenas. H, for example, participated more forcefully in a discussion that he had initiated himself elsewhere.

On the basis of the analysis above, it would seem that only for A and J this sequence appears as a complete thread. The behaviour of the other participants would suggest that they treat this discussion rather as a collection of single messages or shorter sequences than as a unified discussion thread. It is likely that apart from the researcher only few if any students read all threads as a chain of postings, which progresses in time and builds a coherent whole. Therefore we cannot assume, for example, that the learning process the students undergo could be reached through monomodal research frames, which concentrate on the text alone. Nor can we base assessment of students learning only on those activities that are visible in the electronic platform. It must be admitted, though, that some aspects of the process can be reached through methods that concentrate on analysing the progress of threaded conversations. However, the situated accomplishment, i.e. how messages are produced and interpreted, cannot be reached through an analysis of a single medium. Understanding the various ways in which participants interpret the textual interaction is of vital importance, especially in the case of research that aims at developing successful pedagogical practices. Even if asynchronous computer-mediated interaction cannot be analysed with tools familiar from conversation analysis, they are still useful in the analysis of on-the-computer interactions. In the analysis of meaning-making activities, or the situated production of discourse, conversation analysis has proved to be useful in the study of computer-mediated interaction as it examines language production and interpretation in situ (e.g. Raudaskoski 1999; Raudaskoski 2002; McIlvenny 2001).

5.2.4 Reading as participation

Both ProTo and Optima, the learning platforms used in data sets one and two, provided an opportunity to monitor who had accessed the messages. The data clearly show that reading, or more accurately, accessing a message, is interpreted as participation as well. Every message included a link to a document, which listed the names of the participants who had opened the message in question. The data show that students regularly checked this information and made interpretations on the basis of this. Sometimes the students would express their concern whether their writing was interesting enough if they had not received any replies to their messages: “ Only the teacher has commented my case ---

omitted text ---I tried to make the case as provocative as possible" (year 2000, data B4). Furthermore, one student asked jokingly, if she was allowed to pass the course in the case of receiving no replies: "if no one comments your case will you pass the course ha ha" (year 2000, data B4).

In the following exchange two students, Jaakko and Joni work together on the computer reading and commenting, in particular the messages in Jaakko's case. Jaakko's case is about teaching mathematics in a sensible and meaningful way and he has received several replies. Jaakko and Joni read the messages and talk about them. Jaakko seems to be pleased about the comments. When Jaakko reaches a message he himself had written, he comments in a soft voice:

Example 20. Jaakko talks while working on the computer.

> Jaakko: it seems that no one has looked at ((clicks on the reader statistics)) it always comes if someone has looked it comes here (Data 2000, A1)

After a while Joni and Jaakko continue talking on the meaning of the "message readers menu".

Example 21. Jaakko and Joni talk while working on the computer.

> Jaakko: it seems that no-one has looked at ((clicks on the reader statistics)) if someone has looked at ((the message)) it always shows up here
>
> Joni: which
>
> Jaakko: look ((clicks on the message)) () that this I wrote a reply to that ()
>
> Joni: you can see it there () below () here you see the replies in other words they are shown in the brackets () don't they () so this is a comment to that one () and that to that and that to that ()
>
> Jaakko: ((clicks on the "message readers" menu))
>
> Joni: and if someone comments straight there it comes here in the indentation
>
> Jaakko: Yes no but I meant this here that ((taps on the computer screen)) () that has anybody even popped in to look at ((the text)) (Data 2000, A1)

In his first turn Jaakko, while opening the reader statistics menu, states that no one has accessed the message he had written. Joni seems to talk about a different issue. In his first turn he points at the messages that follow Jaakko's messages in the thread, as if trying to say that since the messages are there, someone must have read Jaakko's message. Jaakko however, opens up the reader menu. In his last turn he shows Joni that the reader menu is the place, which tells whether the text has been accessed or not. Even if Jaakko and Joni talk about slightly different issues here, this data excerpt shows that Jaakko and Joni, as well as the two other students quoted above, orient towards the issue of readers. Their talk shows that they are interested in the possible readership of their messages. In other words, they treat reading as participation in the discussion.

So far we have been looking at computer-supported learning as a form of interaction: what is computer-supported communication like from the participant perspective. Chapter 5.3 will turn to the question of context in computer-supported learning.

5.3 What is the context of activities from a participant perspective?

Chapter 5.3 will consider the context of the computer-supported learning activities as produced by the participants in their talk and writing. Following the constructionist approach that this thesis has applied contexts do not pre-exist, but they too have to be talked into being. In other words, participants contextualize actively. The context of the activities is the context that the students orient to. It follows that research aiming at pedagogical development cannot assume that the described pedagogical principles, or the applied pedagogical model, are at work unless the students themselves clearly show in words and action that the planned pedagogical set up is at work here. Chapter 5.3 asks what the context of activities is that the students create?

First, this chapter will have a look at the presence of institutional context in these data and how it is used as a frame to make sense of the computer-supported learning activities. Second, one local face-to-face situation will be analysed in order to provide a view of the multimodal and multimedia context of the current data. The discussion of data will also touch the issue of learning community. Third, the question of virtual community will be discussed in more detail as it is displayed in the multimodal computer-supported discussions and face-to-face situations. The analysis will focus on the emerging communities in these data. Fourth, an analysis of the emergence of one particular virtual community will be provided. Fifth, the chapter will show how the distinction of 'us and them' – novices and experts as well as groups from different locations – is manifested in these data.

In these analyses different kinds of data will be utilised. Both computer-supported discussions and videoed face-to-face situations will be used to catch the multiple modes and media, which computer-supported learning activities cover, which in part make the context of these activities.

5.3.1 An institutional context for learning

Levine, Resnick and Higgins (1993, 93) point out that people anticipate the interactions they are engaging in on the basis of the mental representations they have of others. The teacher role, for example, is easily associated with particular kinds of interactional patterns, which are culturally bound. In addition to anticipation, the explicitly verbalised teaching philosophies in the interaction itself contribute to the complexity of aspects related to studying and working in new learning environments. This is echoed in the conflicting discourses through which participants seek their roles and identities as learners. Students might, for example, express a wish for independence in learning, but elsewhere express a need for being "taught". This is reflected in the following data excerpt form data set one, from year 1998.

Example 22. Students talk in a peer interview session.

> B: --omitted text-- all right, go the library. We'll never get so deep in these issues in that half-hour compared to listening to a person who has done research and would let us have a little of that

C: I don't mean that we would need to go back to one person delivering knowledge from above and put it into our heads

B: but it is that we go from one end to another

C: from one extreme to another (Students in peer discussion, translated from Finnish) (Year 1998, data A3)

The fact that these computer-supported learning activities are conducted in a formal institutional educational context is also a major resource for meaning-making. Institutional context, for example, to a great extent defines possible participant roles. Roughly speaking, the teacher's task is to be the one who possesses knowledge and who points the relevant information to students. The expectations that the participants have concerning different roles are hard to contest, as the previous data example also shows. Even if students B and C above are aware of the fact that knowledge cannot be "delivered into their heads", they at the same time express a wish for being taught by a more knowledgeable other.

The analysis of the year 2000 data, in particular the evaluation discussion, suggested that students situate the activities on this particular study module into a much larger context. Much of the reflection considered the course in the larger frame of their whole studies. The talk of the students constructed this course not only as a single virtual learning community, but also as a part of their whole teacher training programme. For example, the success of their learning activities was judged against this larger frame and not as an effect of our particular pedagogical interventions.

When asked to give feedback about our course in the year 2000, the students started to talk about their whole study programme, evaluating our course against a much larger context. For example, the students in the following illustrative data sample talk about studying educational sciences and what it means to know something. The data excerpt is a translation of the original Finnish.

Example 23. Evaluation discussion on a classroom situation

A: well () how would I say it () exams for example () those are so different there ((refers to studying engineering)) that () for example you will have to () get () half () of the questions right () so that you will pass

X: um

A: here ((refers to studying education)) if you manage to write something which somehow resembles what was asked () you will surely pass the exam ()

D: it depends () [it depends a little on the subject () here for example in music you will have to have eight correct answers to pass

F: [((unclear))

A: [((unclear)) well I mostly talked about studying educational theory

G: yes

B: um

A: there is a certain difference in what do you have to know and what do you have to be able to make up () there ((refers to studying engineering)) you cannot make anything up () a fact is as it is and if you cannot solve it or know it then it is right or wrong

B: that is the big difference () but on the other hand here ((refers to the educational sciences and teacher education)) with us the great difference is that when you have the ten-year-old hooligan running around the classroom then we can't in a way () we will have to be able to make things up () with engineering it is in a way easy that if a component is broken it is broken but

A: um

D: like about education everybody has an opinion and a theory about like it is in a way wrong than when you pass an exam when you just make things up

A: um

G: on the other hand there are no rights or wrongs in education. (Year 2000, A2) .[19]

On one hand, the students evaluated their studying activity rather harshly from a factist perspective through a personal frame: it does not feel right to pass exams if you just make up things. Knowing, from this perspective, would probably involve an ability to list facts and to know things by heart. On the other hand, the students see that when working in an educational context as a teacher, creativity and an ability "to make things up" – to solve problems here and now – is necessary. From the practical perspective of their everyday studying life, exams have to be passed: you have to be able to answer at least half of the questions asked to get credits in order get a degree one day. Thus "knowing" for these

[19] The transcription practice follows in general the system used in conversation analysis, as first developed by Gail Jefferson (see Sacks & al. 1974). As the intention was not to carry out full-fledged conversation analysis, the transcription is rather rough. Silence-length, for example, is not measured.

Underlined	Talk that receives some emphasis
CAPITALS	Notably louder speech
.	Falling pitch
?	Rising pitch
,	Falling contour
:	Lengthened sound
-	Sudden cut-off of the current sound
((comments))	Comments by the transcriber
(n)	Silences in seconds
(.)	Silence
°word°	Low volume
[	Overlapping speech
hah	Laughter
☺	smiling voice
=	latching between utterances

participants creates a continuum on the one end of which there are facts and on the other being able to make things up and solve problems. Such tensions are typical in the data, in connection with other issues and situations as well. For example "virtual" is sometimes seen as the antonym of "real" and sometime simply as an activity, which involves dealing with mediated communication, which is no less real than face-to-face discussion.

On the basis of the previous rather rough analysis, it can thus be assumed that the students do not interpret our pedagogical interventions as separate entities. The virtual communities and progressivist pedagogic interventions are interpreted against their whole experienced life worlds. Therefore, it is also impossible to conclude that our pedagogic interventions alone would somehow take credit of the emerging learning communities, despite the fact that one of the verbalised aims of the pedagogic framework was to support the emergence of a community of practice. The question remains, which community of which practice is at work here? Learning communities are there, but not due to the teacher interventions alone. Furthermore, the data clearly show that the goal of these communities is as much to survive their studies and pass courses, as it is to involve themselves in the knowledge building activities.

5.3.2 A multimedia, multimodal, polycontextual situation

Further support for the claim that the actual context of communication is far wider than the textual interaction in the learning platform can be provided by observing how the participants move in and out different spaces. This situation is illustrated in figure 19.

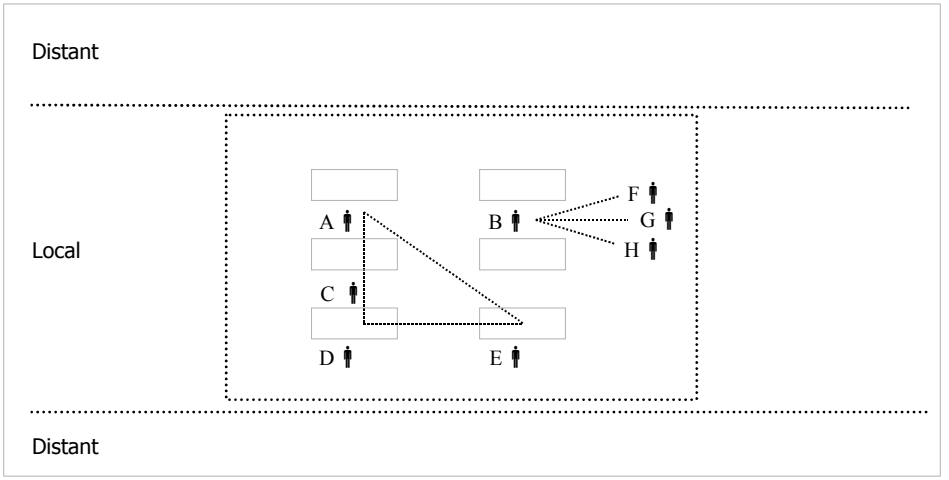


Fig. 19. A classroom situation in site B.

The example comes from a classroom situation from data set two, from the year 2002. The analysis of the situation is based on videotaped material, but for privacy reasons, here only a symbolic drawing of the situation will be presented. In this situation five students (A B, C, D and E), their teachers (F and G) and one mentor (H), who at the same

time acts as a participant observer, work together in a computer lab in site B. The students work on a computer. The teachers and the mentor move around, talk with people and write a little something to the discussion platforms.

The situation comes from the early stages of SHAPE2002 (for a detailed description of the pedagogic set up, see chapter 3.2.1). Before this situation most of the students had already formed small groups they wanted to work in and chosen a tentative topic for their work. This selection was made on the basis of the discussions in the orientation phase. Furthermore, some site B students knew each other already, since they had been studying together on different topics for quite some time. Thus it is reasonable to believe that groups were not only built around a shared interest or goal, but also on grounds of friendship relations.

Students A, D and E had chosen to work together. Here they are jointly negotiating the task and topic of their project, which will later on be termed "virtual identities and games". Judging on the basis of the joint asynchronous learning platform it seemed that this group is not functioning yet. Their folders are empty and practically no discussion is going on at the time of this situation. However, in this situation we notice that A, D and E actively work elsewhere, in a synchronous chat, even if there seems to be no action in the asynchronous platform reserved for their work by their teacher. At the same time D and E talk to each other and sometimes shout a word or two across the room to A, while typing in the chat. Translations from the original Finnish are provided in the double brackets.

Example 24. Negotiating the task and a topic for research project in synchronous chat.

1. E -> A, D: noh, löytyykö mitään? ((well, do you find anything?))
2. A -> hmm, jaa-a ((mm, well well))
3. E -> A: peleistä vois kyllä jotain vääntää ((we could do something on games))
4. E ->A: eikös joo ((don't you think))
5. A -> juu ((yes))
6. A -> mutta siis pitikö nyt ettiä jotain matskua näistä mitä on täällä optimassa? ((but were we now supposed to search for some material from these here in Optima?))
7. E ->A: niin kait ((I suppose so))
8. E ->A: http://eserver.org/filmtv/trek-eulogy.txt (Data 2002, B3)

E, who is sitting next to D opens the negotiation of their task by asking A and D whether they had found anything. During the course of the discussion E and A come to a hesitant conclusion that they "will do something on games" (E on his second turn) as A on turn 5 writes "juu" ((yes)). A, however, seeks for further clarification on the nature of the task in turn 6, which E provides on lines 7 and 8. On several other occasions after this situation they are "caught working in the chat". They are frequent visitors in the official learning platform, and they access messages actively. However, their folders in the joint asynchronous working space start rapidly to fill up only towards the end of the course, when they start producing their final report, but before that their folders stay almost empty. Thus, if we had assumed that learning activities of the groups restrict themselves to the "official" learning platforms, the correct interpretation about the work of this group

would have been that they are not doing what they are supposed to be doing: learning work. However, at the same time it might also be concluded that the members of this group do not share their ideas with the rest of the community and as such their concept of collaboration does not cover the whole SHAPE-community. Why this might be the case, we do not know. What we can say, nevertheless, is that the project this group produced in the end was extensive and must have involved a fair amount of work.

Other participants in this situation create links out of the local situation in the classroom (see figure 20 below). Participant C has come to the meeting on behalf of her group, which was also formed earlier on. They use the learning platform for accomplishing their project, but they were also found working on several occasions in the cafeteria. Thus, like the group of A, D and E, much of the work concerning their joint project seems to be done outside the official learning platform. Within the scope of these data, we can but guess what this work might be like: how intensive and how frequent.

Participant B talks with F, G and H, who are members of the staff, pondering on the question whom should she work with. She refers to two participants in site A, I and J, and says that she might be interested in the issues they had brought up in the asynchronous learning platform. H, who was the participant observer and a mentor, had already agreed to work on a language learning topic together with two participants (K and L) from site A. This group is complemented with a participant from a distant site (M). In this manner, in this brief situation, communities and groups appear in the discussions in different modes and media. As the students work in the asynchronous platform they also meet other groupings of people (the figures with no linking lines in the figure below).

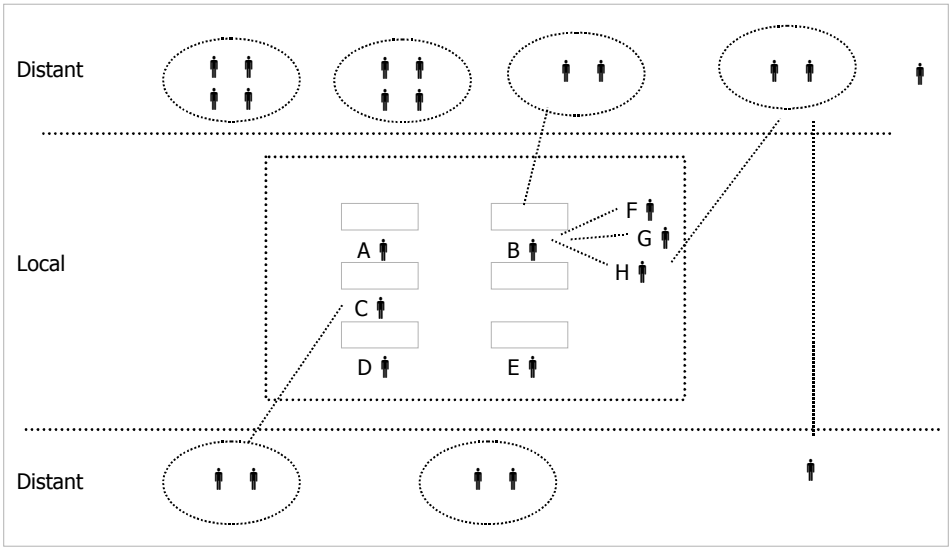


Fig. 20. Groups working in several platforms and maintaining several communities at the same time.

It would thus be reasonable to assume that there are several other communities negotiated and constructed anew in such a multimodal and multiparty situation than just one unified

virtual learning community. The sites where these communities work for their projects are also numerous. Neither do the alleged goals of these "learning communities" end in one rather abstract and idealised learning goal. Many goals are negotiated and renegotiated simultaneously and continuously. The following chapter, chapter 5.3.3 will look at the concept of community as it is manifested in these data in more detail.

5.3.3 Virtual and other communities

Chapter 5.3.3 will first look at the computer-supported discussion data in search of the question, what is the community/communities the participants create in these data like. Second, a multimedia situation where a small group of people works together will be analysed from a similar perspective. Third, it will be shown how a distinction between us and them is created in these data. Finally, development of one particular group is followed through the computer-supported discussion data. It will be shown that virtual community is a complex and multifaceted phenomenon in these data.

5.3.3.1 We on the web

Analysis of the web-discussion data gives support for the claim that the community we are dealing with in SHAPE 2002, is not a single unified virtual community, but instead, several communities at work at the same time. Analysing the web-discussion data from a learning community perspective we shall soon see that the communities that the participants talk into being - or in this case, write into being - are manifold. For this purpose the "who is who" discussion from the orientation phase in data-set two, from year 2002 (see chapter 3.2 for a more detailed description) was analysed. The discussion consisted of 170 messages altogether. All first person plural pronouns (we, us, our) were sought, and their referents analysed. In the following I will provide examples of the different uses of the word 'we'.

It cannot be denied that 'we' in these data denote also the participants of the course, as the following exchange between two students of the course indicates.

Example 25. Two students writing on the learning platform.

» The only thing on my mind at

» the moment (in addition to that obvious one =) is how

» to finish my studies this year, including a Pro Gradu

» thesis. That's why I am here. Maybe I'll end up doing

» research on YOU.

So, you're doing research *on* us, are you? Do it with us, not on us, and we're ok. (Just kidding!) (Year 2002, data B1)

Thus ‘we’ (in form of ‘us’ here), clearly has the meaning of “participants in this course”, staff and students. Several other instances of “we the participants of this course” can also be found. ‘We’, however, refers to many other groupings as well. In these data, we are members of our home institutions, for example:

Example 26. Student writing on the learning platform.

> “---omitted text--- you´re right, an avatar is the nickname you use when you´re going online.... In a seminar in my home institution last year we had to find out the meanings of lots of those funny words”. (Year 2002, data B1)

‘We’ are also members of other study groups:

Example 27. Student writing on the learning platform.

> “---omitted text--- 20 years ago I started my studies at X university and finished them last month thanks to the x course and our great tutors. I wrote my thesis on the building of a learning community in distance education and I studied the messages we sent --- omitted text--- ((in the course)). I would be happy to continue with the same theme, ie do research with you. ---omitted text---“(Year 2002, data B1)

In addition, ‘we’ come from different disciplines:

Example 28. Student writing in the learning platform.

> “I bet I'll see things from a more technological perspective. Despite that I hope we can all benefit from cross faculty discussions”. (Year 2002, data B1)

‘We’ also refers to family and friends outside academic community as in “I play live-roleplaying games as well, where we do act stuff out”. When talking to the international participants we is also used to refer to national identity “we here in Finland “. We is also used to indicate “we, the mankind” as the following example shows: “I'm a person with extremely low self-confidence and when talking to people through computers you do not have to worry about trivial things like if you are attractive enough etc., so in my opinion yes, we are more equal in virtual environments at least in some ways”. In addition to these various uses of ‘we’, we obviously was found in the use of passive voice and denoting “you and me”. Thus, these data show that the issue of virtual community in the computer-supported discussion data reaches wider than one unified learning community. The following chapter will look at the issue in more detail, but now from the perspective of synchronous spoken computer-mediated situation.

5.3.3.2 Talking communities into being

In the following, pieces of discourse are analysed on the micro-level. This analysis shows that the view to community the students provide is very rich. Instead of one single virtual community, the students construct several communities in the course of interaction. The following analysis is based on the work that was originally done for an article on theoretical and methodological approaches to studying computer-supported learning (see also Saarenkunnas, Kuure & Taalas 2003).

The data excerpt below presents a complex situation from year 2003 where a group of people in two different locations (Universities of X and Y) negotiate a timetable for their shared project. Location A involves two future language teachers. The second site, location B, consists of a language student and her mentor. The students in the situation form a small group, who ordinarily work together on an asynchronous web-based learning platform. Here they are in a computer-mediated synchronous meeting. Several different media are involved since the activity is carried out through a combination of a telephone conference and a desktop videoconference including a shared computer screen (via Netmeeting). In other words, the participants share several computer applications at the same time as they talk to each other via the telephone. The situation is illustrated in Figure 21.

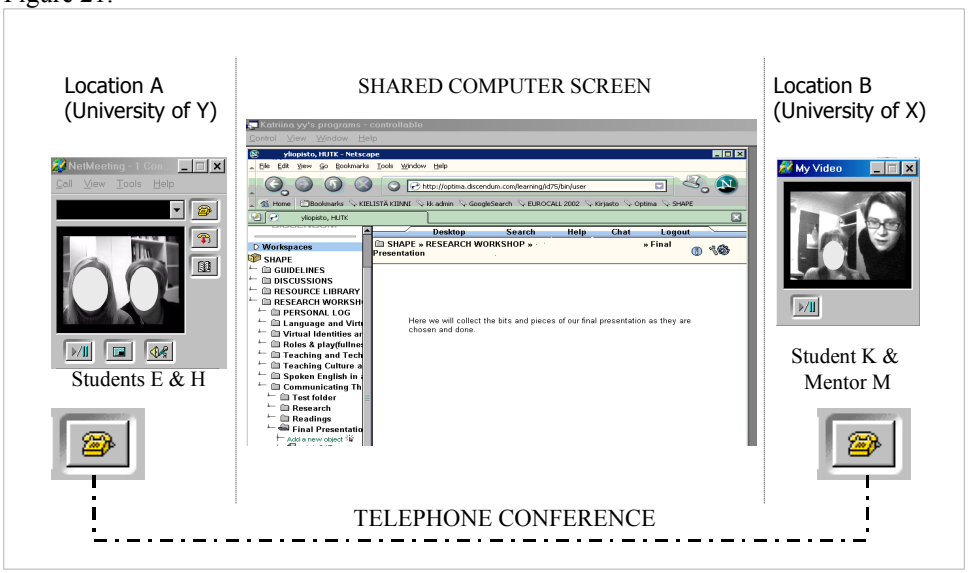


Fig. 21. A computer-supported joint working space.

