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Trajectories of Learning

Embodied Interaction in Change
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Abstract

This dissertation is about learning as changing understanding in social and situated activities. It takes part in the development of a reconceptualization of learning initiated within participationist perspectives. Multiparty interaction in situated activities is a primordial site for the exploration of human action and cognition. Through the theoretical framework of Conversation Analysis (CA), a method for the analysis and description of trajectories of learning is proposed. Departing from a view of learning, interaction, and cognition as closely related, learning is argued as gradually changing understanding in situated activities.

The empirical material consists of video recordings from an elementary school and pilot training. The recordings are analyzed using CA methods, including detailed attention to embodied features of interaction. The analyses focus the development of trajectories of learning through the participants’ orientations. The trajectories are based on topicalizations and co-constructions of contents of learning, where interactional organization and content are interrelated. Participants are shown to make relevant relations between past, present, and future actions and material settings, and their ways of aligning and resisting participation and change are explored. A framework for the analysis of learning as embodied interaction in change is developed.

The dissertation shows the fruitfulness of CA work for the understanding of learning processes. The results underline the importance of including embodied action, as constitutive of the co-constructions of contents, into learning studies. The value of highlighting learning as co-construction and of anchoring the analyses in the participants’ orientations is underscored. The results further the understanding of how people learn, and of how they make relevant knowledge and experiences in activity. The understanding of learning and change as action, which can be initiated, aligned with, and resisted, opens up for future developments within CA, where learning researchers might be able to describe more precisely how human learning is constituted.

Keywords: learning, interaction, situated cognition, embodiment, conversation analysis

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Ekshagarna Krusenberg, in April 2009

Helen Melander
CHAPTER I

Introduction and aims

Participationist perspectives on learning have come to play an important part in current theorizing on learning. Through conceptualizing learning as social and situated, these perspectives have placed learning in the context of lived experiences of participation in the world, where people are engaged in collaborative activities (Lave & Wenger, 1991; Lave, 1993; Sfard, 2008).

This dissertation is about learning as changing understanding in joint activities. It takes part in the development of a reconceptualization of learning initiated within participationist perspectives, and it proposes and develops a method for analyzing and describing trajectories of learning as they evolve in embodied interaction between the participants in situated activities.

The ability to interact with others and to engage in shared and collaborative projects is key to the human existence, as well as to processes of learning and development (Enfield & Levinson, 2006; Sfard, 2008). The possibility of engaging in coordinated actions, that are managed through joint commitments, is based on the assumption that we inhabit some same world in which we have both expectations upon and understandings of other people’s intentions and knowledge (Clark, 2006). Interaction is consequently the “most basic site of experience, and hence functions as the most basic site of organized activity where learning can take place” (Mondada & Pekarek Doehler, 2004, p. 502).

In Conversation Analysis (commonly abbreviated CA), a theoretical and analytical understanding of the meaningful and orderly organization of human sociality has been developed. CA is a theory of human action within which the organization of interaction has been described in detailed and systematic ways (e.g. Schegloff, 1996). Human action is built through the simultaneous use of many different kinds of interactional resources. Participants use semantic, syntactic, and prosodic features of talk, they use gestures, gaze, and body posture, as well as resources in the surrounding material environment when participating in social interaction. An understanding of human action must encompass and be able to come to terms with the integrated way in which interaction is organized, through taking into account the participants’ concurrent use of multiple resources (Goodwin, 2000a).

A participationist perspective invites us to look at processes of learning and cognition in new ways. Rather than understanding these notions as tied to individual minds, learning and cognition instead lie in the relations between people. This radically shifts the basic analytic unit from the individual mind to participants engaged in concerted action in situated activities. Consequently, a primordial site
for the investigation of human action and cognition is multiparty interaction in
situated activities (Goodwin, 2000a; Hutchins, 2006; Lave, 1993).

Taking multiparty interaction as the basic analytic unit, cognition can be un-
derstood as distributed over several participants and their surrounding material
environment. Socially distributed cognition sees real-world cognition – cognition
in the wild – as processes that involve the interaction of the consequences of past
experience with the affordances of the present (Hutchins, 1995a, 2006).