An exploration of the data point out that the virtual learning community is one context the participants negotiate into being in their interactions. The following data excerpt demonstrates an event where virtual group identity is talked into being. E and H are students from location A (University of X). K, another student, and M, who is the mentor of the group, join in from location B (University of Y).

Example 29. E, M, H and K over the phone, by a shared screen.

1. E: ---I don't know if anyone else apart from us works in mixed groups hah hah () [but
2. M: [no they don't
3. E: yeah hah () [I sort of .hah thought so
4. H: [hah hah

5. M: ACTUALLY SOMEONE DOES () Tiina does apparently
   [(unclear)
6. K: [(unclear) oh that I have not ((seen)) them () do anything hah
7. M: yeah (.) there is nothing happening there yet=
8. E: =what what does that Tiina do ()
9. M: teaching and technology group (Year 2002, data A3)

With 'us', on line one, participant E refers to a virtual community, which she herself is a member of. This community, formed by E, H and K, is present here in this situation. E further defines this group by calling it ’mixed’, which means that the members come from the two geographically distant universities. K adds to the group identity by contrasting it with 'them' (line 6), which is given a name on line nine by M as 'teaching and technology group'. M and E (lines 5 and 8) produce Tiina as the representative of this other group. Thus, this excerpt shows that a group, which could also be called a virtual community, is made real in the talk of the participants. This is not, however, the only community that the participants refer to. When the situation develops, we see that the members of this computer-supported learning situation skilfully construct a scene where various contexts and group identities interact. This context reaches far wider than the abstract notion of virtual learning community. Directly after this instance of "we the virtual community" talk, another community is brought up (see below).

Example 30. E, M, H and K over the phone, by a shared screen.

1. E: yeah (.) who are the members ((of that group)) in our location .hah .hah
2. ((clicks on the computer screen)) (.) that is well ((creaky voice))
3. () in our location we are a little overloaded we really have not chose
4. (.) ch ch chose (.) ((clicks on the computer screen)) chosen this thing se well ()
5. K: yes this is obligatory for you
6. E: yeah(.)
7. H: [quite right
8. E: [yeah ((clicks on the computer screen))] (Year 2002, data A3)

When E continues her speech (line 1), 'we' is given a new meaning. Here 'our' and 'we' refer to the course participants in her local offline site, in the University of X. K affirms this on line five with 'you', positioning herself as a member of another group, which is not the virtual community they share. The discussion continues along the same lines. The participants construct memberships of several different communities continuously: This can be seen even in a data excerpt as short as this, let alone looking at larger stretches of group activity. The analysis above, as well as the analysis of the different uses of ‘we’ clearly point towards several virtual communities. Therefore, it must be concluded that it would be a crude generalization to look at computer-supported learning as an activity performed by one unified virtual community alone. What would be of interest, though, is to find out when it is that the participants bring forward the membership in a virtual

learning community. This could shed light on how the participants make use of and assess the activities provided by computer-supported learning environments.

5.3.3.3 Us and them

In data set two, 2002, the issue community was visible in several ways. Not only because the pedagogical framework built on the concepts of "community building" and "collaboration", but also in the talk and text produced by the participants. From the perspective of the designers of the course, the purpose of phase one was to start community building through a shared exploration of the key concepts relating to the topic of the course. In this chapter I will have a look at the kind of communities that clearly emerge in the computer-supported activities between the participants. As we have already evidenced in the analyses of the uses of 'we' in a face-to-face situations as well as in the textual interactions in the web, the participants construct many kinds of communities in their talk. In the following, the community is approached from a participant perspective. Despite our conscious efforts to support community building one distinction is evident in the data: this particular virtual community is formed by (at least) two different off-line locations.

Negotiation of "common ground" (see chapter 2.3.2 for a theoretical discussion of the notion) in the orientation phase of SHAPE 2002 was put to practice as a "key-concept discussion". The idea was to try and find out what kind of concepts and ideas the participants relate to the topic, trying to negotiate a common conception of "what should we be doing here on this course and which issues are related to the topic". The student guideline for site B students gave the following instructions for this key-concept work: "Brainstorm around the key concepts connected with cultures, communication, and virtual environments. What is a key concept is not a clear thing - it is a matter of negotiation. So, there are no "correct" or "wrong" answers here. Just throw in concepts and ideas, which we can later elaborate and study further." These discussions together with the introductory discussion called "who are we" also aimed at group formation and the emergence of a learning community. The students were instructed to look for issues they would be interested in pursuing further and identify who else was interested in similar topics. On the basis of these discussions the students were also supposed to form groups for further exploration in research workshops.

The local group B entered the environment a week earlier than the local group A. Group B thus started the discussion of key concepts. They brought into the environment issues they were interested in. The following issues were touched upon the web-work, for example: Emoticons, typography, fonts, meaning negotiation, face-to-face conversation vs. virtual interaction, literacy, repair, community, culture, genre, membership, negotiation of membership, virtual world (online) vs. real-world (off line), community building, membership, social interaction, mediated event, internet culture(s), context(s), on line and off line, discourses around and about virtual world(s), (micro-) culture(s), group cohesion, participant perspective(s), lexical choice, playfulness, roles, chat, irc, moo, mud, role games and virtual communities. The fact that B had entered the environment earlier had consequences, as will be shown later.

One particular distinction concerning the issue of community was clearly manifested by the data. Most of the participants of group B had selected the course, because computers and the Internet were part of their life elsewhere as well, e.g., among their hobbies. Group A consisted of students who were currently doing their teacher training in a teacher training school. They participated the course from a teaching and learning perspective: there was evidence that they were after practical teaching and learning solutions. The following example illustrates in general the difficulties the group A students felt in relation to the key-concepts introduced by the group B students.

Example 31. Member of group A writing in the learning platform.

Discussion list: Key Concepts

Subject: About our key-concepts

Sender: Rinna

Recipient: All

Date: 02.10. 17:40

I guess I have to comment on the key concepts we came up with here in Location A since I don' t understand much of what is said by people in location B... Actually, as you probably have noticed by now, I' m not too familiar with computers, and key concepts such as ' worthless until proven useful' is something I really can agree with. However, another key concept that I find interesting is ' alternative teaching methods '. This is mainly because I' ll (possibly) become a teacher of English in the future, and I think I would be interested in knowing how to use a computer in class. In fact, I hoped to get some further information on that in this course, but I don' t know... (Year 2002, data B1)

Rinna's comment "I guess I have to comment on the key concepts we came up with here in Location A since I don' t understand much of what is said by people in location B" seems to indicate that even if she would like to comment group B's key-concepts, she cannot, because she does not understand them. She also positions herself as a novice with computers. This, nevertheless, does not hinder her from participating as she also provides her key concept, "alternative teaching methods". However, there is also evidence (example 32) that the location B participants try to reach out. They for example offer to study together with location A people and are willing to investigate issues related to their main area of interest, which for most of group A is teaching.

Example 32. Member of group B writing in the learning platform.

Re: About our key concepts...

Sender: Martta

Recipient: Sanna

Date: 04.10. 14:31

---omitted text--- Sanna and Rinna (and all you under the burden of teacher training), You have my symphaties: teacher training was probably the hardest year in my

> studies. And the first computer supported collaborative course I took, was also a puzzling experience (don't try read everything if you are too busy, is my advice). But - I am also interested in alternative teaching methods (I am a teacher as well). In addition to educational techology I have studied drama pedagogy and action methods. I am very interested in collaborative learning. Especially computer supported collaborative learning. Should we start researching computer supported language learning then? –Martta (Year 2002, data B1)

Several involvement strategies (Brown & Levinson 1978) are displayed in the message in example 32. The writer shares feelings with the other group for example in “the hardest year in my studies” and “puzzling experience. The writer also discloses personal information in her judgements about teacher training and in the information, which she gives about her interests. She offers advice “don’t try to treat everything” and invites the others to co-operate with herself.

Thus from the perspective of group A, group B was a more experienced one when it comes to virtual interaction, which made the web-discussions difficult for them to participate. For example, initiating topics proved to be difficult. Interpreting example 33 (below), two factors, which could explain this difficulty are given. The first was the relative inexperience of group B, and the second, the fact that group A had been there for a longer period and in a sense “claimed the space” already. This made it difficult for at least some group B participants to initiate topics, which would serve their goals best.

Example 33. Member of group A in e-mail.

> Subject: Feelings about yesterday
>
> Date: Thu, 3 Oct 2002 13:08:40 +0300
>
> From: eeva@xx.xxx.xx
>
> To: xxx.xxx.@xxx.xxx.xx
>
> What was so difficult about creating a new discussion? All the people in B seem so "professional" in these kinds of things, whereas my experience is limited to e-mail and surfing on the net. They (people from B) have a very "sophisticated" view of these thing, are better in arguing their points, are better in using academic language etc. It seems that I have a problem of self confidence! Anyway, it is not easy to go there and reveal one's ignorance.
>
> Especially I think it is problematic that the people in B have had this webcourse going on for so much longer than we (a week, two?). they already have discussed their ideas and made study circles, whereas we are only learning to function in the environment. I think it would be easier for me, if we had started at the same time. (Year 2002, data B5)

In the brainstorming phase the location A participants had thus difficulties in finding topics that they could relate to. They felt that group B talks about issues, which they have nothing to say about. Group B was seen as the more experienced partner. Most participants in group A had little or no previous experience of this work approach. It was also evident that group B had strong feelings about the participation to this study project

in all respects. This was brought up for example in the participant observation logs as well as email-exchanges between the teachers of the two locations (example 34).

Example 34. Teacher from group A in e-mail.

> Date: Wed, 16 Oct 2002 16:44:17 +0300 (EEST)
>
> From: Lotta
>
> Subject: Re: xxx xxxx
>
> To: Leila@xx.xx, väinö@xx.xx
>
> --omitted text---
>
> A while ago we had the local SHAPE-meeting and it was rather heated. The students were somewhat full of negative energy towards the whole enterprise and kept on repeating that they do not have the time nor the will etc. etc. to participate the whole thing… Well… I promised them to compensate 2 credit units from our studies (feels fair considering the amount of work) and I tried to guide the discussion towards a more constructive direction. Real metalevel session! (Translation from the original Finnish, which is available in the appendix) (Year 2002, data B5)

The data introduced above clearly shows that a distinction of us and them, group A and group B, is made in these data. Therefore, it seems to be justified to argue that we cannot really talk about a single unified learning community, but several different groupings of people: novices versus experts as well as participants from different locations. The example gives further evidence for the multiplicity of learning communities.

The subsequent chapter will turn to analysing the emergence of a "virtual community", a group of three students, who in the course of the activities showed involvement with their shared task and community. It will be shown, however, that despite the apparently cohesive nature of this "online community", they, too, display memberships of several different communities.

5.3.3.4 Our group

Phase two, called Research Workshop, in SHAPE 2002 involved working in small groups. These study/research groups were formed after the orientation phase. Here I have a look at one particular group called "communicating thoughts" [20]. Two Location A participants and one participant from location B form this group, which makes it possible to investigate the life of this group in the data collected from the shared learning platform, Optima. Apart from two online videoconferences this group never meets (see chapter 5.3.3.2 for a description of such a situation). Here I will have a look at how the group is negotiated into being in the discussions in the learning platform. After showing how the group is born, I will turn to analysing their activity in the discussion list. I will

[20] The analysis presented in this chapter started as attempt to build a narrative of the life of one group in SHAPE 2002 together with Katriina Vakkila from the University of Jyväskylä.

argue that in the initial phases of this group's life it is possible to follow the events as they unfold in time, in consecutive turns. When the work really gets going such a sequential approach cannot be justified anymore, since the discussion displays multidimensional sequentiality (see chapter 2.2.2.2).

Katri, a location B participant had an experience of a similar kind of web-based collaborative working process beforehand and was eager to participate. Katri was one of the most productive members in SHAPE 2002. Finding a suitable group took some time and effort from Katri. She volunteered to join another group at first, but this group never started to function. Finally, The topic, that Eeva and Sanna from group A introduced was appealing to her. Eeva wrote the following message (example 35) in the key-concepts discussion on behalf of Sanna and herself.

Example 35. Eeva in the learning platform.

> Subject: Communicating thoughts -- teaching
>
> Sender: Eeva
>
> Recipient: All
>
> Date: 16.10.2002 15:40
>
> Hello everyone! This is *Eeva and Sanna H. from location A. We are going to start a discussion here:) Actually, we are doing our proseminar (teacher training) on autobiographies, or more exactly on how people reflect their experiences about language learning. So, this is our starting point for this new topic.
>
> Now, here, we will be taking a look at how people communicate their thoughts, especially on the meta level (you know, metacognition is an important part of effective learning). So, there will be a folder on this in the research workshop. Join us, all you people interested in this kind of a project!
>
> *Eeva and Sanna H.
>
> And, we really are serious on this... It's just that we've been at school for eight hours, so... Kind of feeling not-so-academic already. We'll get back to you soon... (Year 2002, data B1)

Katri responds to this message and expresses that she would be willing to join their group (example 36).

Example 36. Katri to Eeva and Sanna in the learning platform.

> Subject: Re: Communicating thoughts – teaching
>
> Sender: Katri
>
> Recipient: Eeva
>
> Date: 17.10. 16:58
>
> Hi there, *Eeva and Sanna H., I would like to join your group, if it's OK =) Katri U. ps. I think that the Not-So-Academic is *the* source for the Academic... Think about

how many important ideas have been brought to light first in coffee table discussions! (Year 2002, data B1)

She reiterates it in another list (example 37).

Example 37. Katri to Eeva and Sanna in the learning platform.

Subject: What is communicating thoughts?

Sender: Katri

Recipient: Sanna H.

Date: 17.10. 17:33

Hi there *Eeva and Sanna H, do you think I could join your group? There are some very interesting questions that you ask -- what actually is communicating thoughts? and how it can be done? and does this all help people learn? Eventually I might end up asking "what is learning?" =) Katri (Year 2002, data B1)

Eeva and Sanna H. invite Katri to the group (example 38), which is still “their group”. At this point Katri is the “other” or the outsider waiting for an invitation. Eeva and Sanna H are still ‘we’, who invite Katri to the group. Eeva is also thrilled about the fact that their work becomes “authentic” now, since Katri is from the other location and this thus provides an opportunity to learn “virtually in authentic context”.

Example 38. Eeva to Katri in the learning platform.

Subject: Re: What is communicating thoughts?

Sender: Eeva

Recipient: Katri

Date; 22.10. 11:47

Hi there, Katri! ---omitted text---It would be great to have others interested in these kinds of things in our group. And even more, it would be great to try learning virtually in authentic context (that is, sanna and me might get just a little bit bored chatting to each other while sitting back to back). So, I'd say you are more than welcome -- we'd love it! -- and I am quite sure SannaH (this is getting difficult having all these nicknmaes for people with same first names...) is of the same opinion, too, even though she isn't here right now. *Eeva

When the group is closed and the members of the group chosen and named, a collective ‘we’ – “we the group” is used (example 39).

Example 39. Katri to eeva in the learning platform.

Subject: Re: What is communicating thoughts?

Sender: Katri

Recipient: Eeva

Date: 23.10. 09:03

---omitted text---I think we could check the guidelines for project work, too -- there was something about a presentation or something to be done... let's see... yes, there's something in location A guidelines... and in the frontpage of Research Workshop folder. At this moment, I have to log off very soon -- the campus is calling... See you later, --Katri U.

However, there still are two groups inside this group occasionally. We, Eeva and Sanna H, will "make decisions" and give Katri "answers later today" (example 40).

Example 40. Sanna to Katri in the learning platform.

Subject: Greetings and welcome to our group!

Sender: Sanna H

Recipient: Katri

Date: 23.10. 17:21

Sorry that I haven't been around much but I heard the good news from Eeva earlier today and I also read the messages you two have been sending to our Thought Forum! Seems that the thing is finally starting for real! Very reassuring. As you might have noticed I am not as energetic as Eeva but I'll try to keep up with you both. We are still going to make some decisions and give you some answers later today. Actually we got an interesting article from Lotta about a magazine article she had written with two other writers about the use of hypermedia as a tool for language lerner. haven't read the article yet myself but we are going to add it to our folder a.s.a.p. so that you can alaso chek it out. SannaH (Year 2002, data B1)

As a result of this group formation phase, Eeva and Sanna H. created the first discussion list for this group and opened the discussion. In their first message they defined the issues they were interested in. After this initiation, Katri joined in and offered to make a mind map about her vision of the topic. In the group formation phase it was relatively easy to follow the work of this group as it unfolds in time, as we saw in the analysis above. After their work really gets going the true multidimensionality and unlinearity of the textual process is revealed. The group produces altogether 144 messages and 53 documents during their joint research process.

Chapter 5.3 has shown that the issue of virtual community is not a matter of one socially cohesive group as several communities emerge in these data. Therefore it will be concluded that it would be appropriate to talk about multiple virtual communities even in relation to one rather limited applied language studies course, as was the case of SHAPE2002. The following chapter will turn to an investigation of how the participants

of virtual computer-supported learning projects participate. I will show that in respect to this question, too, multiplicity of participation patterns can be detected. It seems that the cause-effect relationship between a particular computer-supported pedagogy and participant behaviour is not clear-cut.

5.4 How do participants participate?

The analysis so far draws a picture of computer-supported learning and interaction as polycontextual, multisequential and a non-linear process. In the current chapter I will turn to analysing computer-supported learning and interaction as activity. The analysis of the reading behaviour of participants of one thread (see chapter 5.2.3) as well as the analysis of the activity in the communicating thoughts group (see chapter 5.3.3.4) already pointed towards a complex pattern of participation. In the following I will attend to six students in data-set one from year 2000, to draw a fuller and deeper picture of the patterns of participation. This will be done with a close analysis of literacy discourse supported with a particular sampling technique developed for the purpose of this study. The analysis concentrates on participant activity in data set one, from the year 2000. I will make use of two types of data. First of all, I will have a look at the computer-mediated discussion data from the perspective of literacy discourse to analyse the meaning potential the computer-supported discussion provides. Secondly, I will follow six participants throughout the learning platform with the help of computer-generated database logs to identify which messages were accessed and written by each of the participants. The approach will mix micro and macro perspectives to the data.

5.4.1 Context

A few words are needed to remind the reader of the pedagogic context (for a more detailed discussion, see chapter 3.1.1). The data discussed here were collected in connection with an international web-based language course (English) for future language teachers, where the participants jointly constructed problem cases. Seventy-three people contributed to discussion, some more actively than others, producing all together 476 messages. On the average each participant thus produced approximately six messages. However, participation rates and patterns varied a lot, also because the participants had differing roles in the process. Finnish students (from two different universities) were instructed both to write a problem case and to participate in the construction of others' cases. The first of these groups consisted of future language teachers. For the second group, future class teachers, this course was part of their obligatory foreign language studies. American students did not write problem descriptions at all, but discussed the cases as resource people. In addition to the American "novice" mentors, one American and five Finnish university teachers took part in the discussion.

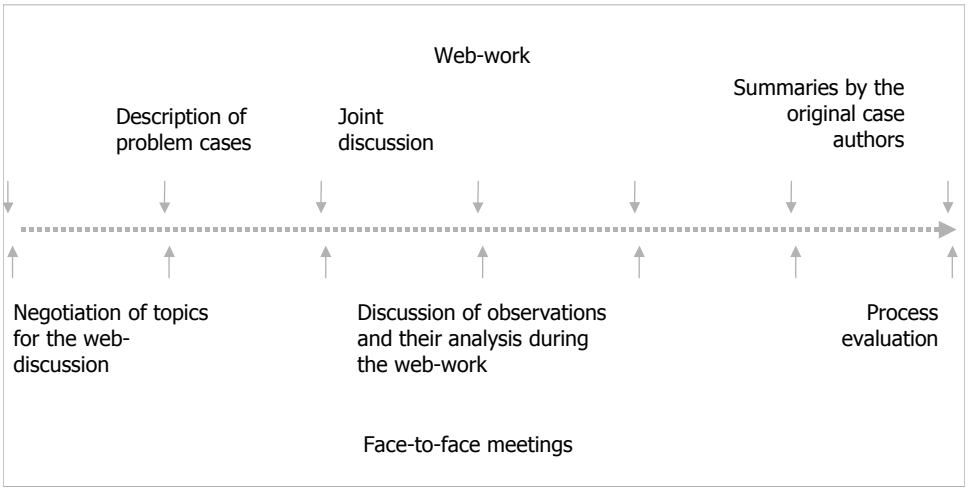


Fig. 22. Participant tasks on the web and in the classroom.

During the course the participants created case-discussions on a web-based learning platform. In casework, the task of the student is to write descriptions of problematic situations in teaching and learning contexts and to discuss these cases in the web-based platform, from as many angles as possible. Towards the end of the course the students write reflective summaries of these discussions. On this particular course the face-to-face meetings were used to reflect the web-work on a meta-level: teachers and students together discussed the observations the students had made on the web-discussion.

5.4.2 From text to activity

There is an abundance of research on computer-mediated and web-based learning and interaction which concentrates on the analysis of textual interaction, in the propositional contents of the text as well as the structure of interaction. I do not wish to deny the fact that close analysis of textual interaction provides valuable micro-perspectives to computer-mediated communication. However, to catch the situated perspective to the whole activity, it would seem naïve to assume that participation would be constructed in active text production alone. Meaning is negotiated through other resources as well, as has been argued throughout this thesis. Furthermore, the meaning of an activity cannot be read from the textual interaction alone. Texts provide a semiotic resource for the readers to use for their own purposes. In a sense every reader reads a new meaning to every text in every reading event. From this principle we can also infer that in each different reading event texts "get new meaning" (chapter two discussed the social semiotic perspective to texts and literacy in more detail). Therefore, it would seem reasonable to argue that mere close analysis of texts provides only a partial view to the situated activities the readers participate.

This chapter is interested in computer-mediated discourse as situated activity, particularly as a literacy event. It aims at exploring the context of activities that the

participants in these literacy, or reading and writing, events participate. Rather than taking what it means to participate in a web-supported activity as given, I wish to explore how participation is manifested in the data, in the actions of the participants. This follows a critical look at what reading and writing in these environments means. I will also challenge the conclusion that participation equals writing. As shown above in chapter 5.2.4, reading or accessing messages can also be interpreted as active participation. "Reading" and "meaning-making" (see chapter 5.2.2) have also proved to be complex issues in computer-supported interaction.

To catch the broader frame of activities, the data are analysed from macro to micro perspectives, and back. The approach draws from mediated discourse analysis (Scollon & Scollon 2003; Scollon 2001b), even though it is not followed programmatically. Scollon (2001b, 3) points out that there is no action without participation in different discourses, and, vice versa, no discourses without concrete, material actions. Mediated discourse analysis sees that in research, we should focus on social actors as they are acting, not linguistic detail alone. Jones (2002) shows, that the uses and meanings of computer-mediated communication have in fact very little to do with the actual words typed into computer screens. His study also pointed out that the context of computer-mediated communication is often much more important than is regarded in most work on CMC. He suggests that analysts need to adopt a polyfocal perspective: a perspective, which encompasses multiple modes and makes use of multiple methods, which begin with people's actions and experiences around texts. The theory of multimodality (Kress & Van Leeuwen, 2001; Kress 2003) in its emphasis of multimodal research frames has also influenced my approach. Not only is this approach applicable in catching the reading and writing activity in these data, but also as a form of testing initial interpretations. The analysis advances the by following procedure:

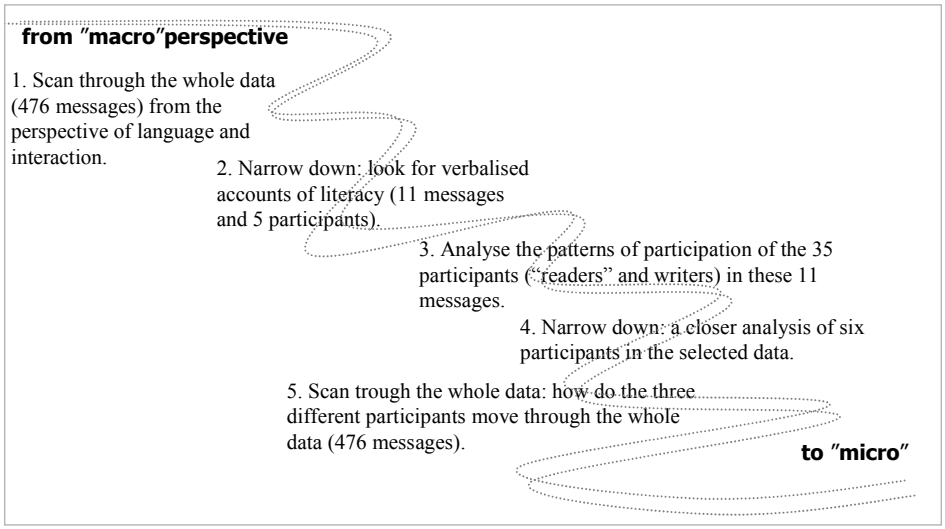


Fig. 23. The process of analysing patterns of participation.