The meaningful organization of interaction as described in CA research, builds
on the assumption that people create shared understanding turn-by-turn, or
action-by-action, and that they make relevant these and other understandings,
earlier experiences, and knowledge to each other in interaction. Participants build
their actions on what has come before, something that consequently means that
current actions also shape future possible actions. In each and every action, an
understanding of what has come before is made visible. This understanding is
thus laid out in the open for acceptance or modification. In this way, shared
understandings are managed in the moment-to-moment interaction (Heritage,

In this dissertation, practices of shared understandings will be considered as
the basis for the analyses of learning as changing understanding in situated activi-
ties. This position motivates a focus on studying learning within empirical set-
tings, concentrating on the organizational details of naturally occurring actions
and interactions, rather than on investigating data that are elicited by researchers.
Within such a perspective, learning processes need to be observed within the or-
dinary contexts of routine activities (Mondada & Pekarek Doehler, 2004).

Aims

The overall aim of this dissertation is to contribute to the development of an
empirically grounded theoretical understanding of learning from a conversation
analytic perspective.

Three areas of inquiry are focused:

- interactive constructions of contents of learning
- establishing continuity and change within and between activities
- ways of resisting change and participation

A close affinity between learning, interaction, and cognition is argued. Thus,
learning is possible to understand as situated cognition in change. In the analyses,
the integrated use of different interactional resources – talk, embodied action,
and material environment – will be explored. As a consequence of this interest,
I will also develop ways of transcribing and representing integrated interaction.
The dissertation is intended as a starting point for further discussions. The purpose is not to develop an exhaustive explanatory meta-theory, but to address and discuss some questions and issues that arise when, from an interactionist perspective, conceptualizing learning as changing understanding in socially and culturally situated activities.

Trajectories of learning in situated activities

In the dissertation, a framework for the analysis of trajectories of learning will be developed. The procedural sense of cognition and learning is emphasized, and learning is explored as an ongoing interactional process rather than as the description of a final state (cf. Schegloff, 1991; Hellermann, 2008). The concept of learning is connected to notions of continuity and change, as part of an evolving shared understanding in situated activities.

The detailed analyses of video recordings from two settings provide the empirical ground for the developed argument. In order to be able to discuss learning in conceptual terms, rather than exploring learning as tied to specific practices, I have chosen to work with data from two diverse practices. In the detailed analyses of the different activities, questions related to the specificities of each activity are however also raised. Through a careful exploration and analysis we learn both about how specific practices are constituted in interaction and about more general issues of learning in relation to the different activities.

The first data corpus consists of video recordings from the early years in the elementary school. The second data set are recordings of flight lessons at an aviation academy at upper secondary level. From these two sets of data three different activities have been selected for analyses: first, a reading activity, in which a small group of children are engaged in collaboratively reading a book, second, a jump rope activity, where three girls are jumping rope together on the schoolyard, and third, a young adult practicing a flight maneuver.

Plan of the dissertation

The text begins with a chapter presenting the theoretical framework and foundations of the dissertation. Chapter 2 consists of an introduction to an interactionist perspective on learning, with a focus on interaction and cognition, thus situating learning within that domain. The perspective of conversation analysis will be introduced and I will describe a framework for the analysis of embodied action in situated activities. Special attention will be paid to participants’ sense-making practices and how shared understanding and intersubjectivity is built in interaction, as a basis for an understanding of cognition and learning. Previous research claiming to study processes of learning and development from a CA perspective is also introduced.
The three following chapters discuss methodological issues. Chapter 3 is focused on fieldwork and data. Questions related to practices of transcription and representation of data are discussed in Chapter 4. Matters of representing embodied action are discussed at some length, as the inclusion of embodied action in a material environment into the analysis both theoretically and analytically constitutes an important part of this dissertation. Chapter 5 is dedicated to descriptions of how I have proceeded with the analysis. I will moreover introduce how the trajectories of learning have been constructed and how they are organized.

The dissertation contains three analytical chapters, Chapters 6, 7, and 8. It should be noticed, that these are not to be understood as constituting three separate studies, but that they instead build upon each other in the order in which they are presented. In Chapter 6, interactive constructions of contents of learning are focused, whereas trajectories of learning and participants’ orientations to change and continuity are explored in Chapter 7. In Chapter 8, the notion of change is problematized and discussed in relation to the question of how interactional change and learning are related.