The analysis began with a general scan of the whole data. First, all messages (476 messages complemented with reader statistics) were read through. The scope of the analysis was temporarily narrowed down to messages, which explicitly referred to reading and writing practices. Following this criterion, two threads (11 messages) were chosen for a closer analysis. These data were then analysed from two different perspectives: discourse and participant activity. From this "micro perspective" the analysis moved back to the larger scene, in order to compare the representation of participant activity portrayed by these messages and the activity around them. For this purpose, six participants, who represented different kinds of participation in the narrower data selection, were chosen for a closer follow up through out the whole data (the 476 messages complimented with computer-generated access statistics). In the following the analysis will be described in more detail.

5.4.3 Reading and writing around the literacy theme

Once the whole data (476 messages) had been read through to get a general picture of the activities and to identify instances where literacy was explicitly brought up, two specific threads (11 messages) were chosen for a closer analysis. These two threads explicitly brought up reading and writing practices. Both threads investigated here were placed in a discussion area entitled "Technology, ICT and Education". A student initiated both threads. First of them "writing and technology" (thread A) consisted of an exchange between a student and a teacher. The second thread (thread B), "Reading, learning and Internet" involved 8 writers, out of which one was a member of the staff. The following figure draws a rough representation of the overall structure of the two threads. The threads are also available in Appendix 2.

Thread A	Thread B
Rhonda ⇒ Kalevi* * staff member	Leila ⇒ Christian ⇒ Paula (Tiina, Tarja) ⇒ Leila ⇒ Pirkko* ⇒ Paula (Tiina, Tarja) ⇒ Leila ⇒ Stephan ⇒ Linda ⇒ Leila (summary)

Fig. 24. The overall structure of the literacy discussions.

On the basis of the analysis of the contents we can conclude that these threads display literacy from many different angles (the threads will be found in appendix 2). In the discussion on writing, the writers suggest that writing is a process in which texts are

written and rewritten several times. Second, they also see that writing is different in different contexts; e.g. writing for an essay in school context or writing personal letters. Third, different text types/genres involve different perspectives to norms and rules; e.g. it is not imperative to write grammatically correct sentences in order to participate web-based discussions whereas certain academic writing might require close attention to the norm. Fourth, tools take part in the process and transform it: e.g. writing with a pen is different from writing with a computer. Fifth, writing practices involve different discourses and ideologies, which in turn may have an effect on how we perceive our writing tasks: e.g. the images that academic writing involves as "scientific expert reporting" might have something to do with the difficulties that the students experience.

A similar richness of perspectives can be detected in analysing the exchange concerning reading. The writers conclude that reading is different in different contexts: e.g. reading for pleasure, seeking information, and reading for learning purposes. Second, reading can be approached from both a critical perspective and as a strategic activity. Third, reading in a foreign language differs from reading in the mother tongue. Fourth, different text-types involve different kinds of reading: e.g. reading textbook texts differs from reading "authentic" material. Fifth, tools take part in the process and transform it: e.g. reading hypertext from a screen differs from reading a book.

On the basis of the textual analysis of these threads in can be concluded that these writers treated literacy practices as a multi-faceted phenomenon. Diverse angles are brought up, most of which are supported by the current literacy research (see the discussion of literacy and reading in chapter 2.2.2). To put it differently, assessing the text the students and the teacher together produced, we can say, that it is of good quality. In that sense, this course has been successful in reaching one of its goals: involving students in a discussion of language and interaction and producing a rich collaborative resource. However, since the patterns of participation vary a lot in web-based conferences such as ours, the richness the textual analysis yields does not necessarily equal with participant experience. Participants wander through the multitude of messages through various paths, making various interpretations of the texts their meet. No matter how rich a resource the collaboratively produced text provides, it will not guarantee equal learning outcomes. In the following I will have a look at different types of participation.

5.4.4 Participants

The search for different participation patterns started by simple counting. The amount orf written and accessed messages per different participants were calculated first. Altogether 35 people participated in these two discussion threads either by accessing the messages or by writing a contribution to the discussion. Eight out of the whole group of 35 participated actively by writing. Four people of these eight writers accessed all messages but one. One of them accessed only one message in these particular threads. 27 participants did not write at all, but however, participated by accessing one (10 participants) or more messages. Four participants, who did not participate actively by writing, accessed more than ten messages in these two threads.

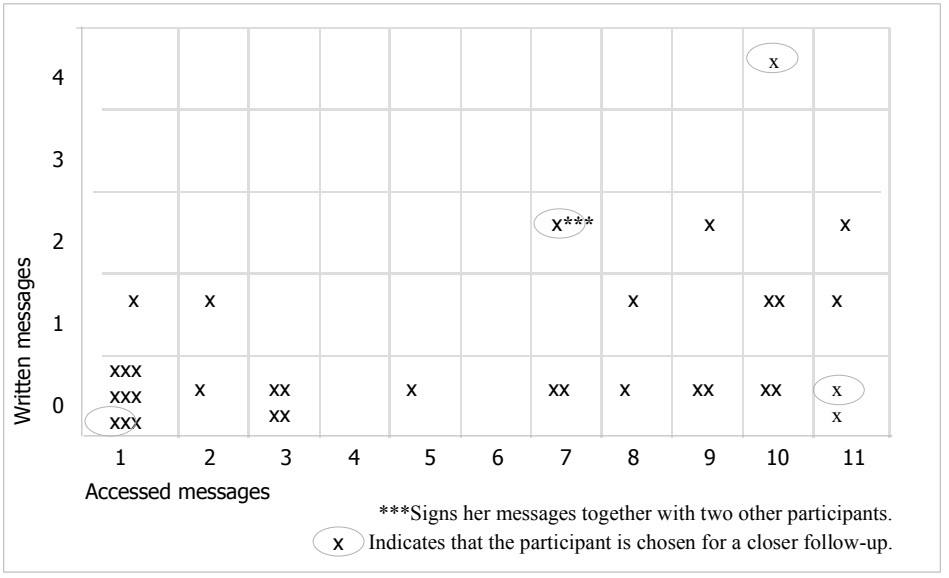


Fig. 25. Participation by reading and writing messages in the selected thread.

It is of course impossible to say whether the accessing of messages involved any reading at all. In that sense clicking the messages open does not count as "participation by reading". However, one particular feature of the conferencing software turned accessing the messages into participation from a reader perspective. Each message posted into the environment included a user list in a scroll window, which listed all participants who had opened the message. Observations from classroom activities verified that this list was interpreted as "these people have read the messages". The videotaped classroom sessions record such comments as: "Many people have read my message, but nobody replied. What is wrong with my message"? (see chapter 5.2.4 for a discussion of this). Thus from the message writer's perspective accessing the messages was conceived as active participation. We can therefore conclude that also the 27 seven "readers", who did not actively participate by writing, can be treated and are treated at least by some writers as participants in the thread. This observation gives further support to our claim that seemingly insignificant texts may have an important role as resources for meaning-making in web-discussions. (Kuure, Saarenkunnas & Taalas 2002, also chapter 5.1 in this thesis).

5.4.5 A sample of six different participants

The second step in the simple counting procedure was to sample out some participants for a closer look in the whole data. Out of the 35 participants in the above-described discussion six participants were chosen for a follow up through the whole data of 476 messages. As we have already seen above, patterns of participation vary a lot (cf. Figure 18, participation in the early specialisation case). Some participants peek in a discussion

and leave immediately. Some of them "read" a lot, but do not participate by writing. Some of them read one message, provide their contribution to the discussion, and leave. Some participants both write and "read" a lot. The grounds for choosing these particular participants was that each of them represents different patterns of participation in the above analysed threads. The first participant, Leila, participated both by writing and reading actively. In the literacy discussion she wrote four messages and accesses ten out of the total of 11 messages. The second participant, Jaakko, accessed one message and left. The third, Michael, accessed all 11 messages in these threads, but did not write at all. Paula, Tarja and Tiina represent a different type of participation, because they partly work together as a team. Table 7 summarises the activity of these six participants in the literacy discussion.

Table 9. Leila, Jaakko, Michael, Paula, Tarja and Tiina in the literacy discussion.

Participant	Accessed	Wrote
Leila	10/11	4
Jaakko	1/11	-
Michael	11/11	-
Paula	7/11	3*
Tarja	11/11	3*
Tiina	9/11	3*

* Participant signs these messages together with other participants.

The table below describes the activity of how the six participants work their way through the discussions. The activities spread through 12 discussion lists (*A-L*). The topics of the discussion were (see chapter 3.1.1 for a description of the topic building procedure):

A. Authenticity and Context (Building on pupils resources, etc.)
B. Fears in Educational Environment
C. Technology, ICT (Information and Communication Technology) and Education
D. School, Home and Society
E. Dealing with Difficult Situations and Delicate Matters
F. Learning to Learn
G. Becoming a Teacher (Approaches to teaching, teaching philosophies, identities, etc.)
H. Developing Learning Communities
I. Creativity
J. Thinking, Understanding and Knowledge Construction
K. International Café
L. Bar Lingua

The lists are not distinctly separate units; instead, their topics overlap to a great deal. All topics deal with education, from slightly different perspectives. Some may bring up issues connecting to science education more widely, and some language teaching. However, they all deal with central issues concerning teaching and learning.

The following table (table 8) presents the number of written and accessed messages per participant in different discussion topics.

Table 10. Participant activity across different topics.

Total number of messages per topic	Leila Writes/ Accesses		Jaakko Writes/ Accesses		Michael Writes/ Accesses		Paula Writes/ Accesses		Tarja Writes/ Accesses		Tiina Writes/ Accesses	
Topic A, 26 messages	-	7	8	26	1	24	-	5	-	4	-	5
Topic B, 37 messages	-	-	-	-	-	23	-	2	-	15	-	-
Topic C, 48 messages	4	20	-	15	-	44	3*	32	(3)	40	(3)	32
Topic D, 125 messages	-	-	-	19	-	4	-	-	1	46	-	1
Topic E, 48 messages	-	-	-	2	1	6	-	-	-	12	-	-
Topic F, 26 messages	1	11	-	3	1	25	-	1	-	16	-	1
Topic G, 79 messages	-	-	-	1	-	-	-	-	-	24	-	1
Topic H, 38 messages	-	2	-	-	-	11	-	-	-	29	-	-
Topic I, 49 messages	-	-	-	-	-	37	-	12	-	8	-	-
Topic J, 22 messages	-	3	-	5	-	18	-	7	-	7	-	-
Topic K, 29 messages	-	-	-	6	-	6	-	-	-	9	-	-
Topic L, 1 messages	-	1	-	1	-	1	-	1	-	1	-	-
Total 476	5	44	8	78	3	163	(3)	60	(3)+1	209	(3)	40

*Paula, Tarja and Tiina write these messages together.

Parenthesis ( ) Indicate that the messages were produced in collaboration with other participants.

Judging on the basis of the written and accessed messages, Leila's activity seems to concentrate largely on our example case, which is her own problem case. In her first message, she tells us that her case entitled "Reading, learning and internet" is motivated by a need to create an online text course for foreign language learners. She seems to engage mainly in discussion with Paula, Tiina and Tarja, who are future language teachers. Leila also participates in another discussion topic, both by writing (1 message) and "reading" (11 messages out of 26). She visits briefly four other topics, but altogether six topics remain untouched by her. It might be concluded that apart from her own case, she does not participate actively, neither by "reading" nor writing.

Jaakko's writing activity concentrates on one particular topic. He participates by writing in the construction of one single thread, which he himself has initiated. Also his reading activity is situated mainly in the same area. He accesses some messages in 8 other topics and ignores three topics completely. This is by no means second rate participation, since the students were explicitly instructed to choose from the multitude of threads the ones they were themselves most interested in. Thus, it might be concluded that Jaakko's activity concentrates on one particular area.

Figure 26 exemplifies Jaakko's participation in the construction of his own case discussion.

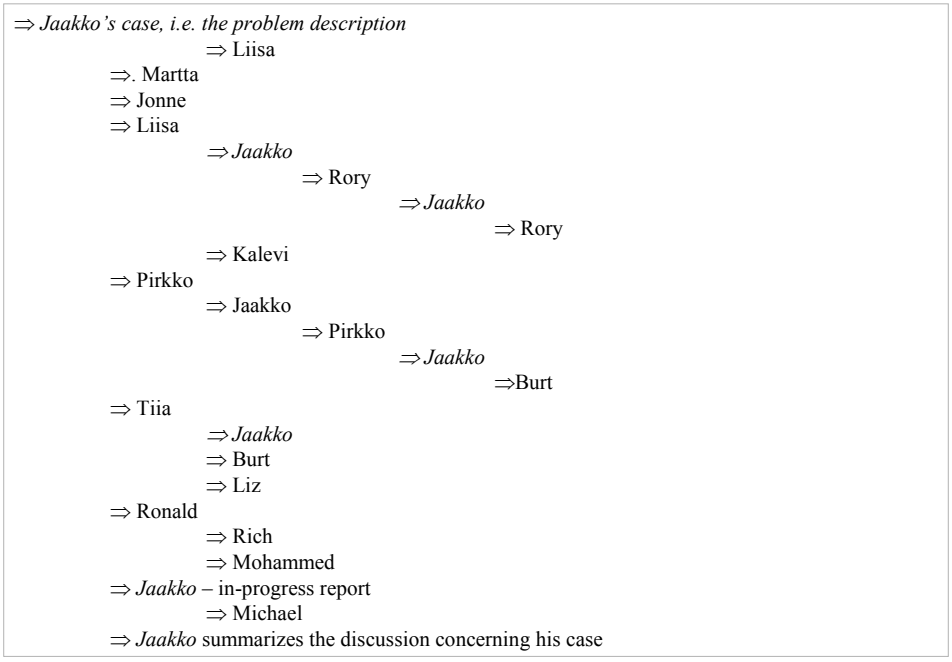


Fig. 26. The structure and participants in Jaakko's case.

Jaakko's own case deals with science education. The discussion thread contains several sub-threads and it is longer (26 messages) than average threads in SHAPE 2000. Jaakko participates actively in the construction of his own case. Instead of a group-discussion, where all the participants are assumed to be collectively accountable, it seems that this discussion is characterised by intensive dialogues between Jaakko and certain participants (see figure 26 above). Jaakko responds to most messages sent by other participants, reflects them and asks for further questions. In a sense, Jaakko's behaviour reflects rather strong ownership of this discussion. This is evidenced for example, by the fact, that he often thanks other participants for their contributions, thus acting as the "host" of this thread. Jaakko's active role in the discussions could be explained by the fact he himself tells us, that his topic is also the topic of his pro-gradu thesis, which he is currently intensively writing.

Michael writes altogether three messages in three different discussion topic areas. He visits all other topic areas, except for one. Jaakko's topic (A) he seems to follow straight through, as he accesses most of the messages in the thread. Also topic F receives quite a lot of his attention. Topic E, which he also writes in, he visits only briefly. Even though he has accessed only 6 out of the total of 48 messages he chooses to participate by writing, which is a particularly interesting observation, since Michael of all the participants "reads" widely. All in all, Michael seems to cover a rather broad range of the activities as he accesses most topics in the whole conference. This could be at least partially explained by the fact that Michael's role is different from the other participants in this thread. He acts as a peer mentor for the other students. In other words, his task is

to follow the discussions others have initiated and to comment on the cases. His role explains the wide access to different topics.

Paula, Tarja and Tiina write mostly collaboratively as they sign some of their messages together. As for Paula and Tiina we see that their participation is not particularly active in the learning platform. They neither actively write nor "read" messages in other topics apart from the topic in which their problem case is situated. What we do not know on the basis of these data is how much collaboration, in other words talk around the task on the computer, their participation involved and how "involved" they felt in the process. Tarja writes one more message (altogether 4) than the others. What is noteworthy, though, is that Tarja accesses a considerable number (200) of messages. This could be explained by the fact that Tarja was working on a thesis about a topic, which was closely related to this course.

5.4.6 Summary: the patterns of participation

From the analysis above we can conclude that people participate differently in similar pedagogical settings. Writing messages is generally considered active participation, but the above analysis clearly shows that accessing messages can be considered participation, too. The simple counting applied in the analysis of patterns of participation is capable of telling us something about the areas in which the participants concentrate their activity. However, even if we combine analysis of the textual product (chapter 5.4.3) to the above describe quantitative measures we cannot say much about the quality of the learning process, especially if we wish to shed light on the students learning experience. Similar observations were made by Kuure, Saarenkunnas and Taalas (2001). However, simple counting supports textual analysis: macro perspective combined with micro perspectives gives a richer picture of the participation. However, in order to make far-reaching conclusions on the variety of "meanings made", an analysis of *in situ* interaction would be needed.

5.5 Discussion

In the following the observations and analyses made in chapter six will be synthesized in the light of the theoretical concepts introduced in chapter two.

Chapter 5.1 argued that the resources that the participants use for meaning-making in computer-supported learning reach wider than the actual computer-supported discussion. Furthermore, the analyses showed that also seemingly insignificant text have a role in meaning-making. This observation is in line with the chosen social-semiotic perspective to reading and text (cf. Kress 2003). A participant, who is actively engaged in meaning-making, has countless opportunities for meaningful action and interaction (Van Lier 2002, 147). Text indeed provides a resource for meaning-making and computer-supported, collaboratively created text even a richer resource. This is due to the fact that this text is also part of a larger scene as the off-line and on-line contexts are closely intertwined (Jones 1999; Hine 2000). Not only is the physical context of computer-

supported learning complex, but so are the contexts that the students talk into being (Goodwin & Goodwin 1992) also present in the complex scenery of institutional computer-supported learning. Therefore, in particular when the aim is to analyse how particular pedagogies are received and evaluated by the students, it is necessary to attend to a wider range of data.

Moving from the textual analysis towards a wider participant perspective, chapter 5.2 brought up reader perspectives to the resources of meaning-making in computer-supported learning. Chapter 5.2.1 made a claim that researching the quality of computer-supported learning from a theory-based perspective is plausible, if the aim is simply to provide an assessment of the product the students have produced. However, even the seemingly high quality computer-supported discussions do not provide us with a full picture of how the students interpret the process. As was shown, the student perspective might differ radically from the researchers' perspective. Where the researcher sees quality might for the student represent a failed attempt to work efficiently. Similar observations from an ecological-semiotic perspective have been made by Van Lier 2002, 148) who points out that the quality of student experience and the product cannot be equalled: "There is more to educational experience than scores and objectives".

Further evidence for the observation that readers use text to make meaning (Linnakylä & Takala 1990, Takala 1986), in particular when they act from an active and assertive reader position (Wallace 1992, Widdowson 1984), was provided by an analysis of a thread from a reader perspective. Chapter 5.2.2 presented an analysis of a thread, which as text seemed rather neutral, but still invited passionate interpretations by a reader. The analysis of the exchange on the other hand showed that the text provided some grounds for the dissatisfaction expressed by the reader. On the other, on the basis of the textual analysis it would have been possible to conclude that the goals set by the student who initiated the discussion, where sufficiently meet by the other participants. The analysis shows, that if we are interested in catching the participant perspective to these activities, valuable observations might be missed if we restrict the analysis of computer-supported learning on the jointly produced textual product (i.e. the threaded sequences of computer-supported interaction) alone. A wider range of data is needed if we intend to reach aspects of the situated meaning-making (Garfinkel 1967, Gergen 1973, Potter & Wetherell 1987) the participants are involved in. This observation also suggests that participants of computer-supported interaction do not restrict their meaning-making to the resources offered by the immediate context provided by the web-discussion, but that the context they draw from is wider. It would also point towards the importance of the multimodal perspective to meaning-making (Kress & Van Leeuwen 2001, Kress 2003, Lemke 2002). Analysis of a single mode (i.e. the text) does not seem to provide a rich enough interpretation of the meaning made.

The sequential analysis of how a thread develops has also proven to be problematic, especially when dealing with asynchronous computer-supported communication. Some participants – in our data the teachers and researchers mainly – read the threaded sequences messages by message, interpreting them as they unfold in time. Chapter 5.2.3, however, showed that a single thread allows several different ways of reading. Furthermore, the analysis of actual reading behaviour of the participants made it clear that readers indeed approach the threads in several different ways. The behaviour of the participants seems to suggest that readers may also treat extended computer-supported

discussion threads as collections of single messages or shorter sequences. Readers do not necessarily treat the sequences as unified discussion threads. Such multidimensional sequentiality (see chapter 2.2.3.2) has also been identified by other research of computer-mediated communication (Garcia & Jacobs 1999; Herring 1999, 2003a and b). Chapter 5.2 finishes off by showing that in addition to writing, reading is also considered by other readers as active participation. When reader statistics are available for the participants, they check who have accessed messages and make interpretations on the basis of that information. This gives further support for the claim that textual elements, which at first glance seem insignificant, may play an important role as interpretative resources for the readers.

Chapter 5.3 moved from the analysis of the computer-mediated data towards the wider context of activities. It examined the context of computer-supported activities from a participant perspective. The leading idea behind this analysis was, that we must not take for granted what the context of computer-supported learning is, but, instead, try and examine what the context is that the participants create in their talk and actions (Goodwin & Duranti 1992). First it was noted that the participants interpret the computer-supported learning activities through the larger frame of their studies, for example, the whole teacher training programme. For instance, the success of the learning activities is judged against this larger frame and not as an effect of particular pedagogical interventions: learning is situated and participants of learning situation situate it (Hemmings, Randall, Marr, & Francis 2000). Chapter 5.3.2 showed through an analysis of one local situation, how the asynchronous computer-supported activities link in complex ways to other media, modes and contexts in student activities. Similar observations about the interconnection between off-line and on-line worlds have been made by Hine (2000) and Jones (1999). Through this analysis the thesis turned to the question of virtual learning communities (cf. Renninger & Shumar 2002). Analyses of computer-supported discussion in chapters 5.3.3.1 and 5.3.3.3, as well as analysis of on-the-computer interaction in chapter 5.3.3.2, tried to establish that instead of one unified learning community, several communities are continuously constructed in the talk and actions of the participants. This, however, does not mean that virtual communities are not “real” or “do not exist”, as chapter 6.3.3.4 showed. It is possible to find traces of how virtual communities with shared goals emerge in the computer-supported interactions. However, the analysis points out, that the issue of learning community is complex and multifaceted. It can be concluded that computer-supported learning is polycontextual and constitutive of varied social spaces the same way as the classroom is (Gutierrez, Baquedano-López. & Tejeda 1999).

Chapter 5.4. aimed at reaching an activity-oriented multimodal approach (inspired by mediated discourse analysis, e.g. Scollon 2001b) to computer-supported learning. The analyses moved from more textual approach to the more activity-oriented analysis of participation patterns, which was developed and discussed in chapter 5.4. It described in detail a method of analysis where the perspective shifts from macro to micro and back to macro again. First, the whole discussion data from the year 2000 was read through in search of literacy discourses. Second, two discussion threads, which handled the question of literacies were analysed. It was concluded that judging against educational standards and linguistic knowledge, the participants had produced a rich resource for studying the issue of literacies. Chapter 5.4.4 showed, not all participants, however, attend similarly

this discussion, but instead their patterns of participation vary a lot. Some read and write equally much. Some read but do not write. Some choose to work collaboratively. Thus we cannot assume that this potentially rich resource is received similarly by all participants. When the selected six participants where followed through the whole discussion data, we noticed that the participants' activity concentrated in different areas. The simple counting procedure was capable of telling us something about the patterns of participation. When both simple quantitative measures of computer-supported discussion and qualitative analyses of computer-supported discussion are applied at the same time, a slightly richer perspective to the complex activity is reached. However in order to make interpretations of the participants learning process and the meanings they attach to the activities an analysis of in situ interactions (cf. Raudaskoski 1999), on the computer for example, would be needed.

All in all, it can be concluded that chapter five has been able to show that computer-supported learning and interaction are complex phenomena when looked at from a participant perspective. The resources for meaning-making are many and the structure of computer-supported discourse is multidimensional. The settings of computer-supported learning are polycontextual: the participants continuously create new communities and goals in their talk and actions. The participation patterns that different participants follow are also diverse. This complexity should be taken into account while developing new pedagogies and setting up research projects. The recent discussion of ecology (Kramsch 2002) provides promising points of view for the analysis of computer-supported language learning as it focuses on the relationships between various organisms in their physical environment, a "complex and messy reality". Ecological perspectives come close to ethnography, ethnomethodology and discursive psychology, since these approaches do not take context as given. Its primary requirement is that the context is central, it cannot be reduced, and it cannot be pushed aside or into the background, quite the contrary; the context is the focal field of study (Van Lier 2002, 144). Figure 27 outlines the central results provided by the analyses in chapter six.

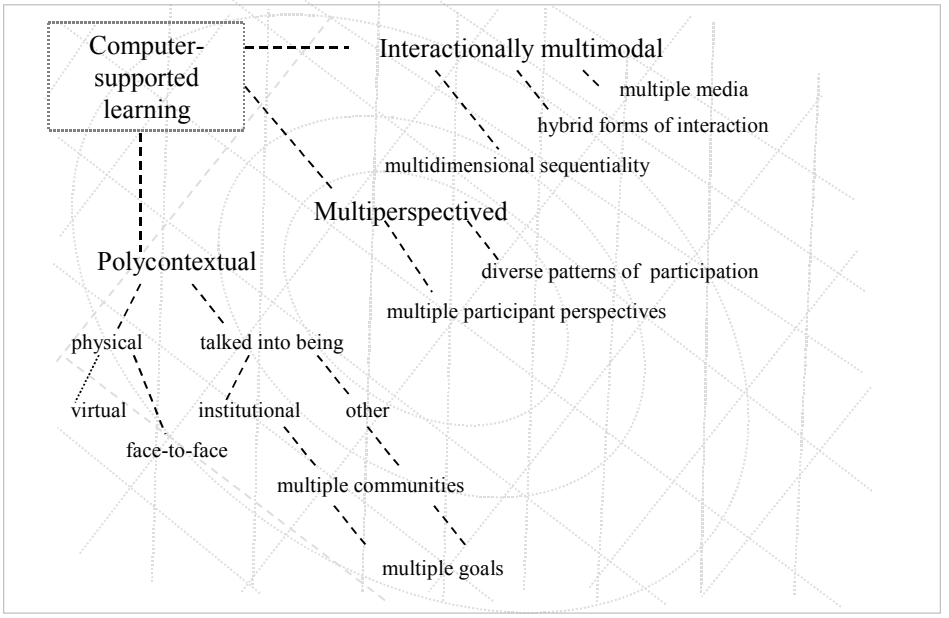


Fig. 27. The multidimensional context of computer-supported learning.

Chapter seven will turn from the general observation of computer-supported interaction and learning in language learning settings to a domain specific discussion of the role of technology in language learning and work. Chapter seven uses both data set one (for a detailed description, see chapter 3.3.2.1) and data set three (for a detailed description, see chapter 3.3.2.3) in an attempt to compare institutional language learning and learning-at-work settings. This is done in order gain distance to the cultures of formal language teaching. It is believed that trough an analysis of language work new broader perspectives to formal language teaching will be reached.

6 The domain of Language learning: tools in solving language related problems

Chapter six takes the general discussion of computer-supported learning and interaction to the domain specific plane. Here the use of technology and collaboration are discussed with a special reference to language learning. The context of this study is broadened towards language work for the following reason: analysing the familiar culture of institutional foreign language education through language work practices might help the researcher to see language learning in a new light. This in turn is believed to provide new perspectives to the pedagogical application of computer-supported language learning in higher education. Chapter seven is based on the work that is also treated in Saarenkunnas and Kuure (2004).

While observing classroom activities in data set one, year 2000, it became clear that students often tended to start explaining or joking whenever they used any other resources than their memory to draw from during the writing process. As we know on the basis of recent discourse studies, accounts and humour of this kind are not treated as unimportant asides. Potter and Wetherell (1987, 74-), for example, have discussed in length the notion of 'account' referring to the discourse that is produced when people have the need to give explanations on their actions. Through accounting, people do not necessarily give factual reports of the 'world' around us but try to make sense of it. Joking also has special functions in talk. Jefferson, Sacks and Schegloff (1987, 152), for example, view laughter as a systematically produced, socially organised activity. As the classroom observations mentioned above seemed to indicate potentially meaningful moments in the study process we decided to take a closer look at the kind of accounting that occurred in the data that were collected during the SHAPE 2000.

Examining the nature of accounting among students in more detail raised a few considerations. Such explanations and comments often seemed to be connected with the talk about the use of various language tools and resources for language work. By the term 'language work' we refer generally to the activity of solving practical language-related problems for the purposes of written and spoken communication. Although the notion of 'tool' has a specific sense in the framework of socio-cultural theory (Vygotsky 1962), it implies here the concrete devices or resources that may be used in such problem solving.

There is an abundance of research arising from socio-cultural and socio-cognitive paradigms that examine myths, beliefs, attitudes, narratives, autobiographies and

identities among others related to language learning and teaching (cf. Leppänen & Kalaja 1997; Leppänen & Kalaja 2002; Dufva, Lähteenmäki & Isoherranen 1996 as for Finnish language learners). These approaches suggest that such talk is meaningful from the point of view of language learning and should, thus, be systematically utilized as a resource in the language curriculum. A further resource in developing interpretative research approaches and teaching practices is provided by the recent theories of learning and expertise . They have extended from the individual to entire situated problem-solving networks. Such an interest requires a look beyond the practices within the institutional context of learning into all the domains where language-related issues are negotiated between people, e.g. the surrounding working-life.

This chapter will reconsider the issues and problems above through the following steps. Firstly, some theoretical points will be discussed including the notions of expertise, language expertise and language work. Secondly, the theme will be examined through student accounts produced during a web-supported language learning process. Thirdly, the student account data will lead the study towards the perspective of language work in working life as displayed through an online interview of language professionals. Finally, the results will be re-examined in the light of theory and consequences weighed in terms of the language-learning curriculum in relation to classroom approaches and teacher education.

6.1 Language learning from a learning theoretical perspective

Socio-cultural and socio-cognitive approaches into language learning have acknowledged the importance of both individual cognition and social interaction in its wider context (e.g. Lantolf 2000; Kohonen, Jaatinen, Kaikkonen & Lehtovaara 2001; VanLier 1996; Resnick, Levine & Teasley 1991; Resnick 1989; Salomon 1993; Lave & Wenger 1991; Rogoff, 1990; Alanen 2000). These theories stress that most knowledge is an interpretation of personal experiences and social in nature. Kohonen (2001, 11-, 50) discusses the perspective of experiental foreign language education in terms of a major paradigm shift from transmissive towards transformative learning. He points out that the role of the culture of the learning institution and society is an essential underlying element in language education. Learning is, in other words, a holistic process of relating to the world. Pavlenko and Lantolf (2000, 155) see language learning as a struggle for participation. For educators, these considerations pose a particular challenge. This is seen in the development of pedagogic approaches in terms of how communicative competence is viewed, for example (cf. Kohonen 2001, 29): While the focus was earlier on the individual's knowledge and skills in communicative situations, the intercultural learning approach puts emphasis on the learner's personal and social abilities such as ambiguity tolerance and respect for diversity.

Recent learning-theoretical and pedagogic considerations, indeed, highlight concepts such as 'communities of practice', 'apprenticeship' and 'expertise' in designing environments that would be beneficial for learning complex problem-solving (Lave & Wenger 1991, Wenger 1998, Eteläpelto & Tynjälä 1999). Lave and Wenger (1991) demonstrated how learning can be viewed as a process of participation in communities of

practice. Such participation is first legitimately peripheral, working its way to the more central positions. Novices learn, first in legitimately peripheral positions, through collaborating as apprentices with experts, in real contexts and authentic learning tasks. Gradually, their abilities to perform the activities grow and they move towards more central positions, i.e. towards expertise.

What is regarded as 'expertise' is an interesting question as such. Asanti, Lehtinen and Palonen (2002, 88) point out that the world, as well as the skills and knowledge it requires, have thoroughly changed and are still changing in a way that is difficult to anticipate before the current generations in school move to the working-life. According to a recent OECD report, produced within the multidisciplinary DeSeCo program (Rychen & Salganik 2003), the so called key competencies for citizens include interacting in socially heterogeneous groups, acting autonomously, and using tools interactively. Competence refers to the ability to meet demands of a high degree of complexity, and implies a complex action system. Thus, it encompasses more than knowledge or skills. The report mentions 'socio-cultural tools' such as language, information, and knowledge, and 'physical tools' such as computers. According to the report, the phrase 'using tools interactively' does not simply refer to having the appropriate technical skills (e.g., reading a text, using a computer mouse, etc.). Rather, it implies a familiarity with the tool itself and an understanding of how it changes the way one can interact with the world. Moreover, the tool is used to accomplish broader goals. Seen in this way, tools also shape our world and actions. As Van Lier (2000, 246) puts it, "Learning is not a holus-bolus or piecemeal migration of meanings to the inside of the learner's head, but rather the development of increasingly effective ways of dealing with the world and its meanings."

As the discussion above indicates, the notion of expertise has been changing. Expertise is no more regarded as a characteristic of an individual. Rather, it is increasingly seen as the ability of networks and organisations to solve constantly changing problems. Launis and Engeström (1999) suggest that highlighting the collaborative skills in such a way (e.g. the OECD report) may be reflected as unrealistic requirements for an individual as for his/her education or professional development. It is, indeed, important to consider the language curriculum from this angle as well: How are the goals formulated? What is considered a core and what a fringe area of learning? What kind of role could language technology have in these processes?

Tynjälä (1999) points out that the traditional practices of education, which focus on presenting, repeating and controlling knowledge, seem to hinder rather than promote such expertise that is embodied through progressive problem-solving, continuous learning and surpassing oneself. Modes of traditional university pedagogy, for example, have been criticized for producing inert knowledge which is useful for certain purposes such as exams, but which cannot be used in solving real-life problems at work (cf. VanLier 2002). An expert defines and redefines his/her tasks and actions. When a problem is solved, this will not lead to routinization, but new problem setting on a higher level. An expert working method is, thus, a gradually developing, progressive problem-solving process. If we consider apprenticeship in language work as one important element in language learning, we should try to learn from the practices of language professionals in solving language-related problems. (Tynjälä 1999)

6.2 Research approach

According to Kohonen et al. (2001, 1), it would be worthwhile to look into different disciplines that are relevant to foreign language education in the changing world as an important step to broaden our professional knowledge base and understanding. We have attempted to distance ourselves from the classroom by looking into a working-life context. The research approach of the present study, thus, combines different perspectives and data. First (chapter 6.3), language learning is approached through the discourses of language learners basing the arguments on ethnographic participant observation data and video material from data set one, year 2000. This approach aims at investigating the language-learning context that the learners participate in producing. The approach draws on the social constructionist research tradition (e.g. Potter & Wetherell 1987, Berger & Luckman 1967) according to which reality is socially constructed (see also chapter 3.1. in this thesis). This entails among other things that discourses are not individual. Instead, they are created through language.

The second study (chapter 6.4) widens the scope of analysis from formal language learning situations to settings in which language related problems are solved on a daily basis. The data collection was carried out through an online-interview of 18 professionals who use foreign languages in their work frequently. The approach to this data comes close to qualitative content analysis (cf. Silverman 1993, 9), as no quantification in terms of 'researchers' categories' was applied. It aims at investigating the language tool related practices of language work. We will provide below more detailed descriptions of the research approach together with the analyses of the two studies.

6.3 Tools and resources on a university language course

Data analysed in chapter 6.3 comes from SHAPE 2002 (see chapter 3.1 for a detailed description of the pedagogic activities and participants). This chapter makes use of the participant observer notes and videotaped classroom situations. During the course the participant observers paid attention to how the students often started providing explanations or jokes in certain phases during the writing process. Both the participant observation notes and videotaped classroom situations showed that this accounting occurred in relation to technological and manual tools as well as peer or expert help. As was brought up in the introduction, accounts and humour of this kind are meaningful for people in making sense of the world (e.g. Potter & Wetherell 1987, 74-, Jefferson et al. 1987, 152). The students in question, for example, construct through their talk which actions and practices count as language learning activities and which do not. These discourses take part in constructing the reality of language learning, and play a role in how the attempts to transform language-learning practices are perceived.

The first example deals with a traditional resource, the dictionary. During a classroom session, while the students were writing messages to the shared learning platform, one student reached for his bag and pulled up a dictionary. When he noticed that the participant observers were watching he put the book quickly back into the bag. Only after he had been "granted permission" did he reach for the book again and checked whatever

he intended to check in the first place. The kind of accounting described in the participant observation logs could also be seen in the videoed data, as evidenced by excerpt one.

Example 41. Pentti and Paavo on the computer, in the language classroom.

Pentti: have you written this in the English language hah hah

Paavo: heh

Pentti: so you have a dictionary at home heh

Paavo: we have one of those scanner translators hah (Year 2000, data A1)

Here Pentti asks Paavo jokingly, whether the language of his writing was truly English. Paavo laughs. Pentti continues, laughing still, and asks Paavo if he has a dictionary at home. Paavo adds on the joke by claiming that he has a scanner translator at home. Thus, here, as well as in the situation described in the participant observation diaries, the use of dictionaries was joked about and explained, even if no explanations were overtly required by the teacher. Obviously, we as language professionals were rather surprised since dictionaries are something that we would all use without hesitation in work settings.

The use of peer or expert assistance (e.g. in assessing suitable wording for a particular purpose) was also accounted for. Our second data excerpt provides an example of such activity through the short exchange below in which two students and a participant observer talk together. This discussion occurs when the two students review together a piece of text, which Paavo, a student in the course, had written to be published in the shared learning platform.

Example 42. Pentti and Paavo on the computer, in the language classroom.

Pentti: hm uhu yes ((refers to the text in front of him)) surely evokes some questions

Paavo: yeah and you wouldn't think that this was written by a Finn

Pentti: no heh how long did it take for Mrs to write this heh heh

Paavo: tut tut tut heh

Pentti: heh.

Paavo: dangerous things to reveal especially when the mike is to close

Martta: is your Mrs an English student heh heh

Paavo: no

Martta: heh (Year 2000, data A1)

Pentti suggests that Paavo, an active participant in the web-discussion, may have used his girlfriend as a resource person in the writing process and laughs. Paavo says that these are dangerous things to reveal, especially as the microphone is located near by. Martta, a member of the staff and a participant observer, asks if the girl friend mentioned in this discussion is a student in the English department. Paavo says no and Martta laughs. The joking manner of this discussion seems to suggest that asking for help is not advisable behaviour in connection with language learning. However, as our second data set, the

online interview of language professionals clearly shows, having a network of language experts is a valuable resource in language work contexts. In addition the way the use of electronic resources (e.g. spell and grammar checkers) were accounted for and joked about, talked for the fact that these were also not seen as part of natural language learning activity.

The fact that the accounting among students often seemed to be connected with their talk about the use of various language tools and resources raises a few considerations. We know that learners participate in producing the context for language learning. They, for example, construct which actions count as valid language learning activities and which do not. These discourses have an effect on how the reality of language learning as well as the attempts to transform language-learning practices are perceived and received. Our data analysis shows that while language professionals indeed use a varied collection of tools, language learners seem to construct their use as problematic. One possible explanation for this is that students still to some extent consider memorized linguistic details as proper proof of language competence: a successful foreign language user copes without assistance. It might also be possible, especially in relation to asking for peer or expert help in writing tasks, that the use of tools and resources might be associated with cheating or copying. However, in the context of language work the use of tools as well as peer or expert assistance are portrayed as an essential element of successful accomplishment of language related tasks as will be shown in the following discussion of interview data by people whose work involves use of foreign languages.

6.4 Tools and resources in the workplace

The second data set was collected through an online interview. This was complemented by observations of actual language work (What is it that the language professionals do?) as displayed through email discussions between language professionals over a period of several years. The eighteen interviewees represent a wide variety of different professions, all of which require regular use of foreign languages. Some of the respondents simply use foreign languages as tools for accomplishing various tasks (e.g. teaching, researching, writing and reporting) at their institutions (e.g. universities and polytechnics), whereas some of them work as professional writers, technical documenters, translators and project managers in private enterprises.

As mentioned above, the data is approached through what could be described as qualitative content analysis (cf. Silverman 1993, 9). The aim of the analysis was, first of all, to sketch a picture of what language work is like as described by the participants. A shift in perspective from the more familiar culture of formal language education to informal arenas of language learning provided viewpoints, which otherwise would have been hard to reach: As we are members of the current language teaching culture it might be difficult to see beyond the obvious. Therefore, an analysis of language work helps us to distance ourselves from the familiar frames and discourses of language pedagogy in institutional contexts. (Cf. Alasuutari 1993, 179) In other words, the analysis of language work, which we will turn to next, functions here as a kind of heuristic tool for developing new approaches to language learning.

The interview questions focused on two main themes. First of all, we were interested in finding out, what kind of language work these people do. Secondly, we wanted to find out which resources they use in solving language problems. To clarify what we meant by the concept of 'tool', we provided a list of examples for the informants. The list included dictionaries, glossaries, publications, spell-checkers, translation engines, corpora, concordances, databases and search engines. Various forms of social resources were represented by examples such as discussions forums, networks and other support by colleagues. The interviewees were also asked to specify when and why they use these tools and resources. The questions prompted rich descriptions of the use of tools in language work. The following figure presents a rough classification and gives examples of the tools mentioned. This division may seem self-evident, but, nevertheless, it enables further considerations in the context of language teaching.

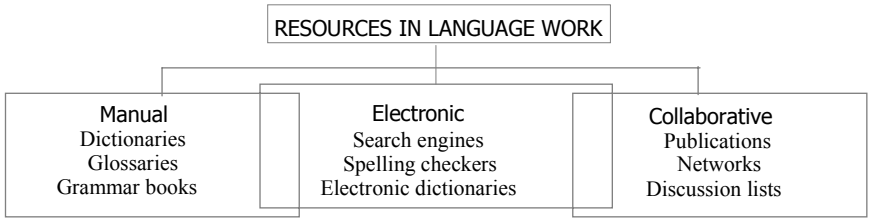


Fig. 28. Resources in language work.

The results of the interview verified that especially professional foreign language users (e.g. technical writers) make use of a wide variety of language tools in their work including personal and private networks. What is essential is that most of these resources are used simultaneously, e.g. one to check the information provided by the other. The three main categories of resources could be characterized as manual, electronic and collaborative. By electronic tools we refer to such relatively novel resources as Internet search engines, spell-checkers and electronic dictionaries. The category of manual tools (e.g. dictionaries, glossaries and grammars) partly overlaps with that of electronic tools in terms of function, but provides a variety of other affordances for use during the actual working process. Finally, collaborative tools include resources, which are collaboratively produced by a community of practice. Academic publications, for example, represent a genre, which, on the one hand, functions as a normative model for the writer, but on the other hand, itself arises from the practices of the academic community. Journals among others provide an abundant, collaboratively produced resource for a particular kind of language work. Discussion lists are also an increasingly familiar resource in performing various tasks.

The resources mentioned by the informants were, first of all, used for the obvious purpose of checking meanings and usage of words, as even novice language learners would do. What is not so common in language learning contexts is the simultaneous use of several resources. Experts do not rely on one source alone, but, instead, make use of a plentiful supply of both manual and electronic resources. In addition to traditional general-purpose resource books (e.g. thesauruses, phrase dictionaries, encyclopaedias and

grammars) the long list includes more novel, electronic tools: electronic dictionaries (e.g. MOT, Onelook.com and yourdictionary.com), search engines (e.g. Google), mobile services (e.g. through SMS) and web-based wordlists. Dictionaries and glossaries of specialized terminology (e.g. medicine, linguistics, wine, food or company-specific terminology) as well as manuals of style (e.g. for technical publications) are also brought up. Practically everybody uses a spell-check program while writing. However, especially expert language professionals use multiple resources creatively to crosscheck alternatives for adjustments.

An expert foreign language user thus knows that words and expressions are to be examined in their context. The Internet represents for language professionals a kind of "naturally occurring corpus". Search engines are used to access this vast information database to find examples on how a particular term has been applied in different contexts, for example, as the following extracts illustrate.

Example 43. Online interview data.

> "I often write a couple of words as a search term and compare the results to see if my ideas have any correspondence. Even though the Internet is full of bad language, I manage to rule those pages out by relying only on authoritative sources." (Pirkko, technical documentation) (Data set three)

Example 44. Online interview data.

> "When I translate I look for similar texts to compare" (Taina, project co-ordinator) (Data set three)

In practice, this means that in translation and writing tasks language professionals look for texts, which would fall close to the one under translation as for their field and contents. These texts are then analysed in order to find out which expressions and structure seem to be typical of this particular 'text type' or topic. People whose work is not strictly language oriented, but who use foreign languages regularly, make use of these tools as well. One informant, for example, described that while composing a report on the basis of a statistical analysis, for example, she would search for articles in the field to review possible expressions to describe certain procedures. She also commented that she regularly takes notice of interesting ways to report research and to structure articles in order to apply this in her own writing.

As expertise cannot be built relying on individual efforts alone the use of collaborative resources is an important tool in solving language problems. This is clearly reflected through the interviews. Further evidence for the importance of collaboration is provided by the interview accounts: In situations where collaboration is not available, its absence is noticed. In terms of the availability and use of collaborative resources, there may be great variety as some workplaces support co-operation more readily than others. The following data excerpts illustrate forms of collaboration.

Example 45. Online interview data.

> "We are developing a web-based course in English Together with colleagues. The field is new to me. I get a lot of help from the material they have written." (Merja, teacher) (Data set three)

Example 46. Online interview data.

> " We produce tremendous amounts of documents in fast speed. Therefore "peer review" has proven to be good practice". (Taina, project-co-ordinator) (Data set three) (Data set three)

Example 47. Online interview data.

> "(Networks and colleagues) are the most important resource for me. In other words I phone colleagues, knock on their doors, and ask." (Väinö, researcher) (Data set three)

Collaboration reaches over institutional boundaries particularly when electronic tools are put to use. Among the language professionals, the everyday collaborative resource included also other kinds of networking in the professional community. Many of the informants in this study are members in a voluntary community of practice among others, keeping contact through a simple email list evolved on a course they all participated almost ten years ago. The list becomes activated regularly by members who have something to share or a problem to be solved. Often these problems involve specific culturally bound information, which would be very difficult to reach on one's own without the support of various networks.

Example 48. Online interview data.

> "I worked on a film translation (English to Finnish) with a group of 20 students. We needed help in translating the phrase "he goes Eddie Vedder", so I presented the question to our discussion list. Very quickly one of the members told us that Eddie Vedder was a popular rock-musician whose habitus was far from smart. This was essential information because "dressing smart" was used as an opposite for the expression in the text we were translating. "(Data set three)

The list brings the personal experiences and life-worlds of its members into a shared resource. As committed members, the participants also extend the process beyond the group. They discuss the queries posed to the group in intertwining networks and apply various tools in solving the problems. Solutions are usually found quickly.

As we have seen, solving language problems displays a particular perspective in relation to what traditionally has been seen as communicative competence. It seems that developing language expertise is a matter of exploring entire work processes: Understanding the field or your work helps to solve language problems, which in turn helps to develop language abilities.

Example 49. Online interview data.

> "I have to try to follow all kinds of things (publications) that have something to do with my work, in order to clarify what this work is all about and which concepts relate to it."(Sirkka, technical writer) (Data set three)

Example 50. Online interview data.