The dissertation is brought to conclusion through a discussion in Chapter 9.
CHAPTER II

Situating learning: an interactionist approach to cognition

Learning theory has during the last decades seen the emergence and rapid growth of a new theoretical field of research, what Sfard (1998, 2008) has called a participationist perspective on learning. Particularly important to the development of this perspective has been the work of Lave (e.g. Lave 1988/1997, 1993), Lave and Wenger (1991), and Rogoff (e.g. 2003), from whom the notion of participation is derived. The metaphor of participation is intended as a contrast to the metaphor of acquisition, an understanding of learning and knowledge that Sfard (1998, 2008) argues has up until quite recently, in a historical sense, dominated learning theory.

In an acquisitionist perspective, knowledge is seen as a commodity, as a defined entity that the learning individual internalizes. Knowledge enters the learning individual’s mind. To learn is to acquire knowledge, and to know something is consequently to possess knowledge. In contrast, in a participationist perspective, learning is the process of becoming a member of a community of practice. Knowledge is here understood as an aspect of an activity or discourse. While an acquisitionist perspective stresses the individual mind, a participationist perspective shifts the focus to relations between the individual and others, and how these relations evolve over time (Sfard, 1998).

A more broadly used term for referring to the participationist perspective is situated learning. Lave and Wenger (1991) argued the need for a rethinking of the concept of learning. They connect learning to a theory of social practice and sociocultural continuity and change, saying that learning is an intrinsic part of all human activities, rather than a phenomenon restricted to different institutional settings designed for teaching and learning. In the introductory chapter to the much referred to Understanding Practice (Chaiklin & Lave, 1993), Lave writes that

there is no such thing as “learning” sui generis, but only changing participation in the culturally designed settings of everyday life. Or, to put it the other way around, participation in everyday life may be thought of as a process of changing understanding in practice, that is, as learning. (Lave, 1993, pp. 5-6)

Lave and Wenger (1991) further claim that learning involves the whole person acting in the world in terms of an increased participation in different communities of practice. Learning is an integral part of all social practice, and “learning,
thinking, and knowing are relations among people in activity in, with, and arising from the socially and culturally structured world” (ibid., p. 51). The authors insist on the need to question and rethink dichotomies such as body versus mind, inner versus outer. In reaction to more mentally oriented theories of learning, they claim that a concept such as internalization of knowledge is not a fruitful way of thinking about how we learn things. Knowledge should not be understood as something that is to be found ‘out there’ in a solid and static state, where the task of the learning individual is to internalize this knowledge (i.e., an acquisitionist perspective). Instead, Lave and Wenger (1991) offer the concept of participation:

Participation is always based on situated negotiation and renegotiation of meaning in the world. This implies that understanding and experience are in constant interaction – indeed are mutually constitutive. The notion of participation thus dissolves dichotomies between cerebral and embodied activity, between contemplation and involvement, between abstraction and experience: persons, actions, and the world are implicated in all thought, speech, knowing, and learning. (Lave & Wenger, 1991, pp. 51-52)

This way of conceptualizing learning as changing participation has been immensely important to recent research on processes of learning from a conversation analytic perspective, something that will be discussed later in this chapter.

This dissertation can be understood as part of participationist or situated perspectives on learning and cognition – based on and argued from an interactionist point of view. In this chapter, I will position my study theoretically, developing a framework for the analysis of interaction and cognition, and for an understanding of the relation between interaction and cognition. This will provide ground for the discussion of learning that is the main subject of my work and that will be initiated here, but will continue throughout the dissertation.

The fundamentally social dimension of human life

Interaction or communication, like thinking, may be some of the most human of human activities (Sfard, 2008). The central role of interaction rests on the notion of participation in a common mental world. A world in which we have detailed expectations about each other’s behavior, and beliefs about what we share and do not share in the way of knowledge, intentions, and motivations (Enfield & Levinson, 2006). Communication in itself is a fundamentally cooperative enterprise and operates on the assumption of first, the existence of a mutual and shared conceptual ground, and second, that there are mutually assumed cooperative communicative motives (Tomasello, 2008).

Human cooperation is structured by shared intentionalities. Shared intentionality is what is necessary for engaging in uniquely human forms of collaborative activity in which a plural subject “we” is involved: joint goals, joint attention, mutual knowledge, shared beliefs – all in the context of various cooperative mo-
tives (*ibid.*, see also Tomasello, 2006). Unique is the human way of understanding and inferring other people's intentions, or interpreting other people's behavior in terms of what their intentions are (in the literature referred to as Theory of Mind). That is, an understanding as to what, out of a host of possibilities, another is attending to and, most essentially, for what purposes.