> "Often language issues deal more with the content of my work than lexis or grammar problems" (Pentti, staff development) (Data set three)

These rather simple interviews provide already a rich view into the multiplicity of language work in professional settings. The following figure summarises the language work portrayed by the interviewees in their accounts.

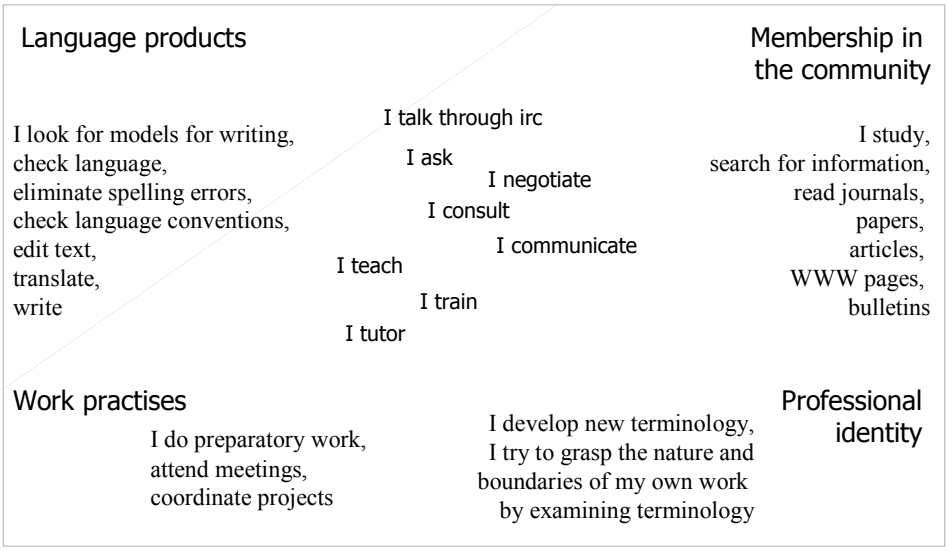


Fig. 29. Language work as described by the interviewees.

The figure shows that the close work with different kinds of "language products" presents just a tip of the iceberg of language work. In addition to the familiar editing, checking, translating and writing, language work involves also studying, examining and developing work practices. Through such activities, language professionals may strengthen their awareness of the working methods and conventions of the community in question. Language work thus involves negotiation of memberships in the communities of practice and familiarising oneself with the work practices of these communities. This is the basis of the strengthening professional identity.

Situated and distributed perspectives to learning give further support to the above suggestions. According to Barab and Kirshner (2001, 5) knowledge is a "process distributed across the knower, the environment in which knowing occurs, and the activity in which the learner is participating". In other words, it would make sense to talk about 'knowing' instead of 'knowledge'. Furthermore, as O'Connor (2001, 285) points out, knowledge cannot be detached from the context in which it occurs as contexts do not pre-exist but learners 'contextualize' actively and flexibly. We conclude that in language learning the perspective of work practises and tools is fundamental.

6.5 Discussion

It seems that formal language education needs at least to consider how to take into account the reality of language work, where multiple resources are utilised creatively for

solving complex and irregular problems. This is obviously not an entirely new viewpoint to language teaching. Nevertheless, we can ask ourselves if the present day language curriculum is still biased in one way or another: Do we accentuate one area of language work over others, which, however, might be equally essential in real-life working contexts. Firth (1995) among others showed how business communication differs in many important ways from what textbooks may imply even today. Business letters, for example, are often prepared in multiple formal and informal spoken and written encounters. Different communicative modes, thus, permeate each other. Therefore, when novice language learners are being apprenticed into the working culture, it is essential to familiarize them with the whole process connected with textual products.

Language teaching carries with it its institutional constraints and affordances. This context, as we tried to show with our examples of student talk around language teaching and learning (study one), is created and recreated anew when the participants jointly negotiate the purpose and appropriate activities in educational situations. As Hemmings et al. (2000) have also shown, students contextualize learning situations relying on their previous experiences if there is no active teacher intervention. It would thus seem that the implementation of new task types in institutional learning settings is not a trigger powerful enough to change learning and teaching practices. What we need is a kind of 'meta-work' approach. This entails that the students and teachers together challenge their conceptions of language learning: What constitutes language learning? Where, when and how do we learn languages? Which actions are acceptable and relevant in the process? Manual, electronic and collaborative tools are part of everyday reality of language work and, therefore, relevant in language learning contexts as well. It seems that a systematic approach, which would consider the use of language tools as a legitimate element in solving language related problems needs to be developed.

7 Conclusions

The aim of the current thesis was to study computer-supported interaction and learning from the participant perspective. It was assumed that an understanding of "what is going on in computer-supported learning projects" or "how the participants construct computer-supported learning" would help us to conceive the pedagogical interventions we make in a new light. This in turn, would help us to draw pedagogical conclusions. What must be emphasized here, is the marching order: application is on the agenda as the second item while gaining an understanding of "what is going on" in computer-supported learning activities comes first.

The research approach applied in this thesis particularly tried to avoid taken-for-granted explanations of the possible benefits of computer technologies on learning. This research also led to methodological conclusions, as one aim was to develop a qualitative research approach, which would take into account the wider context of computer-supported learning. The analysis moved gradually from a general discussion of learning and interaction in computer-supported environments to a domain-specific discussion of language learning and work. From the very beginning of this work it was evident that a deeper understanding of the nature of computer-supported learning and interaction needs to be acquired, before the domain specific questions can be discussed in a satisfying manner. The specific research questions asked in search of the above described aim were:

1. What kind of computer-supported interaction do the participants construct? What are the resources they draw upon?
2. What is the context of computer-supported learning as produced by the participants? Which resources do they draw from while making interpretations on the activities?
3. How do people participate in the computer-supported learning activities? What is considered participation? What kind of paths of participation do they follow?
4. How do technology and computer-supported learning relate to language learning? How are these used in language work?
5. What would a research approach that aims at reaching the sense of the activities from the participant perspective have to take into account?

The methdology applied in this thesis combined several methods. As was argued, the context that the participants produce for computer-supported learning projects reaches

wider than the textual interaction in the web-based learning platform. This leads to several conclusions. The meanings the participants make in computer-supported interactions cannot be studied by relying on data retrieved from the textual interactions alone. Therefore, this thesis applied various data collection methods: both written (web-based discussion data, student instructions, questionnaires and online interviews) and spoken (classroom situations, interactions on the computer, videoed desktop and ISDN videoconferences) interactions were utilised. In addition, computer-generated statistics were used in the simple counting procedures applied to support the investigation of participant activity. The analysis also tried to take into account the multimodal nature of these data. In addition to studying the textual traces of participant activity visual aspects (in particular, the structuring of the computer-mediated discussions and computer-generated access statistics, which were also available for the participants) were considered to some extent. In analysing such multifaceted data, a combination of different research approaches was essential as the materiality of written and spoken records of student activity differs to a great extent. The applied approach emphasises meaning as situated and locally constructed since in the textual analysis the reader perspective is also brought to the fore. Multimethod approach support the trustworthiness of the research as well, since the analysed phenomena are treated from many different angles.

Application of such a multimethod approach created both benefits and challenges for the study. As already indicated above, when we aim at reaching the participant perspective(s) a narrow data set is not enough. A large data set enables the researcher to challenge and check her initial interpretations, as well as the theoretical accounts of prior study, against several perspectives. A large data set is thus an investment in the trustworthiness of the analysis. Furthermore, computer-supported learning is hardly ever restricted to online activities, but instead is part of the larger context in many ways. Therefore a wide data is a necessity if we aim at drawing pedagogical conclusions on the basis of the analysis. However, analysing such a vast amount of data to the smallest detail is impossible: the data has to be narrowed down in several intensive sessions. In connection with this particular study, for example, it was possible to report only a fraction of the data. Many perspectives remain yet to be discussed. Furthermore, such a data-intensive approach as applied in this thesis requires rather a large group of researchers and teachers in the documentation phase. Therefore such data collection procedures are not plausible tools as such for solitary teachers to apply. However, in a sense this could also be seen as one advantage of the approach: such an approach forces the “reflective practitioners” to invest in developing more collaborative teaching practices. Analysing the data demands also quite a lot from the researcher, since it involves dealing with both written, spoken and visual records of the activities.

As the amount of data was large, the current thesis was able to reach some of the richness and diversity of action in connection with computer-supported learning acitivities. However, at the same time compromises on the level of detail in analysis were made. This was also partly due to the intentional aim of tackling the whole “messy reality” of computer-supported learning and partly due to some methodological choices made at the beginning of the research project. In the light of the current experience it seems that in the future it would be beneficial to apply Mediated Discourse Analysis (Scollon 2001b; or Nexus Analysis, a further development of MDA in Scollon & Scollon

2004) in studying such contexts and issues to its fullest extent. MDA provides many useful tools for pinning down just those moments of action and interaction, which need to be analysed in the smallest detail. It provides tools for narrowing down key mediated actions relevant to the studied social isue, mapping the significant cycles of discourses and the crucial social actors. At the same time MDA provides an apparatus for researching the larger context of activity.

The results of the analysis point in the following directions. Analysing computer-supported interaction according to a predefined classification scheme does not provide a broad enough picture when we aim at understanding the meaning making process from a participant perspective. Narrow classification schemes would only provide a partial picture of the process, as what the collaboratively produced text to a large extent provides is just resources for meaning making. These texts do not speak about the "meanings made" as such, as they provide only a limited amount of information of the situated meaning making. Therefore, direct conclusions about the quality of the learning process, for example, cannot be made on the basis of a single source of data. For example, the students can interpret the quality of the studying process from significantly different perspectives than their teachers.

The resources that the participants use for meaning making reach beyond the active and conscious attempts to make connections to others by writing messages. In addition to the messages, seemingly insignificant, but frequently occurring text (i.e. indicators of role and rank attached to user names) and activity in related contexts (e.g. taking the role of the chairperson in a classroom) provide important resources for meaning making. Furthermore, the participants also attend to the computer-generated indicators of message access, which shows that they are interested in and aware of the possible readership of their text. Participants also draw from their previous experiences: the context of formal education gives the participants material for making interpretations about participant roles and their expected behaviour.

The participant perspective also cannot be reached through a sequential analysis of the product - the computer-supported discussions. This is because of the multidimensional nature of computer-supported communication. First of all, the discussion tools in learning platforms allow and invite the participants to approach the discussion threads in different ways. It was shown that the threads could be accessed as single messages, as a dialogue that gradually unfolds in time or as several threaded sequences, which do not follow the temporal order of their production. Secondly, the analysis suggested that the participants mostly seem to approach the discussion threads rather as a collection of single messages or shorter sequences than linear, unified discussion threads. The sequentiality, which is created in the reading process of these resources, is indeed multidimensional. Furthermore, the patterns of participation vary to a considerable extent. Some participants read everything and write less. Some participants write a lot. Some participants concentrate their activity in certain areas and keep away from others. Some write their contributions in collaboration with other students. It must be concluded that the product – the typed words displayed in the threaded sequences on the screen – does not tell very much about the process the participants are involved in. It provides only a partial picture of participant activity let alone a full description of their learning or learning experiences.

The analysis in this thesis shows that the context of computer-supported learning is also a complex phenomenon. The physical context of computer-supported learning in

itself is multidimensional and polycontextual since, as shown in this thesis, it often involves multiple modes and media. The contexts that the participants talk and write into being are manifold, too. These contexts relate to the life-worlds of the participants in numerous ways. The students do not interpret the computer-supported learning projects as separate entities, which would somehow float free from the surrounding social and historical contexts. The institutional context, with its affordances, is clearly present in the sometimes rather contradictory discourse of the students, for example, when they evaluate the learning activities. Furthermore, the communities that the participants talk and write into being are manifold: the "virtual learning community" is clearly there to some extent, but at the same time the students portray memberships of many other communities. Thus, the virtual learning community is not a very well defined entity, but rather one aspect of learning work for some students – and especially the researcher. The goals constructed by these communities in these contexts are also many. Even if the students set rather high quality criteria in their talk for their learning, from the practical perspective of their everyday lives, courses and exams have to be passed. Thus, both "deep learning" and "passing courses" are legitimately and simultaneosly present. Summa summarum, looking from the participant perspective, computer-supported learning can justifiably be described as multidimensional and polycontextual.

In the light of the analysis of multidimensional participation it seems that it is hard, if not impossible, to control the pedagogic activity in computer-supported learning platforms even with heavy scripting. However efficient and organised an image computer-supported learning may have, it still can be approached in numerous ways by the participants, as the analysis in this thesis showed. One solution could, of course, be to try and control the activities more carefully: to give the students clear instructions for the type of participation that is expected of them, well-defined tasks with strict deadlines. Highly structured learning activities might result in neat high-quality study products (e.g. well organised computer-supported discussions full of desired content) and seemingly cohesive and coherent exchanges, the quality of which would be clearly discernable for the teacher. But still, this would not necessarily involve an experience of learning from the student's perspective. In a sense, heavy scripting might give the teacher a false sense of security of a nicely proceeding collaborative learning process: an illusion that the students are working hard in the direction of the goals set by the course. The first data set analysed in this thesis bears traces of this phenomenon.

The problem with relatively loosely structured computer-supported learning activities, as was seen in data-set two, is that the students have to tolerate a fair amount of uncertainty and ambiguity of meaning. In such a case, the teacher needs to work harder to assure the students that they are working in the right direction and find ways to help them to endure the pressure. The teacher herself has to be rather flexible. The ever-evolving process also demands a fair degreee of trust in the process and the participants. However, in a sense such a pedagogic and loosely structured activity gives a more truthful picture of academic work. This could also be seen as desirable, since one important goal of higher education is to apprentice the students into the community of academic practice. In academic work tasks are by their very nature ill-defined and necessitate a fair amount of tolerance for messy and difficult processes. Thus, it seems that on the basis of the analysis carried out in this thesis at least, it is not possible to say whether the multidimensionality and complexity of computer-supported learning should be fought

against by heavier structuring of the activities or not. Both, structuring the activities and letting the process develop more freely have possible positive and less positive effects. It is a matter of choice: some learning goals might benefit from clear structures but at the same time an important aspect of work might be missed altogether if the learning environment is too controlled.

What can be said on the basis of the observations made in this thesis is that listening to the student interpretation of the process – the important participant perspective – should be consciously given space and time in computer-supported learning projects. It would clearly be helpful for teachers to understand the different participation patterns. A practical solution for uncovering the variety of student experience is metalevel discussion: a discussion in which the students are asked what they have observed in the ongoing computer-supported collaboration. As was shown, the students sometimes do not see the quality of the computer-supported collaboration from a similar perspective as the teacher or the researcher. Such discussion would give the teacher opportunity to discuss what it is that constitutes quality from her perspective and to conceptualise the collaboratively studied phenomena anew. Analysing the sometimes contradictory discourses of learning together with students might provide keys to change. However well educated the students are, their epistemic beliefs also seem to require that they analyse their contributions in terms of memorised facts. In practice, it seems to be difficult to acknowledge that finding new questions and new problems is the ultimate goal of learning and research – even more so than finding new solutions and discovering new facts.

As for the research perspective, it seems that there is still room and need for research projects, which would boldly try to tackle the complexity of educational reality. Teaching development projects are not carried out in a vacuum, but they relate to the surrounding context in many complex ways. The conflicting discourses that the students produce about learning in computer-supported contexts and learning in general suggest that implementing a pedagogical change is not a matter of changing isolated courses. Changing the teaching during one university course is not the key to pedagogical revolution, even if it might sow some seeds. It seems to be that the development projects should be directed at an organisational level: instead of working with isolated experiments, whole study programmes, with groups of students and teachers, should be tackled. Furthermore, instant miracles are not available in connection with computer-supported learning, even if it does provide new ways of organising learning and teaching work. Developing such long-established institutions as university education takes time and patience. However, in the future it might be wise to opt for a more comprehensive approach.

Developing language-learning pedagogies is a challenging task, because it, too, involves conflicting discourses and goals. On one hand, language learning is viewed from the perspective of acquiring prescriptive rules for correct language use. This is natural, since language teaching necessarily involves talk about grammar rules, correct spelling and pronunciation, as that is one familiar way to describe how languages work. The students themselves seem to assess their language abilities by linguistic correctness and the size of memorized vocabulary. On the other hand, we have also evidenced the paradigms of communicative language teaching, which emphasise, for example, the importance of using the language and getting messages across, no matter how “right” or

"wrong" the linguistic structures might be. These two discourses are often realised in heated debates about whether the language abilities of the students have grown worse or better. It seems that in language teaching we still have not really understood what the contextual nature of language means. Instead of debating whether linguistic correctness or communicative skills should be the ultimate goal of foreign language teaching, we should build new pedagogies on the understanding that different social contexts require different kinds of language use. On some occasions incorrect spelling might have undesirable results, for example in connection with highly formalised text types, such as job applications. Some settings do not set such high standards at all, for example a friendly chat between schoolmates. We should direct the students' attention to the context and analyse what kind of consequences certain kinds of language use might have in these contexts.

On the basis of the analysis made on language learning situations it seems that formal language learning contexts trigger certain kinds of discourses. As was noted above, these discourses seem mostly to suggest that language learning is an individual cognitive effort, and uses of collaborative and electronic resources are likely to be sanctioned. This was a striking observation, since the teachers' conception of appropriate language learning pedagogy did not involve such a perception of the use of tools as undesirable. Quite the contrary, flexible use of different kinds of aids was considered as one of the most important goals of language learning in academic settings. According to this view, language is not a matter of knowing alone, but also a matter of being able to solve language related problems. Sometimes this process takes a considerable amount of time. And generally it is inseparable from other kinds of expertise. For example, being able to write a scientific text, such as the thesis at hand, is not a matter of mastering language skills alone, but it is also a matter of understanding a highly complex work process. Language is not separable from the work process. We do not think first and report our thoughts after. Language itself is one of the major tools through and with the aid of which we learn and work.

Higher education contexts have their special features when it comes to learning languages, since language is one of the major tools with which the work is done, and the mastery of which is an important indicator of expertise. Studying at the university involves reading articles and books. The texts that the students meet in their studies are mostly end products of years of work and learning. These texts, however, do not make this work process visible. They do not show, for example, how clumsy the author's first attempts to write about this particular topic might have been. Neither do they reveal the tremendous amount of other related texts, and talk for that matter, that have been produced before and during the research process, where the "skill" to write about this particular topic was also at least partly developed. The amount of distributed and collaborative expertise invested in the texts in the form of peer-reviews, research collaboration and language checks, does not show either. The norms for academic writing are, however, built on an analysis of these finalised polished products: this is what we strive towards in language courses at the university. This is not the reality of academic text work, however: writing for academic purposes is much messier and less organised than language pedagogies which are based solely on a context-independent understanding of language seem to suggest. Thus, it would seem, that in order to really make a difference in formal language teaching contexts, we should take a look at how language

work is done in other contexts and analyse these situations together with the students. What we should assess in this case, in addition to linguistic correctness, is how efficient the student is in tackling problem solving processes, which would include the use of various kinds of resources. This is one possible direction that the research of computer-supported language learning could take.

This is not an easy route, however, because of the contextual nature of learning. Formal language teaching carries with it its institutional constraints and affordances. This context is created and recreated anew when the participants jointly negotiate the purpose and appropriate activities in educational situations. Students contextualise learning situations relying on their previous experiences if there is no active teacher intervention. It would thus seem that the implementation of new task types in institutional learning settings is not a trigger powerful enough to change learning and teaching practices. What we need is an approach, which would enable us to study jointly with the students the phenomena related to language learning on a metalevel.

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Appendix 1 The opening page of the year 1998 case-conference

Finland_Cases

(Click on the university logos above to visit their web site.)

Welcome to the Finland Conference! It has been created for you to exchange questions, answers, and ideas with other students, faculty and teachers during your field experience. You can also view the discussions for Cultural Immersion, Indiana-US and the International Café.

Some of the topics listed below are RESTRICTED to either students, faculty or teachers. Other topics are PUBLIC and anyone may participate. But --- ---, --- ---, and --- --- serve as "fair witnesses" to this conference, and they can read ALL messages.

Note: A practice topic has been created to help you become familiar with this online system and project.

Conference Topics:

Number	New	Topic Name
200	27	Alternative Teaching Methodologies
201	36	Assessment and Evaluation
202	24	Big Global Problems
203	146	Classroom Management and Discipline
204	18	Co-operative Learning
205	23	Foreign Language Teaching and Learning
206	12	Culture in the Classroom
207	0	Intercultural Communication
208	28	Learner-Centered Instruction and Constructivism
210	12	Local Problems
212	35	Motivation
214	9	Multicultural Education - Ethnic Minorities
216	13	My Own Topics (use as a last resort)
219	23	Teaching Methods
220	55	Technology (Computers and Learning)

[COWSearch]: Search This Conference

Instructor: **Dr. M** (email: xxx@xxx)

Help | HotList | Profile | HotList Editor

Appendix 2 Original Finnish versions of the translated data

Example 9. Student H in the peer interview session.

H: Se yksi asia mikä mua kiinnosti ja mistä sitten tein oman casen ei saanut semmosta vastakaikua, kommentointia, että siitä ois syntynyt haluamaani aitoa keskustelua.

H: musta tuntuu että monet kommenteista oli enemmänkin "musta tuntuu"-juttuja

H: Kyllähän tässäkin tuli välillä tuhrattua aikaa siihen, että yritti ohjata Indianan kommentoijjia sanomaan enemmän mun casesta

Example 18. From observer P's participant observation log.

”K. on kerännyt mielenkiintoista kamaa opiskelijoiden keskustelukokemuksista, joita ei me ainakaan itse olis missään kuvitelmissammekaan tajunneet. Mm. yksi opiskelija oli itku kurkussa kommentista, jossa häntä kehoitettiin lukemaan OTE- lehteä ja Tempusta. Oli niin loukkaantunut, että päätti, ettei enää kirjoita mitään.... Mutta kyllä se homma sitten lähti rullaamaan, kun pahimmat höyryt oli saatu ulos ja korvaavuudet sovittua. ” (Participant observation log 16. 10 16:44, Observer P)

Example 20. Jaakko talks while working on the computer.

Jaakko: kukkaan ei oo vissiin kattonnu ((clicks on the reader statistics)) se tullee aina jos joku on kattonnu se tullee tämä tähän

Example 21. Jaakko and Joni talk while working on the computer

Jaakko: katoppa ((clicks on the message)) () se tämä minä kirjoitin vastauksen tuohon ()

Joni: se näkkyy tuolla () tuolla alhaalla () tässähän näkyy ne vastaukset eli ne tullee väkäsiin näkyviin () eikö nii () elikkä tämä on kommentti tohon () ja tuo tohon ja tuo tohon

Jaakko: ((klikkaa "message readers" valikkoa))

Joni: () ja jos joku kommentoi suoraan tuohon niin se tullee tänne sarkaimeen

Jaakko: nii ei kun mää tarkotin tätä näin että ((naputtaa sormella ruutua)) () että onko täällä kukkaan käyny edes kattomassa

Example 22. Students talk in a peer interview session.

B: ---omitted text--- no niin, menkää kirjastoon. Kun ei me siinä puolessa tunnissa ikinä päästä niin syvälle niihin asioihin kuin sillä tavalla että joku ihminen jolla ois tämmönen tutkimus vähän raaskis meille antaa sitten

C: en mä sitä tarkoita että tarvis olla niin että mentäis takasin siihen, että yksi ihminen antaa tiedon tuolta ylhäältä ja panee meidän päähän

B: mutta kun mennään laidasta laitaan

C: äärimmäisyydestä toiseen

Example 23. Evaluation discussion on a classroom situation

A: joo se () miten sen nyt sanos () se tenttikäytäntö esimerkiksi () siellä on niin erilainen että () esimerkiks se että sun pitää () puolet () saaja () kysymyksistä oikein () että sää saat tentin läpi()

?: uhu

A: niin täällä jos sulla on puolet sinne päinkään jos se vastaus on sinne päinkään semmosta liirum laarumia semmosta liirum laarumia niin se varmasti menee se tentti läpi

D: se vähä riippuu () [se vähä riippuu aineesta () ei meillä esimerkiksi musiikissa kymmenestä pittää kaheksa olla oikein että mennee läpi

F: [(epäselvää)]

A: [(epäselvää)] no mää tarkotin lähinnä nyt näitä kasvatustieteen opintoja

G: nii

B: ym

A: on siinä niinkun semmonen tietynlainen vivahdeero että mitää pitää osata ja mitää pitää säveltää () ku sillä puolella ei pysty oikeestaan säveltää mitään vaan () joku fakta on semmonen niinku se on ja jos et sää sitä osaa ratkasta tai tiiä niin se on sillon väärin tai oikein

B: siinä se on suuri ero() mutta toisaalta se on meillä sillälailla se suuri ero että ku sulla on se kymmen vuotias huligaani hyörii luokassa kun väkkärä nii meillä ei tavallaan () meillä on pakko osata säveltää () sähköllä se on sillee niin heleppo että jos komponentti on rikki niin komponentti on rikki mutta

A: ym

Example 33. Teacher from group A in e-mail.