Accordingly, a significant feature of human societies is the high level of cooperation toward shared goals. The ability to coordinate our activities and the management of intersubjectivity is key to what defines humanity (Enfield & Levinson, 2006; Tomasello, 2008). We engage in collaborative action, working toward shared goals with a high degree of cooperation (*cf.* Clark, 2006; Hanks, 2006).

The ability to establish joint foci of attention is a prerequisite for cooperation. It has been demonstrated that this is something that children orient to at a very early age (*i.e.* understanding others as intentional agents by the age of nine to twelve months, Tomasello, 1999). Establishing joint attention is something that requires active work by the participants and that, in line with the understanding of interaction encompassed in this dissertation, has been argued as a fundamentally interactional process. Kidwell and Zimmerman (2006) write that:

> Social interaction relies in a most basic way on the abilities of participants to coordinate their attention with one another. That is, for participants to interact requires at the very least that they are able to attend to one another, discern the relevant objects and events of one another's attentional focus and, further, implement their own lines of action by reference to where, and toward what, others may be attending. (Kidwell & Zimmerman, 2006, p. 592)

Not only is communication and cooperation crucial, but humans are also to a high degree systematically involved in activities of teaching and learning. Tomasello (1999) claims that humans have unique skills of cultural learning and imitation, which enable them to learn from others in powerful ways. The high social skills that human beings have and the ability to work together in groups, renders possible the co-construction of knowledge, as well as the use of other people's knowledge, something that in turn is what enables cultural development (*cf.* Enfield & Levinson, 2006; see also Säljö 2000, 2005).

The way that learning is approached in this dissertation relies on the centrality of interaction, cognition, and learning. The capability of establishing and sustaining shared foci of attention, and the active work required to engage in shared and collaborative projects, is considered a prerequisite for learning. Moreover, this constitutes an analytical point of entry to the understanding of learning processes as they occur in interaction. In order to establish and sustain shared understanding it will be demonstrated that and how participants orient toward shared foci of attention (*see Chapters 6, 7, and 8*).
An organization of meaningful action

Conversation analysis has emerged as an approach to the study of social action, building on the work of Goffman (e.g. 1963, 1967) and Garfinkel (e.g. 1967/2007). First formulated within the disciplinary field of sociology it has spread to many other disciplines, there among education. In general terms, CA is the study of the organization of people’s activities in society. A fundamental assumption is that human actions are meaningful, and that actions are produced and understood in relation to shared procedures and methods (cf. Garfinkel 1967/2007; Schutz, 1962). As was discussed above, an integral part of human everyday life is that we interact and coordinate our actions with others. A goal of CA is to describe and explain these shared methods that actors use to produce and recognize their own and other people’s actions (Schegloff, 1996, 2007).1

CA has thus evolved as a perspective for the analysis and description of human sociality. Regardless of the reference to conversation through conversation analysis, the object of study is however not conversation in and by itself. As Heath (1997) writes, CA is not concerned with language per se, but rather “derives from the recognition that talk is a principal means through which we produce and recognize social actions and activities” (p. 186). In an introductory text to CA as a theoretical and methodological perspective, Schegloff (1996) states that a conversation analytic paper “invites reading not primarily for it’s bearing on so-called sociolinguistic themes but as a contribution to both basic sociological theory and appropriate methods for developing it” (p. 162). In focus is the repertoire of actions and practices out of which the quotidian life of the members of a social species is fashioned (ibid., p. 164). Activities and practices are hence understood as constituted in interaction. The constitutive dimension of interaction involves all kinds of activities; learning and cognition not excluded.

The primordial unit of analysis is multiparty interaction in situated activities rather than utterances in isolation, produced by individuals. The contributions of individual participants are analyzed as interactional actions engaging the collectivity of participants, where the analytic focus is directed toward what the participants are doing together. As Gülich and Mondada (2001) remark, this means that even actions that appear to be individual or personal do not and cannot escape an interactional analysis. Consequently, notions such as cognition and learning – areas that are traditionally thought of as more or less strictly individual phenomena and not under the constraints of interaction – also require a re-conceptualization.

One of the fundamental principles of ethnomethodology, and something that has had a decisive influence on the development of CA, is the observation of members’ methods. This means that analyses should always be grounded in the perspectives of the members or the participants (a term that I will use interchangeably with members). The description and analysis of action should hence be anchored in the participants’ orientations. However, this does not imply or require

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1 For general introductions to CA, e.g. see Gülich & Mondada, 2001 (in French); ten Have, 1999; Hutchby & Wooffitt, 1998; Psathas, 1995.
that the participants necessarily are aware of the ways in which they organize their conduct or would describe it in the same way: they are inevitably engaged in the topic or business at hand rather than the analysis of the ways in which it is being accomplished (Heath & Hindmarsh, 2002).

CA research has demonstrated that interaction is systematically and methodically accomplished by participants that are engaged in a constant work of coordination, synchronization, and adjustment of their perspectives. For example, early research resulted in the groundbreaking description of the turn-taking organization. Observations were made about the fact that—and more importantly how—people take turns at talking, that overwhelmingly one speaker talks at a time, that there are methods for how turns are allocated, etc. (Sacks, Schegloff & Jefferson, 1974). Other organizations have later been described, such as for example sequence organization (Schegloff, 2007) and the organization for repair (Schegloff, Jefferson & Sacks, 1997; Schegloff, 1992).

In spite of the orderly organization of interaction, it is not a deterministic or mechanistic system. CA is the study of meaningful action rather than mechanical behavior (cf: extended discussion in Edwards, 1997). In other words, it is not possible to predict what people will do in every given situation. As Coulter (1999) points out, grammar is normative whereas what people actually say is up to them. However, what they can mean by what they are saying is not solely up to them to say (p. 167). The orderliness is tied to the sense of intelligibility and what constitutes meaningfulness.

In CA, focus is, as has been said above, on social action, that is, on the interactional work that utterances are doing within sequences of action. Language and interaction are considered the media of social action, and talk and embodied action are the primary vehicles through which people accomplish social activities and events. The accomplishment of social action is deeply interactional, and requires that not only the party producing an action but that also others present must be able to systematically recognize the shape and character of what is occurring (Goodwin, 2000a). This is what makes it possible for separate parties to recognize in common not only what is happening in a here-and-now, but more importantly, they have access to what range of events that are being projected as relevant nexts. In such a way, they can produce a next action that is coordinated with what someone else has just done (ibid.).

CA research is in other words concerned with the ways in which utterances accomplish particular actions by virtue of their placement within sequences of actions (Gülich & Mondada, 2001). At all times, it is a turn in its sequential environment that is focused, rather than the turn in isolation. In CA research, the constitution of meaning is closely linked to the notion of sequentiality. Heritage (2005) writes that

CA embodies a theory that argues that previous actions are a primary aspect of the context of an action, that the meaning of an action is heavily shaped by the sequence of previous actions from which it emerges, and that social con-
text itself is a dynamically created thing that is expressed in and through the sequential organization of interaction (Heritage, 2005, p. 105).

The sequentiality is sensitive to the temporal development of conversation, where each turn is tied to what precedes it and projects what will come next. Each and every action both empirically and normatively projects an array of possible next actions to be undertaken by a next speaker. In doing some current action, speakers normally project (empirically) and require (normatively) the relevance of a ‘next’ or range of possible ‘next’ actions to be done by a subsequent speaker, what is called “conditional relevance” (Heritage, 1995, p. 398).

The sense and significance of social actions and activities are inseparable from the immediate context; they emerge moment by moment reflexively creating the context in which they arise. Participants use and rely upon practices, procedures and reasoning, in short “methodological resources,” through which they produce social actions and make sense of the actions of others (Heath & Hindmarsh, 2002). Each conversational action is treated as both displaying an understanding of a prior action and projecting subsequent conversational actions, something that enables simultaneous analysis of: (a) the organization of action and (b) understanding in interaction (Goodwin & Heritage, 1995).

A central concern within CA is how participants create intersubjectivity, that is, how they manage shared understanding within the moment-to-moment interaction. As Garfinkel (1967/2007) noted in his studies, people make sense of some particular utterance by seeing it as part of a larger whole, which includes both what has preceded it and what they anticipate is to come. Each utterance, and the components of which it is composed, is thus treated as inherently indexical. According to Garfinkel, understandings are in this sense sufficient “for all practical purposes,” at a given point in the temporally unfolding course of an activity and are revisable in light of later evidence. This is something that has been taken up and developed within CA, where an interactional structure for the accomplishment of shared understanding has been described, what Heritage (1984) has referred to as “an architecture of intersubjectivity” (p. 254).