Date: Wed, 16 Oct 2002 16:44:17 +0300 (EEST)

From: Lotta

Subject: Re: nimen väärinkäyttöä

To: Leila@xx.xx, väinö@xx.xx

--omitted text---

Meillä oli äsken paikallinen SHAPE-tapaaminen ja oli aika hikiset paikat. Opiskelijat oli aika täynnä negatiivista energiaa koko touhua kohtaan ja kokivat, etteivät ehdi, halua, osaa, etc etc osallistua koko juttuun.... Noh... Lupasin heille 2 ov:ta meidän opintoja suoritetuksi (tuntuu ihan reilulta työmäärään suhteutettuna) ja yritin vähän muuten saada keskustelua rakentavampaan suuntaan. Oikein kunnon metatason sessio! Kristiina on kerännyt mielenkiintoista kamaa opiskelijoiden keskustelukokemuksista, joita ei me ainakaan itse olis missään kuvitelmissammekaan tajunneet. Mm. yksi opiskelija oli itku kurkussa kommentista, jossa häntä kehoitettiin lukemaan OTE- lehteä ja Tempusta. Oli niin loukkaantunut, että päätti, ettei enää kirjoita mitään....

Example 41. Pentti and Paavo on the computer, in the language classroom.

Pentti: ootko kirjottannu sen oikein englanniksi hah hah

Paavo: heh

Pentti: teilläkö on sanakirja kotona heh

Paavo: meillä on semmonen skannerikääntäjä heh

Example 42. Pentti and Paavo on the computer, in the language classroom.

Pentti: hm yhy kyllä ((refers to the text in front of him)) herättää varmaan kysymyksiä

Paavo: nii eikä usko että on suomalaisen kirjottama

Pentti: ei heh kauanko se emännällä meni aikaa heh heh

Paavo: no no no heh

Pentti: heh.

Paavo: vaarallisia asioita paljastettavaksi varsinki kun on tuo mikki nii lähellä

Martta: onko se emäntä englannin opiskelija heh heh

Paavo: ei

Martta: heh

Appendix 3 The sited threads in their full length

Example 4. Student Katri replies mentor Martta in the learning platform.

Subject: Re: Do you talk to me or do you talk to us?

Sender: Katri

Recipient: Martta

Date: 11.10.2002 00:49

» Maybe we are wrong when we look at this interaction as

» interaction between people and messages. As in "you

» wrote this comment", "I built on it", "he continued".

» At least my experience as a participant (in shape now,

» as well as before in other similar contexts) is that I

» write most of my contributions for many recipients,

» collecting the stimulus for my contributions from many

» messages, from different people. What I mean here is

» that I feel I talk more to/with the whole community

» than to/with single people.

» What do you think?

I don't know why but I feel I talk to one person (or several, if the message contains pieces of several messages) when I'm answering a message (sometimes with the idea of other people possibly reading my thoughts in the back of my head)... and sometimes I do try to address the whole community (questions etc.) The 'who I am addressing' sort of fluctuates, even during the writing of one message. The 'one person' feeling is at its peak in answering direct questions ... in jumping in, the addressee circle sort of widens. Interesting. I also think that the community is reflected and built also by using exactly those 'he continued', 'MARTTA:' etc. -types of expressions.

As far as I'm concerned, my feeling of a community here is still a bit too vague for having a feeling of talking to the whole, not only to a single person -- which sometimes makes me feel guilty because I feel I'm excluding all the other people in my message.

Katri

PS. On one newsgroup, some people see the threads they've initiated their own; they also try to control what people say or do with their threads on the basis of this ownership -- and it's considered bad behaviour to express strong, opposing opinions on someone else's thread. Of course, this goes for this particular newsgroup only. But it is curious, isn't it? Also, I've seen many people there starting with an apology if they jump in on a conversation (meaning that they answer a second or a third message in a thread).

Example 8. Student H's message in the learning platform.

11. Author: H (xxxxx)

Date: Mar. 1 9:55 AM 1998

Thanks for everyone for your support and comments. Now I would like to take the discussion one step further.

All of you thought that I had done the right thing except Jonathan who thought that perhaps I should have tried to stay calm a little longer. I do agree that shouting to students should be the last resort in classroom management. But I am not afraid to use it when I think it necessary.

Regis said in his reply that you have to earn the students respect. This is something I would like to hear a little more discussion of. I think that the students should respect their teacher. Not just because she or he is their teacher but because she/he is another human being too. But also, because she/he has been appointet the "leader" of that group. Lauren asked if it is the same to demand respect as to earn it. I don't think it is. When a teacher walks into a classroom she/he has the RIGHT to DEMAND RESPECT from the students because of the position as a leader and because all humans should be equal (and I think that treating someone as being equal is also respecting that other person). It would be very difficult if the teacher had to EARN the respect of the students every time she/he started to teach a new group.

To a certain extent what I said last is ofcourse reality. A group of students will try the new teacher and the teacher has to show that she/he can handle the situation, like in the case I presented to you in the beginning of this discussion. but it should not be like this, or should it? Lauren was asking about the teacher role and thought that itmight have something to do with this respect thing, but i do not agree. I think the teacher has a right to expect respect from the students regardles of the method of teaching. However, I can see that if teaching is done in a very student oriented way with mostly pair and smaal-group work and students guiding their own learning and working, thatthis may leed to the students forgetting that the teacher is not their pier but an authority in the classroom..

I would like some comments about the teachers role in the classroom from you guys.

Early specialization case (chapter 6.2.3.).

MESSAGE:7960 = Early specialization - an advantage? : 2000-03-03 12:00:48 Teachers and educators have recently discussed widely about curriculum and the importance of different subjects at school. Especially mathematics and natural sciences have been a popular topic among people who study pedagogy: should there be more weekly lessons in math or biology? Should we have special shools or classes for those who are mathematically talented or interested in math? Todays society supports early specialization. Finnish comprehensive schools compete with each other: others have music classes, others give more lessons in foreign languages. There is hardly any school in our town that hasn't at least one specialized class - why? I understand the need of different education in upper comprehensive school and Finnish high school, but nowadays almost every lower comprehensive school is also somehow specialized. In my opinion an eight-year-old child is nor ready to decide between different subjects and alternatives. Or is specialized curriculum only the way to attrack parents or people who finance the school...? (WRITER:1729) READERS:1729, 2648, 1804, 221, 2639, 220, 1740, 2632, 3954, 1639, 1760, 3950, 2414, 1822, 1928, 3933, 3682, 2410, 1558, 4209, 4216, 4212, 4208, 4128, 4131, 1721, 2100, 4123, 4225, 4125, 2830, 3942, 4138, 4221, 3949, 4194, 3944, 4210, 3952, 3956, 4195, 2047, 1675, 4220 =44

PARENT_MESSAGE:7960 > MESSAGE:7964 = No decisions too early : 2000-03-03 14:55:02 As a parent I would really like to listen to my children's views about the choices that school involves. I have three children myself - one 11, one 15 and one 18 at the moment. We have had lots of discussions about these things and really I think that often schools put pressure on specialization in places where no need for pressure really exists. My eldest, for example, who is finishing school this spring, has weighed quite a wide a range of alternatives for future professional orientation already, and I think that there will be more after the matriculation exam and after choosing which entrance examinations for further study etc. to take. I think it was very much pressure from school that encouraged her to choose the long courses in mathematics while

she gradually came to the understanding that not everybody has to study it that much (and especially not her). I think it is important to study things you like yourself. Most children like lots of different things and their interests also change in the course of time. So, enough generality in education gives them space to move and learn things they find interesting. (WRITER:220) READERS:220, 2632, 3954, 221, 1639, 1760, 3950, 1822, 1804, 1928, 3933, 3682, 4209, 4216, 4212, 4208, 4128, 4131, 1558, 4225, 2639, 1729, 3942, 3949, 4194, 3944, 4210, 4195, 1675 =29

PARENT_MESSAGE:7960 > MESSAGE:7989 = Childïs or parent’s intrests : 2000-03-04 18:25:46 About the last sentence; I do believe that one of the most important things that specialized schools aim to is parentïs attention. Nowadays schools are compeating whit each other about students and everyone is trying to be more interesting than the other.In too many case it is parents who decide which school their child will attend, and they rarely ask what would a child like to do. Often a child is in school that is spesialized in something that childïs parents would have wanted to learn themselfs when their were young.In my opinion a child should learn as much as possible, but that should not be from one or two subjects. The more expansive childïs education is, the better. (WRITER:1639) READERS:1760, 3950, 2414, 221, 1822, 1804, 1928, 3933, 3682, 1558, 4209, 4216, 4212, 4208, 4128, 4131, 4225, 2639, 2632, 220, 1729, 3942, 3949, 4194, 954, 3944, 4210, 4195, 1675 =29

PARENT_MESSAGE:7960 > MESSAGE:8051 = the child's own interest : 2000-03-09 15:32:40 I think that when talking about early specialization people should consider what the child wants and needs. I don't see specialization as something negative just because it involves differentiation. If a child is really talented in some area, I think it would be a pitty if she/he could not get further guidance in that area, especially if the child wants it. I think it is good that the educational system provides options for those who want them and tries to take different learner needs into account. (WRITER:4131) READERS:1822, 1558, 3950, 221, 1760, 4225, 2639, 2632, 4131, 220, 1729, 3942, 3933, 4128, 3949, 4194, 1804, 954, 3944, 3682, 4210, 4195, 1675 =23

PARENT_MESSAGE:7989 > MESSAGE:8442 = Parent's intrests rules!! I want my little boy to be ice-hockey star! : 2000-03-27 19:38:09 My opinion is that this problem starts to grow up much more earlier than in the school. There are many parents wanting to take full credit for childs intrests and hobbies. "My two year old Anna is so fantastisk violinist... We have paid a lot of money since she... She takes four privat lessons in a week and teacher is best in this area..." Even this was a little provocative it's also reality today. (I suppose that My three year old boy will be a ice-hockey superstar after some year...) (WRITER:954) READERS:954, 4128, 1804, 4225, 4131, 3933, 221, 1729, 3944, 4194, 3682, 3949, 1822, 4210, 4195, 1675 =16

PARENT_MESSAGE:7964 > MESSAGE:8553 = In-progress report : 2000-04-06 14:08:54 I have received four answers and shared different opinions. According to two answers early specialization is or could be an advantage because of the oppoturnities given to children. 50 % of the writers agreed that talented children need specialized classes and the other half preferred expansive education. There are many studies about education of talented children written by Kari Uusikylä (for example Lahjakkaiden kasvatus). People have also discussed about child's and parent's interests in choosing the school. According to half of the answers you should take child's interests into accout and the other 50 % reminded that parent's are usually decision-makers in these matters. Children's role in making their parents own dream come true was also mensioned. The main promlems in this case seem to be: * WHICH ONE SERVES US BETTER, EXPANSIVE OR SPECIALIZED SCHOOL? * WHO MAKES THE DECISION WHEN YOU CHOOSE BETWEEN DIFFERENT SCHOOLS? (WRITER:1729) READERS:1729, 1558, 954, 3944, 1721, 2648, 4128, 3933, 4131, 4194, 1804, 3682, 3949, 1822, 2414, 4210, 1740, 4195, 4209, 4225, 1675, 220 =22

PARENT_MESSAGE:8553 > MESSAGE:8665 = Parents as future-makers! : 2000-04-06 14:15:13 I think parents mostly decide in which school their child goes to. Parents who choose special schools apparently think they know what their child needs. They think that certain education helps their child in future. What do you think, how much education effects on our future?! How much parents know about children's needs ?!? (WRITER:1729) READERS:4194, 3682, 954, 4128, 4131, 3933, 3949, 1729, 1822, 2414, 4210, 4195, 2047, 4225, 1675 =15

PARENT_MESSAGE:8665 > MESSAGE:8729 = advantages of education : 2000-04-11 15:53:23 I'd like to say something general about the things that I think are the positive effects of education. I think that education can have a crucial role in the later life of a child because without education his/her prospects of e.g. getting a (good) job are limited. At least in a society like ours this is rather obvious. Here I'm talking about the trade value that education has for people. Then, of course, education is important for the personal growth of a child, and here especially I think that the role of special schools can be important. Everyone should be entitled to get a good schooling, but if the child's best interest seems to demand for more in-depth education, then the child should be able to get it. In my opinion this is a way to take the child's needs into account and also a way to give him/her a chance to get the most out of the educational system. So, basically what I'm trying to say here is that education can have a wide impact on a child's future. Without education it is hard to get along in our society. I also believe that giving a child a chance to develop his/her talents to the fullest in a special school cannot be a bad thing, but helps the child in his/her future life. I think that the educational system has been created to make sure that everybody could make the most out of themselves personally and socially. It is the educational system's task to provide the opportunities for every child to do so. (WRITER:4131) READERS:3933, 4128, 3682, 3949, 1729, 1822, 2414, 4210, 4195, 4194, 954, 2047, 4225, 1675 =14

PARENT_MESSAGE:8665 > MESSAGE:8744 = decision age : 2000-04-12 04:00:34 I find this an interesting question to ponder. At any age a child should be able to pursue things that he/she enjoys. And, chances are, those things will change in time. That's the beauty of childhood, learning and trying different experiences. But at some point we begin to ask, at what age can a child be expected to know what is the best educational experience for him/her? My first thought is that it would be after the child has a fairly stable sense of identity, theoretically around mid-late adolescence. I'm not saying that a parent should decide a child's interests before then, but we might be putting a lot of responsibilty on a child to expect them to decide a specialization before they have been able to try on all the different hats, so to speak. And, I'm not sure that a parent is able to choose a specialized area for their child until that time either. It is crucial that children are able to pursue their interests and be engaged in the education process by making it meaningful. Hopefully this can be done within a general system that will allow freedom to continue to explore. (WRITER:3949) READERS:3949, 1729, 1822, 2414, 4210, 4195, 4194, 954, 2047, 4225, 3933, 1675 =12

PARENT_MESSAGE:8553 > MESSAGE:8784 = A couple of viewpoints : 2000-04-13 19:51:59 I think that every child could get same ability to study and manage. And as multifaceted education as possible develop children holistically. We have to let children be children and not make dicision for them. And the other hand: In example if you play some insturment it would be great if you could somehow bring together your hobby and education. (WRITER:2414) READERS:4210, 1729, 4195, 4194, 4209, 954, 2047, 4225, 1822, 3933, 1675 =11

PARENT_MESSAGE:7960 > MESSAGE:8824 = Early specialization-an advantage : 2000-04-16 06:48:44 I don't think it is an advantage to give early specialization to children as young as 8 years old. Three aspects must be considered: students' talent, students' interests, and parents' expectation. If the student is very intelligent, it may be good for the student because he/she will

be frustrated by this situation. If the student is not suitable for this specialization, the sense of frustration may hurt this student very much once no other choices can be given. Sometimes, people cannot make sure what they are interested in even a undergraduate student. Early specialization thus becomes unfair because they don't have enough knowledge to judge what they are interested in. Early specialization often becomes an expectation of students parents. The parents will make decision for their children according to their sense of social values. Sometimes, social capitalism will be a key factor of specialization. To sum up, I don't think early specilization can be advantageous. Leave flexibility and elicit kids creactivity should be better point of view than early specialization. (WRITER:3956) READERS:4195, 4194, 4210, 4131, 4225, 1822, 1729, 3933, 1675, 220 =10

PARENT_MESSAGE:8729 > MESSAGE:8849 = Priorities.... : 2000-04-17 04:13:24 This is a difficult topic to comment on. Unfortunately, each of us only has one opportunity to live our lives and it is so easy to follow one path while ignoring other possibly more interesting/fruitful/important paths. Yes, I do believe that specialization at too early an age, with a complete abandonment of a solid, general education is not in the child's best interests. However, I do also recognize the importance of allowing a child to bloom early in some domain or skill if they possess a propensity for it. Often times, parents are very self-serving with their expectations and their actions towards their children. Unfortunately, this is difficult to control and perhaps it isn't the responsibility of the State or the school to do so. But I do hope that we, as educators and especially as parents, can instill in our children: 1. A desire to achieve, to do as well as we are each capable of doing. 2. A sense of self-monitoring; that we are responsible for our own actions, deeds and learning. 3. And, in my opinion, one of the most important goals, to plant the seed in their minds that they have a responsibility to Society and that they possess the power to help other individuals. With these things serving as motivators to a child, and I realize the concepts may be too advanced for a very young child (although you can still begin the process), specialization takes on a different shade of meaning. The emphasis shifts from a "me-first" approach to a "what can I do for others" approach. It should be obvious that the latter approach demands a wider range of educational experiences. And hopefully, although intense specialization may still exist, a desire for general knowledge and the foundations of the arts and sciences will still be much desired. In addition, if we attend to the items listed above, and a person needs to change their manner of livelihood, they will have a solid framework to change careers with. I recently heard a radio news documentary about a high school in New York City in the 1950s. I started listening to it in the middle of the story and did not hear who they were talking to, but it was obvious it was a famous entertainer of some kind. The school he attended was set up specifically for high school children who were also professional entertainers. And although they had very busy professional lives shooting films and making live appearances, they were still spending most of their time in school, building on their general knowledge. This person's classmates included comedians, film actors and actresses, and classical music performers. -Mark (WRITER:4195) READERS:4195, 4194, 4210, 954, 2047, 4225, 1822, 1729, 3933, 1675, 220 =11

PARENT_MESSAGE:8553 > MESSAGE:8915 = Are we creating a monster? : 2000-04-19 08:22:08 What about the children who do not succeed in special schools? How do these school take this into account? Could special talent be supported and furthered in a "normal" school? Are we developing a monster of a system with specialisation schools for the talented? Should the money be invested on "normal" schools to develop them? (WRITER:1822) READERS:1729, 1822, 3933, 1675 =4

PARENT_MESSAGE:7960 > MESSAGE:9087 = CASE SUMMARY : 2000-05-04 09:53:42 CASE SUMMARY Early specialization in schools was found an interesting topic to discuss. Many opinions and interesting viewpoints have been shared between students of different

universities. All the answers can be put into three classes: 1. people who see early specialization as something to avoid 2. people who think specialization has both its positive and negative sides 3. people who support aerly specialization There are many reasons given to each opinion. In category 1 they put emphasis on expansive education and child's development without too much responsibility too early. Parents' own interests and childhood dreams were also seen as a risk to choose a certain specialized school for one's child. According to writers children themselves often may not or are yet not able to make decision when choosing school or class. People in group 2 deliberated about the opporturnities and risks of specialized schools. Every child's ringht to get same kind of education was considered to promote holistical education but talented children were considered as victims in this kind of system. In many aswers pupil's talent were mensioned as a criteria for special education, but no-one commented how parents or teachers could measure it. There were no reference to differentiation in a normal class. Early specialization was seen as a way to support personal growht or give an opporturnity for better jobs in category three. Specialization was considered to be a way to give further guidance for different learners, a part of good schooling. In one answer there were mensioned three ideal motivators for pupils in special schools: 1. a desire to achive, 2. a responsibility for own actions and learning, and 3. a responsibility for society and helping others. According to this, specialized schools can be a way to learn 'what can I do for others' -attitude - a way to promote differents skills and at the same time the entire society. (WRITER:1729) READERS:1729, 3933, 1822, 954, 1675, 4220, 221 =7

Eeva's thread (chapter 6.2.2): examples 10-16.

Discussion list: Key Concepts

Subject: Problems of communication

Sender: Eeva

Recipient: All

Date: 04.10.2002 09:41

I am looking at this course from the viewpoint of a teacher-to-be. I do not have any experience of these kinds of web environments, chats etc. (I even don'tquite know how to call them). However, I see them as a media of teaching worth considering. You know, alternative teaching methods, experimental learning, project works... That's what is (supposed to be) in fashion in this age of constructivism.

Teaching and learning are not easy in these kinds of environments. When compared to clasrooms, there are several differences that may hinder learning. I can bring into discussion the aspect asynchrony: It takes time to correct misunderstandings, for example. I bet there are several others which I am not aware of. You people, who are more used to these kinds of "computer things", please help a techer-to-be who is keen to learn!

What should one take into account when communicating (giving instructions, for example) via "these things"? What kinds of problems may arise?

And, if you want, you can try to assure me of the excellency of learning in a web environment by telling me what kinds of benefits you think there are in this kind of learning?

*Eeva

Discussion list: Key Concepts

Subject: Re: Problems of communication

Sender: Leila

Recipient: Eeva

Date: 04.10.2002 13:00

Hi Eeva - even though I am very keen on web-based projects I do not want to say that they are any better than others. But, for certain purposes they are useful. Here are some of my thoughts

1. the web can be an excellent "collective memory". Our thoughts are stored and we can go back to all the topics and issues raised and check if we want to continue on any of them. Actually, years ago, when I really wanted to brainstorm with my colleagues, I did not make notes but recoded our working sessions. I never listened them later on but this somehow let our thoughts fly freely (we knew that if there would be something important, we could go back into the tape and check).

2. continuity for projects is easier to establish. This is a kind of project room in which the materials are - they are not in somebody else's office or at home when you need it.

3. the web unites people in cases when it is absolutely impossible to meet otherwise. Especially in the advanced studies phase many of our students work somewhere far from Oulu, or within Oulu. When the working life absorbs you, you just cannot become a full-time student again unless you inherit money or are in other ways successful in finding funding for your studies. Also, we have now crossdisciplinary worshops (like the one on language learning and teaching) when timetable problems have proven to be invincible.

I think face-to-face work is very important but the web gives more flexibility to traditional timetable planning.

Problems, things to take into account:

1. This kind of "open and flexible" learning requires a lot from the particpants. People are not always empowered enough to believe that they themselves can have a say in which direction the process goes.

2. CMC brings aspects of uncertainties into the interaction. Silence - for example is different here. But, there is one tool to ease uncertainties connected with that - you can see below a message who has read it. Perhaps some of the sense of "presence" can be established by checking that every now and then.

3. The teacher can not "see" all the time what people are doing like in a classroom. I don't think it is such a problem in the end because in an ordinary classroom you cannot say for sure if somebody is really "with you" or flying in the stratosphere. There are different things the teacher can do to bring the invisible work visible. We have the Personal Logs, for example in SHAPE for site B people. Well - last I saw them there was not much in them - so my next move will be to persuade everyone to do it. Likewise - the site B people should be reading articles etc. for the projects, but I have only seen traces of it so far. On the other hand, people are busy with other things as well, so I'm not worried about that either. Anyway, from the beginning of next week things should start expanding in the research workshop.

Well - there were some initial thoughts - Leila

Subject: Re: Problems of communication

Sender: Eeva

Recipient: Leila

Date: 04.10. 14:03

How about if you think about children, or young people, whom we'll be more probably teaching in the future?

Subject: Re: Problems of communication

Sender: Leila

Recipient: Eeva

Date: 04.10. 19:29

Hi again,

I checked what I had written and now I think that basically everything I said is valid on a general level - even in the case of young children (collective memory, conitnuity in projects, putting together people that don't have a chance of meeting otherwise).

We ran a web course for language teachers a few years ago. The focus was on supporting them to use the net with their pupils. There were participants from all levels of education from primary to professional. The teachers made projects - there were three to nine teachers joined together. The groups were made on the basis of shared interests and the defining factor in team-formation understandably came to be the age of the pupils/students they taught. The teachers (who were from shcools around Finland) were asked to make project for their pupils so that thre would communication between them, and the net would be used for sharing work. The first half of the course was spent planning the projects and the guidelines for the pupils, and in the middle, all teachers were asked to bring 5 pupils into the same web space to do the projects. We had to limit the number of pupil user id's: there were 30 teachers on the course and, consequently, a high number of pupils as well. However, the teachers were very innovative with these id's. In most cases they made these 5 students some kinds of tutors or representatives of the whole class, or they circulated the id among the whole class so that everyone had their turn. Some groups made web newspapers. Especially the primary level paper The Ghost was great because all the pupils participated - there were cartoon pages - they made animations and texts with horoscopes, they wrote stories, interviewed each other. There was also cooperation on the local schools between ICT teachers, arts teachers, the English teacher etc. It was a surprise to us all how a small group of German beginners (all the pupils were in grade 3, i.e. they were about 9 years old) was eager to Chat in German - after only a few months of German studies. Of course, the English-learners were there, too, but we thought this would be more understandable because of the English language media background.

So, this made me see that, indeed, children are very creative in real situations of language use like the Chat to communicate with each other (and the teachers). They eagerly get themselves into communicative situations. I for example could not refuse chatting when I saw a pupil "invite" me to Chat.

- Leila

Subject: Learning environments

Sender: Maija

Recipient: Leila

Date: 06.10. 21:34

Hi,

there are some commercial environments that you can buy and start using in web-learning. One is Humapkids, which is a very handy tool for different grades and in different school subjects. I was told that some students have even been writing their theses by using the Humapkids programme that helped them to organize the text in smaller pieces,in the same way as you do when writing a mindmap. The ideology behind the programme is collaborative learning, I think. If you know better, correct me, please.

Maija X.

Subject: Re: Learning environments

Sender: Leila

Recipient: Maija

Date 07.10. 17:08

Hi Maija - Actually, I don't know Humapkids. There are indeed quite a few "learning environments" around - and there are fierce promotion campaigns going on. My principle is that I don't believe anything before I've tried to work with it in practice. Sorry - I'm exhausted and I need to go home. I gave a talk today to teachers running the "Etälukio" (distance whatever - senior secondary school)! I was asked to tell the participants what I would do if I had free hands teaching one 28-hour course on the web (incl. videoconference). Well, in the end I created the structure and some exemplary instructions (ashamed to say, clearer than for this course to begin with) for a six-week language course on the web because I couldn't otherwise say anything practical about the topic. It was quite an interesting effort, but now I'm totally tired. I'll come back tomorrow, meet Viljo and make some moves concerning our work here ...

- leila

Subject: Hints about how to use computers in teaching

Sender: Maija

Recipient: Eeva

Date: 06.10. 20:59

Hi,

Ther are some magazines that offer practical teaching hints in using computers. It could be a good idea to follow the OTE- magazine (opetus ja teknologia) and for example Tempus - a magazine for language teachers by Sukol (Suomen kieltenopettajat). Do you any other good ones?

Maija X.

Literacy discussion (chapter 6.4.2)

MESSAGE:8808 = Writing and technology : 2000-04-15 20:59:58 In our P544 class, we had a lengthy discussion on how the writing process has changed with our increased use of computers and word processors. It seems that we may be losing the "art" of writing by using programs in which we can make instant corrections. I know that I personally have to write (for example, for an assignment), let it "sit" a while and come back to it several times before I am happy with it. I may come up with a sentence or paragraph that I am having trouble revising, but do not want to give up on. While I am on the computer, I am more likely to delete it, and replace it with a sentence or paragraph that is less problematic, but lacks the passion of the original. Even the personal touch of handwriting has been lost. Which is more important, the "passion" or "art" of writing, or being grammatically correct? and in which cases (personal letter writing, school assignments, creative writing, etc.)? Is there a way to compromise? Perhaps printing out a copy after each major revision? (WRITER:3952) READERS:3952, 3939, 3938, 4195, 4194, 4210, 4205,4209, 4225, 220, 1822, 4216, 2648, 2632, 3933, 1760, 954, 1675, 4325 =19

PARENT_MESSAGE:8808 > MESSAGE:8963 = Different writing for different purposes : 2000-04-20 22:05:59 This is an interesting question. I think I write a lot - keeping journal, writng e-mail at work, teaching materials and sometimes just for fun - but I have a different relationship to each category of writing that I do. I think it is important to give your thoughts a chance and not to give up on a sentence that does not immediately feel right or convey your thought the way you wanted. As we have seen with these case discussions it is not imperative to write grammatically correct sentences in order to participate. When the aim is to discuss issues and there is a commitment from all the parties then I think it will work. Has a kind of feeling of certain holyness of the written word also caused some kind of writer's block with many people?

And what about feeling that you have to write in a certain way in order to be academic for instance? Has our case discussion been academic writing? (WRITER:1822) READERS:3952, 3939, 2648, 2632, 4209, 3933, 1822=7

MESSAGE:8308 = Reading, learning and Internet : 2000-03-23 17:58:21 Reading and internet is an interesting completeness to me. Especially reading a foreign language and teaching that kind of reading. I'm wondering weather it is possible to combine those things and what it would mean in practice. This topic is interesting to me now when I'm planning and realizing a text course for foreign language learners in Internet. This course is planned for advanced learners and the aims of this course are help to students learn effective reading strategies, to develope one's own speed in reading and to activate and expand the abstract vocabulary. Now I should put this course into the Internet and I should teach how to read texts in Internet and how to distinguish between essential and unessential texts and information. I would like to discuss next things: 1) Is it possible to teach reading in a second or a foreign language and is it even sensible? 2. What kind of things should be paid attention to? 3. What kind of problems there are when reading a foreign language in Internet and are the problems effected by foreign language or computers? 4. If you were having a this kind of course, what kind of expectation you would have? (WRITER:4205) READERS:4205, 4203, 4215, 4221, 3940, 1760, 3949, 954, 4213, 4225, 3682, 3933, 4209, 2100, 4212, 2648, 1804, 2632, 2410, 4123, 4128, 220, 4145, 4210, 4194, 3953, 3939, 1822, 4110, 3952, 3946, 1675, 4325 =33

PARENT_MESSAGE:8308 > MESSAGE:8410 = Using the Internet to Help Teach Foreign Languages : 2000-03-26 22:13:03 I think that your idea of using Internet resources to help teach students foreign languages is a great idea. Choose any language and with some searching you can find all sorts of interesting resources for students to read and explore, and these resources are authentic, not made up by a foreign language textbook. You can tailor them to student interests, current events, other content areas covered in school classes, etc. The students are likely to be more motivated because they are dealing with a fun new technology and the reading materials will be more related to their interests. Also, if they can use email to communicate with people who natively speak the language, that gives them real practice with the written language in everyday communication. Of course, this wouldn't give them any experience in the spoken language (unless you did some sort of video or audio conferencing) and of course there is the possibility that the students could find objectionable material, so you would need to monitor their use of the Internet. Also, students might try to use one of the translation services offered by sites like Altavista, which would do the work for them, so you wouldn't want them to do that. But overall, I think it would make for a very interesting way to learn a foreign language. (WRITER:3940) READERS:3949, 954, 221, 4203, 4225, 3682, 3933, 4209, 4213, 4205, 2632, 4123, 4128, 220, 4210, 4194, 3939, 3952, 3946, 1822 =20

PARENT_MESSAGE:8308 > MESSAGE:8486 = Do you mean critical reading? : 2000-03-28 16:03:56 We assume that you mean critical reading and we see no reason why critical reading could not be done in a foreign language. Of course, pupils' vocabulary is much smaller than in mother tongue, but if the starting point is to solve a certain problem or to find certain information, it should not prevent learning. It's obvious that pupils' skills in critical reading are limited and they may noy be able to select essential information. Teacher should limit the area of searching.It's a challenge to the teacher to find out beforehand about suitable links etc. we're sorry, but our time is out and we did'nt have time to comment all your questions, but we will get back to this subject! –Tiina and Paula (WRITER:4213) READERS:4225, 4209, 4205, 4213, 3933, 2632, 3682, 4123, 4128, 220, 4210, 4194, 3939, 3952, 3946, 4203, 1822 =17

PARENT_MESSAGE:8308 > MESSAGE:8489 = Reading, learning and Internet : 2000-03-28 16:14:02 My opinion is that Internet can certainly be useful resource for learning, but there would be one distinction that I'd like to make in this context. I'm not an expert in foreign

language learning, so this is about learning in general. I think it is important to distinguish whether we are reading for information use, reading in order to learn or reading for pleasure... In other words I mean that it is one thing to write the text / learning material (into the Web) that is easily memorised, but it is another thing to write in such a way that the reader is able to learn effectively. Browsing is a kind of information seeking activity using associations to determine the text item to be accessed. Exploration, on the other hand, could mean to learn specific semantic relationships of domain concepts so that one will begin to 'think like expert'. However, simply learning the links in the database is not going to result in thinking like an expert, but there needs to be a goal like building an argument and understanding a specific topic or problem. Does this make any sense? (WRITER:4225) READERS:4225, 4209, 4203, 4213, 3933, 2632, 3682, 4123, 4128, 220, 4210, 4194, 3939, 3952, 3946, 4205, 1822, 1675 =18

PARENT_MESSAGE:8308 > MESSAGE:8522 = What kind of course? : 2000-03-29 14:22:52 Could you please specify what kind of course you're planning? Is it in a classroom or do the students work alone at home? What's the main idea of your course? Are you more interested in reading strategies or critical reading? -Tiina, Tarja and Paula (WRITER:4213) READERS:4205, 3933, 2632, 3682, 4209, 4123, 4128, 4213, 220, 4210, 4194, 3939, 3952, 3946, 4203, 4225, 1822 =17

PARENT_MESSAGE:8486 > MESSAGE:8525 = How to teach critical reading? : 2000-03-29 15:30:24 Hi Paula, and thanks for your imporatant comment. Like your asked I mean critical reading. You wrote that teacher should limit the area of searching but if we are thinking about authentic situation and giving tools for our students to survive in foreign language, I think giving limits it might be not very fair for our students. It works during the course but how about later? I hope I understood right what you meant. (WRITER:4205) READERS:3933, 2632, 3682, 4209, 4123, 4213, 4128, 220, 4210, 4194, 3939, 3952, 3946, 4205, 4203, 4225, 1822 =17

PARENT_MESSAGE:8522 > MESSAGE:8634 = Course description : 2000-04-05 11:30:21 The course is for advanced foreign language learners and they get 1.5 ECTS credits, which means around 40 hours work for them: 26 hours contact lessons and 14 hours for self study. There will be both reading from papers and reading hypertexts from screen, because the plan for the course is not ready yet (that's why I would like to discuss about this topic) I can't tell very many details, but some information you could read http://xxx.xxx.xxx/xxx.htm You asked if I am more interested in reading strategies or critical reading. I think when teaching second or foreign language reading (and especially reading hypertexts) it's not possible just concentrate on strategies or on critical reading. What do you think? I think we need to teach both of them because the main aims are to give tools for 1) understanding language 2) understanding and coping with foreign language texts (their structure etc.) and when students can do that they can be critical. To be critical they need to be familiar with foreign language texts. And when reading hypertexts it's even more important to be critical than normally because you have to understand what is relevant to read. Maybe I could say that reading strategies are steps towards critical reading which is the target. I don't know if you can understand what I mean and I think this is very important question you made. (WRITER:4205) READERS:4209, 3933, 4123, 4213, 4128, 220, 4210, 4194, 3939, 3682, 3952, 3946, 4205, 4203, 4225, 1822 =16

PARENT_MESSAGE:8308 > MESSAGE:8692 = What a great idea : 2000-04-08 07:19:05 I think using the internet to teach a foreign language is a great idea. In fact two summers ago when I took introductory German we often went to the computer lab and used the internet to learn more about German culture as well as the language. We would go to sites to check out German stores, vacation spots, special interests, you name it. We were using our growing understanding of the language and our contextual knowledge of internet sites to get in touch with another culture. But in reality we were learning how to read German, just like we learned how to read our native language, that is in small contextually significant bits. A course based on

the internet would be a fantastic way to teach foreign language reading. Especially if there were relevant links to real sites in the language you are teaching. Also, if there is a chance for students to respond, like we are doing here, because writing can never be separated from reading--they are two sides of the same coin. (WRITER:3953) READERS:3953, 3939, 3682, 3933, 4209, 4210, 3952, 4194, 4205, 4203, 4225, 220, 1822 =13

PARENT_MESSAGE:8308 > MESSAGE:8852 = On -- What kind of things should be paid attention to? : 2000-04-17 04:54:11 Just a few thoughts here: (1) give support or help to students who may not be familiar or comfortable with using technology. (2) let students know about and encourage them to take advantage of the relevant online features available on the internet: e.g. online dictionary and encyclopedia. (3) give students choice to read off the screen (e.g. print the page off for reading). I know some people including me, after using computers for long, still prefer to read from actual book. (4) technology is only but a tool. The basics in teaching/learning - e.g. learning goal, active engagement in thinking, student choice and participation, etc. -- are still needed to be attended to. (5) allow the use of computers as a cooperative as well as individual learning tool; that is, have students use the internet as a forum to engage in dialogues related to their language learning (e.g. share what they have learned) and exchange learning experience and ideas in attempt to build an online learning community, while also allowing space for students to d individual reflection on what they have gained from the online community of language learning. (WRITER:3946) READERS:3946, 4210, 4205, 4209, 4194, 4203, 4225, 220, 3939, 3933, 1822, 1675 =12

MESSAGE:9044 = The Summary of Reading, learning and Internet : 2000-04-28 14:37:14 Thank you for your comments! I was asking opinions about having a foreign language text course on Internet. Most of you thought that the idea is good and interesting, because there is authentic materials and both language and culture are there together. Also some kind of online discussion group was proposed for charing experinces there. Even using tehnology is a good recourse for teaching, it's not the only. There are things that should be paid attention to: - why, what and how are students reading - there should be a some kind of problem or a goal in instructions - there should be possibility to work / read in groups and alone - there should be possibility to choose how to read (paper vs. screen) - it might be good to learn to know some online resources like dictonaries - also some technical support should be given by teachers (WRITER:4205) READERS:4205, 2632, 1822, 3933, 1760, 1675, 4325 =7

Jaakko's case (chapter 6.4.5)

MESSAGE:7959 = Correct way to teach : 2000-03-03 11:21:42 How many times after lessons you have notice, that you have learnt almost nothing. Things that were talked did not interest you at all or they were at such high abstract level, that you hardly understand nothing. When I was in junior high school and high school feelings above were close to me, specially when it was question about mathematics. When it was question about integral calculus, differential calculus, solid geometry or almost what ever I did not seem those subjects useful or I did not understand them at all. In Finland this problem seem to be very common specially when it is question about science; subjects like mathematics, physics, chemistry and biology. Looks like we come far behind in these subjects when we compare it to other western countries, for example England and USA. Very traditional way to teach or normal way of mathematics lessons going here in Finland is that first teacher tell to pupils the theme they are going to handle. After that teacher tell the main principles or structures of the concept. Almost always pupils and teacher just talk about the concept. Maybe they calculate together one or two examples about the handled concept. Any kind of visualisation or concrete model about the concept are rarely used. At last, in the end of the lesson, it is the pupils turn to start making exercises and that`s it-original Finnish mathematics lesson. What is the matter in Finnish way of

teaching science? Are the pupils more stupid here in dark and cold Finland in the middle of the polar bears than in other western countries? Or is it question about the way of teaching? I think that the problem is that here in Finland teachers does not consider pupils different abilities to handle abstract things. The way of teachig should be build more on pupils resources. Somehow teaching should be more concrete, near practice, specially in science. What is the way you are learning science? What would be the right way to teach? (WRITER:2100) READERS:221, 2100, 2410, 2414, 2648, 1729, 1804, 2639, 220, 1740, 2632, 3954, 1639, 3946, 3682, 1822, 1928, 3933, 4209, 4125, 4208, 4212, 4216, 4210, 4131, 4128, 1558, 4123, 4225, 1675, 1140, 4205, 4214, 4203, 4204, 4215, 2830, 2856, 4138, 4129, 4213, 3942, 3952, 2979, 3953, 4194, 1760, 1721, 3951, 4221, 3932, 3944, 4157, 4151, 3950, 3939, 3956, 3949, 3938, 3957 =60

PARENT_MESSAGE:7959 > MESSAGE:7963 = Related with my problems with knitting? : 2000-03-03 14:43:01 The issue you describe reminds me of my experiences in the first or second grade learning knitting. I just couldn't understand why it was so difficult for me to produce a pattern which was clear and simple - and the reason was that I had misunderstood how the two basic ways to knit looked like when produced (this is a little difficult to describe now because I don't know the terms for "straight" and "reverse" knitting - "oikea" ja "nurin" in Finnish). And now I understand that if the teacher had asked me to explain aloud what I was doing, or if she had talked aloud when knitting herself, explaining what she was doing, I would have understood rightaway where my misunderstanding was. I think this experience of mine is related to your case! (WRITER:220) READERS:220, 221, 2632, 3954, 1639, 3946, 1822, 1804, 1928, 3682, 4209, 3933, 4216, 4128, 1558, 2100, 4225, 2639, 1675, 4205, 4214, 4210, 4204, 4203, 4215, 2414, 2830, 4129, 3942, 3952, 2979, 3953, 1760, 1721, 3951, 4194, 3939, 3957 =38

PARENT_MESSAGE:7963 > MESSAGE:7965 = Or my problems with irregular verbs : 2000-03-03 15:04:18 I remember how furious I felt when my teacher could not explain why you have to say "he has" and "you have". Now I know that there is no explanation - unless you want to dive into the history of English language - but then I felt that the teacher had failed my trust. Similar things happen now with my son. He keeps asking questions such as "mom, why rain exist?" which I fail to explain constantly. --Martta (WRITER:221) READERS:2632, 3954, 221, 1639, 3946, 1822, 1804, 1928, 3682, 4209, 3933, 4216, 4128, 4131, 1558, 2100, 4225, 2639, 1675, 220, 4205, 4214, 4203, 4215, 2414, 2830, 4129, 4213, 3942, 3952, 2979, 3951, 4194, 3939, 4210 =35

PARENT_MESSAGE:7959 > MESSAGE:7976 = Hello Jaakko You sound a little bit bitter : 2000-03-03 21:14:10 You are absolutelu right when You talk about the problems within teaching math and science. Althougt I personally can say that there are also good teachers who do use better methods in their teaching. We must also remember that it is You who will be teaching these subjects in the near future, so don't follow the bad example You have suffered through. I totally agree that there must be more concrete examples included in teaching math and science and these examples should be connected to everyday life. (WRITER:2632) READERS:2632, 3954, 221, 1639, 3946, 1822, 1804, 1928, 3682, 4209, 3933, 4216, 4128, 4131, 1558, 2100, 4225, 2639, 1675, 220, 4205, 4214, 4210, 4204, 4203, 4215, 2414, 2830, 2856, 2979, 4194, 4221, 3944, 4151, 3939, 4129, 3949 =37

PARENT_MESSAGE:7965 > MESSAGE:8115 = Why individuals exist ... or bedsitters? : 2000-03-14 18:36:34 It also happens that you may believe that you have understood the child's question whereas you really haven't. I once thought that my son, who at the time was very young, was a born philosopher, when he asked me: "Äiti, miksi yksilöitä on olemassa" - which translates: "Mom, why do individuals exist?". I started gulping and tried to think about a good explanation. During my thinking pause he started elaborating his question which immediately revealed that he was talking about the bedsitter which my parents had bought next to their

apartment. The Finnish word for it is "yksiö" (vs. "yksilö"). So one letter made a big difference. Well, why did I tell you that anecdote? I suppose because I feel that in interaction participants often believe they have arrived at a joint understanding even though there still is something to be solved. And, isn't it often so that we teachers feel that we have succeeded when we have managed to "perform" something well - but it is another matter if the pupil has really learned what we want to believe. Do you have any suggestions about what kind of interaction and teaching approaches in the classroom would help us to reach real learning, and not just performing teaching and learning. - Leila (WRITER:220) READERS:220, 221, 3933, 4205, 4214, 4131, 4210, 3682, 4203, 4225, 4128, 4215, 1822, 2414, 2830, 2100, 4129, 4213, 3942, 3952, 2979, 4194, 3951, 1804, 4151, 3950, 3939, 1675 =28

PARENT_MESSAGE:7976 > MESSAGE:8147 = Science & 'concrete teaching' : 2000-03-15 15:50:37 You raised acute and important point of making science teaching more 'concrete'. Some further questions occurred into my mind. How to make science learning more meaningful? Is one way of doing this the integration of science teaching into authentic, real-life problems and project-enhanced settings? Nowadays this seems to be popular in the context of experimental science learning, where the aim is to teach inquiry typical to natural sciences. In this kind of project-enhanced working, it is common that there are several (concrete) phases such as microscoping, chemical analysis, report writing etc. during the project. Although this kind of working gives opportunities for modelling authentic practice of making science, it is not necessarily without problems. What if the students get only temporary entertainment from microscoping but cannot create understanding of the phenomena of the whole project? (WRITER:4225) READERS:4225, 220, 4215, 1822, 221, 2100, 4128, 4213, 3942, 3952, 2979, 3953, 4194, 3933, 3682, 1804, 3939, 4129, 4210, 1675, 954 =21

PARENT_MESSAGE:7959 > MESSAGE:8149 = We are not far behind other countries... : 2000-03-15 17:01:36 I, as well as anyone else who has "went through" Finnish school system, knows how hard it can be. We have some more subjects in our curriculum (e.g. second domestic language), and the demands are higher than in some other countries because there is more to learn in each subject than there really is time available in school hours. For example, effective language teaching would need more class hours than three in a week, but it is not possible because other classes take their space as well. I suspect that this is the situation with every class, even in science. How can there be always fun and interesting in a classroom? Life's hard fact is that even the not-so-nice-things have to be thought too, whether the pupils/student are interested or not. And one cannot be interested in everything... What comes to that we are far behind Britain ans USA, I just want to know WHAT part it is that we are behind from? How pupils/students like the school is different from do they learn there. It would seem that if you like going to school or even looooove it, you are succesful and the other way around, but I have read of a study which compared different countries' school systems that in Finland the liking to go to school was one of the lowest of all the countries, but the tests of knowledge/learnt stuff of pupils/students gave the highest scores from other countries. What do you think that tell? And further, many of my friends were as an exchange students in USA, and they all say the same thing: people like to go to school because there is so many extra activities (in Finland most of the extra activities you do on your own time and you don't get any extra points from them), but for them (my friends) studying itself was too easy, they didn't have to do much serious work to get good grades. The system just is different, different things are thought to be important in different countries. I don't think you should be bitter of the unfairness of dull classes you have experienced, it has happened to all of us. I do agree with you that teachers should try to see some effort to make their classes a little bit more joyfull than they sometimes are, but it also comes down to the teacher's personality, and available time and resources. There are many things which a teacher cannot change, although he/she would like to. (WRITER:4215)

READERS:4215, 2100, 1822, 221, 2414, 2830, 4205, 4225, 2856, 220, 4138, 3933, 3682, 4128, 4123, 3942, 3952, 2979, 4194, 3932, 1804, 3944, 4151, 3939, 4129, 3949, 4210, 1675, 1760 =29

PARENT_MESSAGE:8149 > MESSAGE:8196 = About being far behind from other countries : 2000-03-17 08:09:08 Thank you for you opinion about the case handling correct way to teach. In my view I was handling subjects like mathematics and science in common. I did not meant to handle things like does the pupils like to go to school or not. Or is it fun to go to lessons and does they have fun time during the lessons. When it is question about subjects we are being far away from other countries I meant mathematics and other science subjects. That is the situation specially when it is question about elementary school. That is the view I have got during my studies in technology education. You said that we have more subjects here in Finland, for example second domestic language and the demands are higher than in some other countries. How other way the structure of the curriculum is different from ours and what extra subjects we have comparing for example USA? When it is question about liking to go to school, that here in Finland they do not like to go to school as enthusiastic as other countries, I can not tell anything to you about that thing. Does that thing tell anything about situation of correct way of teaching anyway? It would be also nice to know more about the tests which show that pupils got higher scores here in Finland when testing knowledge and learnt stuff. Specially it would be nice to know what were the subjects/ objects (science things?) of the tests, how were the test carried out and were the test suppose to test memory or adapt something to the practice. You said that there is more to learn in each subject than there is time available in school hours. That is very, very good point. So maybe the really point at least is, that here in Finland, when it is question about teaching mathematics, teachers try to teach everything instead of teaching common structures, which would be much easier to put in practice. I am not bitter. I just wonder the relationship between science (specially mathematics) and practice. In my opinion they do not meet each other, at least in my case. And I think that it is not question of time and resources. In my opinion it is question about way of teaching and setting the problem. (WRITER:2100) READERS:2100, 221, 4205, 4225, 220, 3682, 4128, 3952, 4215, 4194, 3933, 1804, 3944, 4151, 3939, 4129, 3949, 4210, 1675, 1822 =20