Through the very organization of conversation, participants co-construct a shared understanding of the current undertakings. In proposing a next action that is tied to the prior action, a next speaker orients to what has preceded and manifests the ways in which s/he treats and understands it. Speakers normally address themselves to preceding talk, and overwhelmingly to immediately preceding talk when constructing an utterance (Heritage, 1995). The second speaker thus makes public and observable the way that he or she understands the prior turn (in demonstrating how s/he aligns to the prior utterance, how he understands the topic, how s/he understand what action it is doing, etc.). S/He makes public this interpretation for the other participants and most notably the prior speaker, whose actions in third turn displays whether s/he accepts or repairs the understanding of his first turn. In other words, through the production of next actions, speakers show an understanding of a prior action and do so at a multiplicity of levels – for example, by an “answer,” a participant can show an under-
standing that the prior turn was possibly complete, that it was addressed to them, that it was an action of a particular type (e.g. a question), and so on (ibid.). These understandings are (tacitly) confirmed or can become the objects of repair at any third turn in an on-going sequence (Schegloff, 1992). This dynamic organizes the fundamental sequentiality of the exchange, which has effects on the methodology (for example in the analytic focus on the sequential placement of turns) and on the understanding of conversation as it has been formulated within CA. Sequential organization is both an integral feature of the social organization of talk and a methodological resource for its analysis: what is referred to as a proof-procedure (cf. Heath, 1997, p. 187; Sacks, Schegloff & Jefferson, 1974, p. 728-729).

Methods of establishing and sustaining shared understanding are of specific importance to the understanding of cognition and the relation between interaction and cognition that is encompassed in the dissertation. Hence, I will return to this issue toward the end of this chapter.

Embodied interaction in a material world

What has primarily been focused and developed within CA is the analysis of the organization of talk-in-interaction. The importance of gesture and other embodied action has always been recognized, but it has taken a longer time to develop an analytic framework capable of encompassing talk, embodied action, and orientations to a material environment. Building on the work of Goffman (e.g. 1961, 1981), Goodwin (e.g. 1981, 1994, 2000a, 2007a & b, see also Goodwin & M. Goodwin, 2004) has developed the notion of participation as an analytic concept.

Goffman (1963) explored how people engage in activities in different ways, thus problematizing ways of participating in face-to-face encounters. As unit of analysis he suggested the notions of encounters and focused gatherings, or the more abstract term “situated activity systems” (Goffman, 1961, p. 18). An encounter is defined as a “social arrangement that occurs when persons are in one another’s immediate physical presence” (ibid., p. 17). This involves

a single visual and cognitive focus of attention; a mutual and preferential openness to verbal communication; a heightened mutual relevance of acts; an eye-to-eye ecological huddle that maximizes each participant’s opportunity to perceive the other participants’ monitoring of him (Goffman, 1961, p. 18).

Goffman (1981) was interested in participant roles, and he provided descriptions of primarily the role of speaker as layered and laminated (for a discussion of further aspects of this, see Chapter 8). In Goodwin’s (e.g. 1981, 2000a & b) work, the interactive work of both speakers and hearers is analytically highlighted. Rather than treating speakers and hearers as inhabiting separate worlds, special attention is dedicated to the active role played by hearers and how speakers attend to hearers as active coparticipants, systematically modifying their talk so as to take
into account what their hearers are doing, procedures in which embodied actions play an important and decisive role (see also Goodwin & M. Goodwin, 2004).

Underlying the CA description of the sequential organization of talk-in-interaction, are, as was mentioned above, the observations that one party talks at a time and that speaker-change is both orderly and recurrent (Sacks, Schegloff & Jefferson, 1974, p. 700). This however, puts focus on the alternating speakers, whereas the hearer remains in the dark. Goodwin (2000b) writes that the “identities of speaker and hearer are the most generic participant categories relevant to the production of a strip of talk” (p. 159). In order to be a possible next speaker you are required to listen, but, Goodwin demonstrates, it turns out that being an active hearer involves more than merely listening. It requires “situated use of the body, and gaze in particular, as a way of visibly displaying to others the focus of one’s orientation” (ibid.), and speakers actively change the structure of their emerging talk in terms of what they see.