PARENT_MESSAGE:8147 > MESSAGE:8197 = About science and concrete teaching : 2000-03-17 08:13:39 You got the point, Pirkko!! That is the way I think it should be. Especially connection to real life situation bring the problems much closer to pupils and so called "every day thinking". You mentioned concept "experimental learning". When it is question about learning situation, example project working you mentioned, it is very important to pupils that they are ably to make observations, which are understandable. That does not mean that they have to understand everything. I think that the main point is that in addition they also notice something, that they are not able to understand but hopefully they want to understand and try to solve the problem. Well, when it is question about "concrete teaching", you mentioned, the very important thing seems to be the word "problem". When it is question about so called project working, instead of instruments and other tools, the very important part of the project is the main problem and strategy how to solve it. In my opinion finding the main problem is very important for learning processes also. So, what are teachers role in this system, example when it is question about project working? Do you have any suggestions? (WRITER:2100) READERS:2100, 221, 4225, 220, 4128, 3952, 4215, 2979, 4194, 3933, 3682, 1804, 3939, 4129, 4210, 1675, 1822 =17

PARENT_MESSAGE:8197 > MESSAGE:8265 = teacher's role : 2000-03-21 15:20:22 I agree with you Jaakko about the importance of problem defining and framing. It is definitely one of the key points in this kind of problem-based approaches. Another related skill is also the ability to present the kind of questions that evoke elaborated explanations. Then about the teacher's role

in project-enhanced work.. It seems to be clear that this kind of working sets new demands also for teachers by challenging the traditional practices and support structures of schools. I think the main role of the teacher is to model the expert's way of thinking and behaving, such as encouraging for open-ended investigations, modeling the use of scientific tools and methods, providing timely scaffolding.. (WRITER:4225) READERS:4225, 4131, 3682, 4128, 4213, 221, 3952, 2979, 4215, 2100, 4194, 3933, 3942, 1804, 220, 3944, 3939, 4129, 4210, 954, 1822, 1675 =22

PARENT_MESSAGE:8115 > MESSAGE:8312 = About learning situations : 2000-03-22 15:30:33 Thank you for your opinion Leila. It is quite interesting how different views we have when it is question example about scientific phenomenon like what is electricity, light or why different seasons exist. Somehow our knowledge have became as it is at the moment. First off all I think that it is it is social question, what kind of our knowledge will became. When we are talking about something strange, which we are not so sure about, we try to name it or at least name part of it. Also somebody else can see same thing little different as somebody else. So they have to compare their views and try to make compromises. That is why it is natural that we have different names to same phenomenon without talking that we have misunderstand or hear wrong the main problem or question. I think that by using social aspect of learning situation and by setting the problem so that pupils have to talk together about it and name it we are quite near the real learning you mentioned. But the main question still is how to set the problems and what kind of problems support learning. That is our teachers question, I think. Do you have any suggestions? (WRITER:2100) READERS:2979, 4194, 2100, 221, 3951, 3933, 4225, 4128, 1804, 220, 3950, 3939, 3682, 4129, 4210, 1822, 1675 =17

PARENT_MESSAGE:7959 > MESSAGE:8380 = You are not alone : 2000-03-24 04:43:58 I have just finished watching earth science teaching at an Indianapolis suburban high school. This school could have used your bears. The primary teacher I observed had the class read the chapters to him. He then gave them vocabulary assignments, followed by quizes and a test. The other earth science teacher tried to conect with the students, but the main theme was focused on the words more so than the concepts. They were doing their section on weather and they not once in three weeks compared the weather outside the classroom with what they were studying. I worked for 25 years as a research environmental geologist and have just begun my science education training. If there is one thing that has made me feel better is reading the suggestions on how to make science education more meaningful. For one thing teachers need to make it relevant to the student's lives. For two days I watched the two teachers talking about cloud types and outside in the real world textbook examples were drifting over the school. Sort of like going to the Grand Canyon to see a movie about the canyon without looking at the canyon, ABSURD!!!!!!!! I several outstanding teachers as an undergraduate and graduate student in geology. They brought the real world into the classroom and the classroom into the world outside. They made it a point to link the academic with the practical. For me doing applied research after graduate school was a natural transition. I wish that science and math educators would get their heads screwed on so that they faced forward. My old research chums shared my views of traditional science education and felt too many bad grade and high school science teachers have done more harm to science education than the Inquisition. (WRITER:4194) READERS:2100, 221, 3933, 4225, 3682, 4128, 3932, 1804, 3944, 4221, 220, 4157, 4151, 4194, 3939, 4129, 3949, 4210, 3952, 3938, 1675, 1822 =22

PARENT_MESSAGE:8265 > MESSAGE:8514 = Experts : 2000-03-29 10:01:22 Framing and defining the problem is very important. That sets really large demands for teacher, when it is question about the subject you are teaching and problem solving strategies you are using. So, I think that first you have to have very profound knowledge about the subject. In teachers role you have to have ability to talk about the subjects in very high abstract level but also in concrete

level. When it is question about problem solving you have to have ability to see what is the structure of the problem and what are the most important parts of it for problem solving. Also by showing the way you are solving the problems, for example thinking loudly, might be useful and support the development of pupils problem solving strategies. I also think that this kind of teaching methods we should try to achieve. When it is question about learning situation and teaching, the direction should be from concrete to abstract, I think. Specially when it is question about elementary school level. By seeing, handling, feeling and thinking the concepts become meaningful in concrete level. Also in social situation the concept became more meaningful in conversations-there can be experts among pupils also! In my opinion that is the experimental part of learning. So, what is the situation in the "fields" nowadays? When it is question about science teaching, are teachers using methods which supports the development of pupils problem solving and thinking strategies so that they can put their knowledge in practice? And what is the situation in university in teacher training? (WRITER:2100) READERS:3942, 2100, 3933, 221, 3932, 1804, 4128, 220, 4194, 3939, 3682, 4129, 4210, 4225, 1760, 1822, 1675 =17

PARENT_MESSAGE:8312 > MESSAGE:8552 = In-progress report : 2000-04-08 13:27:27 I have wanted to make people to think and evaluate learning and teaching situations. Specially I have wanted to hear and read peoples own experiences and opinions about teaching methods and effectiveness of those methods specially when it is question about teaching science. I have an assumption that experiences about learning situations in science teaching have not been near practice or connections to every day solutions have been weak. So, we have not seen science useful to us. However the world surrounding us is full of solutions which are based on science. World surrounding us might be one day very strange place to live if we do not have knowledge about it`s structure. So science is very important subject and it really does make a difference how to teach it. I have read something about Kolb`s model of experiential learning. I think that there are some very interesting elements in it. For example the hole model seems to be based on concrete experience which is the basis for observations, thinking and creating knowledge in concrete and abstract level. I think that teachers role in this learning system is to offer opportunities to pupils to get concrete experiences. In discussions above have been talk about learning situations and its dimensions like social nature, experts model, problem setting like framing and defining the problem and so on. I think that these elements could be involved in Kolb`s model of experimental learning which is a kind of holistic description of learning process. In addition to concrete experience there are also reflective observation, abstract conceptualization and active experimentation in it. When it is question about learning situation and teachers role in it the very important part of learning process is to start it. If it is not happening in a "normal" way, by pupils themselves it is teachers duty to try to do it. I think that by the help of concrete experiences and problem settings which are close to everyday life, the start of the learning process might be easier. And the very important point is that pupils have a feeling that what they are learning is important and useful. It is also teachers duty to try to support and control the learning process. In my opinion that means that teachers have to know pupils development levels well. If necessary, teachers have to show how to solve or see the problem, provide timely scaffolding as one of participants put it. These all means teachers role as a expert when it is question about problem solving. (WRITER:2100) READERS:2100, 1804, 1558, 4221, 3933, 4128, 220, 4194, 3950, 3939, 3682, 3956, 1822, 4129, 3949, 2414, 4210, 4225, 954, 1760, 1675 =21

PARENT_MESSAGE:8149 > MESSAGE:8576 = Learn more but hate it more too! : 2000-04-02 01:13:19 So, Tiia, the students in Finland learn more but like school less. Why is this? Is it because thinking and learning is effortful? Or because there are less social avenues to life as you contend? Or does the curriculum such the life out of them? Is it boring? If it is the latter, how can we engage students so that they go to school more hours and days AND like it more? How

do we make it fun to learn. I know that Dr. Rich Lehrer at the University of Wisconsin uses a program called HyperAuthor where kids throw out the textbooks and create their own. They are coming to school on weekends and the principal needs to come in to open the doors for them. This is NOT an isolated case. There are other such stories here in the US. How do we get them wanting to learn more? And do more? Well, I think we use projects, teams, meaningful activities, etc. We also provide timely content and experiences. The combination of content knowledge and process reflection and collaboration is certainly very powerful. What do you think? By the way, I think our system in the US emphasized too much fun in high school and these become wasted years for far too many. In the US, unlike Japan and perhaps Finland, real learning starts in college. It gets tough then. (WRITER:3932) READERS:221, 1804, 3944, 3933, 4128, 220, 4151, 2100, 4194, 3939, 3682, 4129, 3949, 4210, 4225, 1675, 1822, 954, 1760 =19

PARENT_MESSAGE:8514 > MESSAGE:8577 = What do expert teachers do? : 2000-04-02 01:23:16 Yes, Jaakko, what do expert teachers do? You indicate that they frame problems, structure tasks, make them meaningful, talk concretely and abstractly, question at student's developmental level, model good problem solving approaches, support students, etc. I think you are referring to the ways that teachers can assist in the learning process. Teachers need to understand the formats of learning assistance available. My consolidation of Tharp's (1993) seven assisted learning ideas with the six cognitive apprenticeship techniques noted by Collins et al. (1989), yields the following list of ten socioculturally-based teaching techniques (see original sources for more detailed descriptions): (1) modeling to illustrate performance standards and verbalize invisible processes; (2) coaching to observe and supervise students in guiding them toward expert performance; (3) scaffolding and fading to support what learners cannot yet do and gradually removing that support as competence is displayed; (4) questioning to request a verbal response from learners by supporting them with mental functions they cannot produce alone; (5) encouraging student articulation of their reasoning and problem solving processes; (6) pushing student exploration and application of their problem solving skills; (7) fostering student reflection and self-awareness (e.g., through performance replays); (8) providing cognitive task structuring by explaining and organizing the task within students' ZPDs; (9) managing instruction with performance feedback and positive reinforcement; and (10) using direct instruction to provide clarity, needed content, or missing information. What do you think? Teaching is very complex. Can you do such things? Is your training in Finland focusing on this? Should teachers who can do such things be paid more? Collins, A., Brown, J. S., & Newman (1989). Cognitive apprenticeship: Teaching the craft of reading, writing, and mathematics. In L. B. Resnick (ed.), Knowing, learning, and instruction: Essays in honor of Robert Glaser (pp. 453-494). Hillsdale, NJ: Erlbaum. Tharp, R. (1993). Institutional and social context of educational reform: Practice and reform. In E. A. Forman, N. Minick, & C. A. Stone (eds.), Contexts for learning: Sociocultural dynamics in children's development (pp. 269-282). New York: Oxford University Press. (WRITER:3932) READERS:1804, 3933, 4128, 220, 2100, 4194, 3939, 3682, 4129, 3949, 4210, 4225, 1675 =13

PARENT_MESSAGE:8380 > MESSAGE:8661 = Learning from experimenting : 2000-04-06 01:40:41 I never thought I wanted to have anything to do with science until my junior year in high school. Every class I ever took before this one physics class seemed so pointless. There was never anything that could be applied to the real world! Or so I thought. Junior year, I got a new teacher right out of college. He made physics fun. Everything he covered, he had an experiment to follow that explained the concepts so they could be better understood. Topics such as atmospheric pressure that we hear about all the time but don't really know how strong it is. He showed us by filling a gallon of water up, putting a piece of paper over the open end and turning the gallon over. No SPILL!! It was amazing that I've lived on this earth for 20 years and

something like that has never crossed my mind til he showed me in class. Experiments like this one shined light on the world of science and proved to me there is so much meaningful science out there which when approched in the right way, can be entertaining and fun! When things are fun, we tend to remember them and comprehend them just a little bit better. So what better profession to go into than teaching science!!! (WRITER:4157) READERS:4157, 4151, 2100, 4194, 3939, 3682, 221, 3933, 4129, 4128, 3949, 4210, 3952, 3957, 4225, 220, 1675, 1822 =18

PARENT_MESSAGE:8149 > MESSAGE:8672 = Not really : 2000-04-06 19:20:12 Not everyone likes to go to school here in the US. My parents took my brother out of he public school system last year (he is in the fourth grade). That is the best thing they have ever done. His grades are improved (though he still gets an occasional C) and his behavior is a total turn from what it was at the public elementary school. Even more than that, every year the local paper gives a report of the school system and each school in the district. My brothers school had a 50% attendance rate and over 66% had either been suspended or expelled. I am planning on working in the public school, but look at that! Little children don't even want to go to school and that is when school is usually the most fun (with recesses and all). It is a tragedy. (WRITER:4151) READERS:2100, 4194, 3939, 3682, 221, 3933, 4129, 4128, 3949, 4210, 3952, 4225, 220, 1675, 1822, 1760 =16

PARENT_MESSAGE:8312 > MESSAGE:8695 = Selecting the problems . . : 2000-04-09 03:17:00 Selecting and/or designing "authentic problem scenarios" that motivate learners and optimize learning is certainly a challenging task for any teacher. Here a few generic guidelines offered by: Albanese & Mitchell (1993) 1.common situation to serve as a prototype for other situations, 2.significant, 3.prevention is possible, 4.interdisciplinary, 5.cover objectives, 6.task oriented, 7.and complex enough to incorporate prior knowledge. Peter Rillero (2000) 1. select a problem that is solvable by the students by providing a partial problem that prompts students to select a variable to investigate, 2. select a problem that is doable with the time available, 3. select a problem whose material and tool demands match the available resources. My own experience with designing problem-solving activities for 6-12th grade Technology classroom has led me to add a few more guidelines to this list: Problems should: 1. be challenging and demand MORE information and/skill than the student currently possesses. 2. be accessible. Learners should be able to make observe the problem in a natural setting. 3. possess elements/variables that students can SAFELY manipulate or simulate. 4. be compelling. The resolution of the problem is valuable to the learner. Could you add any other guidelines to this list? (WRITER:3950) READERS:3950, 3939, 3682, 2100, 3933, 4129, 4128, 4210, 4194, 4225, 220, 1822, 1675 =13

PARENT_MESSAGE:8695 > MESSAGE:8785 = More about problems : 2000-04-13 22:23:22 Thank you Mary for your opinion. Me and my fellow student Joni X, also participant in this case-program, have took closer look into experiental learning (Kolb`s model) because our master`s thesis. We also found out or arrived to similar conclusions like you for example that problems should be challenging. We have made conclusions that problems offered to pupils have to be significant and maybe somehow important to their everyday life. It is question about motivation and starting the learning process. It`s also question about the subject which are taught being adapted to the needs of later use. Maybe it`s finally question about awaken learners to think and concern with their inner conflict. It might possible that it`s then question about problems being challenging. It means that problems should be in so concrete level that learners will take an interest in it. Do you mean this by problem being accessible? What is your opinion about problem solving and social dimension in it? Is it worth of it if we try to solve the problem together or is it better way to try to solve the problem on one`s own? (WRITER:2100) READERS:2100, 3939, 3950, 4194, 4210, 3933, 4225, 220, 1822, 1675 =10

PARENT_MESSAGE:8785 > MESSAGE:8811 = A clarification of accessibility : 2000-04-16 01:56:42 "Concrete level" is probably a valid interpretation of the term. But by using accessibility as a criterion on which to select problems, I was also attempting to communicate the notions of : - immediacy & proximity - the students can make first-hand observations of the problem; - cognitive appropriateness - the cognitive demands of the problem are within the students' range of potential achievement; - appropriateness -- age, interests, and other abilities of the learner; and The question you raise about the social dimension is certainly an important decision for teachers. I often choose to design problem solving activities as group endeavors when: - the problem state or its resolution has inherent social qualitites; - social learning goals are also a priority; - the problem is open-ended, complex and requires a broad range of expertise; - the learning objectives address developing broad understandings and sensitivity rather than developing specific skills. What criteria would you use? (WRITER:3950) READERS:3950, 4194, 2100, 4210, 4225, 3933, 1822, 220, 1675 =9

PARENT_MESSAGE:7959 > MESSAGE:8823 = Right way to teach science : 2000-04-16 05:35:52 When I was talking with my friends about how an ideal/good science teacher should be, we came up some properties that I'll list below. In fact these properties should be present in all teachers. Science teachers should: Have a stong knowledge about their areas and be well prepared for the class. Follow new findings in the area of science and bring these findings into the classroom to share with the students. Be flexible for using different instructional techniques according to the requirement of the task. Open students' eyes about what is important and how they can use scientific information in the future. Teach according to the students' level, otherwise science will be seen abstract to them. Give real life examples to make learning more meaningful. Make field trips, design outdoor activities, and experiments to motivate students. Give interesting facts and make interesting links between subjects to excite them. Give opportunity to the students to find results by active participation such as group discussions and ask critical questions to enhance their thinking. Tell the purpose of activities students doing. Mentor students in those activities and give feedback about the progress students make. Foster students to make research, use libraries, etc. Give them opprtunity to use their knowledge in other areas and see the result of their activities: They can construct science clubs, publish scientific newspapers. Love their job, and show enthusiasm to the students about learning science. (WRITER:3939) READERS:3939, 3938, 4194, 4210, 2100, 4216, 3933, 4225, 1822, 220, 1675, 1760 =12

PARENT_MESSAGE:7959 > MESSAGE:8828 = Agree with Ronald! : 2000-04-16 12:36:50 I agree with Ronald. You are not alone. Also in Turkey, generally teaching are based on abstract things not only in science and math but also in other disciplines. But something different in Turkey, the reason of this is that teachers also are educated in the same way that they teach. As Greeno et all (1996) mentions in Ormrod, 1999, we can speculate that such activities (authentic activities) are likely to have several benefits. For one thing when students work in a naturalistic environment offers, students should be able to accomplish more than they might accomplish in relatively artificial and unscaffolded classroom tasks. Second, complex authentic tasks can help students make meaningful connections among the various ideas and skills they have learned in the classroom. Finally, because authentic activities resemble real-world tasks and problems, they should help students transfer the things they learn at school to out-of-school contexts. Instead of loading students with lots of unconnected knowledge, teachers should encourage students to conduct experiments, create something new, participate them in a debate, to make group discussions, conduct a field work related with topic, to critically analyze the things that they saw around them, share their ideas with each other. But as authentic activities are generally more complex than traditional classroom tasks, they may require considerable teacher scaffolding. Greeno, J.G., Collins, A.M., & Resnick, L.B. (1996). Cognition and learning. In

J.E. Ormrod (1999)Human learning. Upple Saddle River, NJ: Merrill (WRITER:3938) READERS:3938, 3957, 4194, 4210, 2100, 4216, 3933, 4225, 1822, 220, 3939, 1675, 1760 =13

PARENT_MESSAGE:8552 > MESSAGE:8923 = Science literacy : 2000-04-19 11:25:42 Isn't basic science knowledge like basic knowledge in reading and writing? A person without the understanding of natural phenomenon around him is not so aware of environmental problems, for instance and does not understand the facts about nuclear power or solar energy. Are there practically oriented materials guiding teachers in organising such practically oriented teaching (problem based, critical inquiry, understanding the observations) as mentioned in the discussion on this case? (WRITER:1822) READERS:2100, 220, 3939, 1822, 3933, 1675 =6

PARENT_MESSAGE:8828 > MESSAGE:8928 = authenticity of learning issues : 2000-04-19 17:34:09 I also think that tying studies around authentic issues and problems would be an ideal approach to teaching. Language learning, for example, is very often seen as polishing linguistic structures while pupils would have capacity to use language in much more challenging ways in real interaction. Yesterday, two of my students in the foreign language education course presented their work on how to deal with culture from the point of view of postmodernism in language classes. The approach was to explore our surrounding popular culture - much through the new media -in projects identified by pupils themselves. All the students were enthusiastic about the ideas presented and there was lively discussion about how this context would really be something that interests the pupils and how this kind of extension of traditional language learning would be welcome in our schools. (WRITER:220) READERS:220, 2100, 3939, 1675, 1822, 3933 =6

PARENT_MESSAGE:8923 > MESSAGE:9056 = Final report : 2000-05-05 10:06:12 In my opinion, comparing to my own experiences in learning science in junior high and high school level, learning have been mostly knowing different kinds of things like formulas by heart. This kind of knowledge is very easy to forget and difficult to put in practice. I think that teaching have been mostly in abstract level without checking out in which level the learners are. Demands for starting the complete learning process have been the issue in my case. By saying complete learning or whole learning process I mean learning both in concrete and abstract level; the highest level is the capability to handle and think problems in abstract level. The way to the highest, abstract level goes trough the concrete level. To be complete, learning process should be started by concrete experience. When teaching new subject or theme which are not familiar to pupils this happens with concrete models and examples by observing it and all the things which belongs to handled phenomenon. At least it is question how to offer the subject matter to the pupils. If we suppose that subject matter is totally new to the pupils, so that they do not have early experience about it or they have very little experience about it, the first contact to the subject matter should be in very concrete level. Kolb says that "learning is process whereby knowledge is created through the transformation of experience". There are four ideas or conception in Kolb`s model; concrete experience, reflective observation, abstract conceptualization and active experimentation. Efficient learners need all these kinds of abilities. Also there are mentioned two dimensions to the learning process in Kolb`s model of experiental learning process. The first dimension represents the concrete experiencing of events at one end and abstract conceptualization at the other. Abstract conceptualization happens trough the concrete experiencing. The other dimension has active experimentation at one end and reflective observation at the other. Experience alone is not the key to learning. As mentioned above phenomenon or events has to be observed, named and reflective first before we can talk about learning. According to Kolb`s model learning process is starting by concrete experience. So itïs position in whole learning process is very central. We as future teachers should be recognize all this. As a teachers we should have very depth knowledge about the subject matter but first of all knowledge about pupils capability and level of knowledge; are they already able to handle

things in abstract level or should teaching be more in concrete level. As a teachers we should build more an pupils recourses. In my opinion it is teachers role to offer subject matter to the pupils or better saying give changes to get and learn it. In my case I wanted to find out the ways teachers can help pupils to learn and find out usefulness of subjects so that pupils have also feeling that they can put learned things in practice. When it is question about teachers role in concrete or experiental learning process suggestion were as follows. Teachers way to think and behave as a experts role were mentioned. This means that teacher should show how to solve the problem or better saying how to define and frame the problem. So it is question how to offer the subject matter. Problem-based approaches are suitable. Especially open-ended investigation tasks whit timely scaffolding were mentioned. Also by coaching to observe and supervise students in guiding them toward expert performance are the concrete ways for this. Further student have to be awareness about what they are doing. So by fostering students reflections and importance of responsibility of his own learning might have meaning when it is question about complete learning process. When it is question about the problem or task offered by teacher it should be significance to the pupils. This might mean that it have some connections to pupils every day life or they see it somehow useful. When it is question about the nature of the problem it should be offered immediately and proximity to the pupils so that students can make first-hand observations of the problem. Also cognitive appropriateness - the cognitive demands of the problem are within the students' range of potential achievement- are important. Teachers have to know pupils resources. Also social dimension of the learning process came up. When we meet a new phenomenon first we try to name it or at least part of it. When this naming happens in a social situation, phenomenon will become somehow more meaningful or richer to the observers. And further when it is question for example about open-ended, complex problem it requires a broad range of expertise. That is possible in social situations. So summary when we are talking about building on pupils recourses in learning situations, we have to consider the way we offer the subject matter. It has to be happen in pupils level of knowledge through the concrete experience - and if possible in social situation. Sources: Master Theme (under construction) by Joni X. & Jaakko Y. Experiental Learning and Reflection as Tools for Teachers Professional Growth as Environmental Educators by Ilona Wilska-Pekonen, University of Joensuu (WRITER:2100) READERS:2100, 1822, 954, 3933, 1760, 220, 2410, 1675 =8