In such a way, Goodwin highlights the important role that hearers, or recipients, have in interaction, and how speakers actively attend to them. This is done through taking into account not only talk, but also the embodied practices of both speakers and hearers in the analyses.

Embodied actions may have (but don’t necessarily have) a different temporality than verbal utterances, in that they can be sustained for a longer time than talk that dissipates when having been produced. Heath (1997), another early and important researcher for the development of analytical frameworks for the analysis of embodied interaction, remarks on the interactional organization of bodily conduct that, “whilst visual conduct with and within talk is not necessarily organized on a turn by turn basis, we can inspect the ways in which the participants respond to each other’s actions as a way of investigating how their activities may be organized” (p. 188). It can be useful to consider the ways in which participants sequentially organize both talk and embodied action. In such a vein, pointing actions have been demonstrated to be of importance to the management of turn-taking, in that participants can on the one hand indicate their status as incipient speaker through pointing at something before actually speaking, and on the other hand mark their withdrawal from a discussion through ceasing to point (Mondada, 2004).

The sequential relations between visual and vocal actions remain a critical property of their organization. Because of the medium that they are embedded within, different resources – talk, body, and material environment – have very different properties. A pattern of a graphic field, the ability to see the relevance of continuously changing movement within it, is quite unlike the emergence of an utterance as a successive sequence of discrete events through time (Goodwin, 2003b).

Momentarily extending focus beyond CA research, gesture has been the focus of extensive research and there are different ways of understanding the role of gestures and how they should be analyzed. It is quite common to treat gestures as bearers of inherent meaning where, as a consequence, the categorization of ges-
tures is considered important, and where the gestures are seen as directly tied to the inner psychological life of the individual (e.g. McNeill, 1992). Gestures are in such a perspective a window on the mind, and gestures give away what people are thinking (Goldin-Meadow, 2003). When gestures are studied in the interactional context in which they are produced, it is still quite often the individual speaker that is in focus and the way that gesture functions in relation to spoken discourse (e.g. Kendon, 1997, 2004).

It is moreover common to assume that gestures could be interpreted independent of the context in which they occur (interactional or other), and that gestures carry symbolic meaning. M. Goodwin (1980) has in a particularly illustrative example addressed this argument, convincingly showing how participants use lateral headshakes – something that is routinely attributed a negative meaning – but that M. Goodwin is able to demonstrate was also used to convey positive meanings. Rather than treating gestures such as headshakes as though they had context-free meaning, participants make sense out of them by analyzing them with reference to the particulars of the local environment in which they occur (M. Goodwin, 1980, p. 308).

Heath & Hindmarsh (2002) argue that it is unfortunately common to conceptualize interaction as going on in or through different channels, and that these channels can thus be analyzed as separate from each other. As Goodwin (2007b) comments, it is moreover frequent that an invisible analytic boundary is drawn at the skin of the person. However, rather than being something that can be studied in isolation, as a self contained system,

gesture is an intrinsically parasitic phenomenon, something that gets its meaning and organization from the way in which it is fluidly linked to the other meaning making practices and sign systems that are constituting the events of the moment (Goodwin, 2007b, p. 198)

Many forms of human action “are built through the juxtaposition of quite diverse materials, including the actor's body, the bodies of others, language, structure in the environment, etc.” (Goodwin, 2003b, pp. 9-10), and not in one or another of these in isolation (see also Heath & Hindmarsh, 2002). Participants orient to these however diverse materials in an integrated way. Consequently, it is crucial that the analysis should also be capable of accounting for the integration and be able to provide an understanding of the ‘integratedness’ of interaction in situated practices.

In order to capture the relationship between talk, embodied action, and material environment, Goodwin has developed the analytical concepts contextual configurations (2000a) and environmentally coupled gestures (2007a & b). The notion contextual configurations, is used to analyze and describe participants’ ways of orienting to a dynamically changing environment. In this way, Goodwin analyzes how orientations to a material environment shape that same environment, as participants orient to it in changing ways. Environmentally coupled gestures are actions in which talk, gesture, and material environment are brought together, and
where participants rely upon all of these, both in order for speakers to produce actions and for hearers to interpret them (for a further discussion, see Chapter 7).

In line with the general focus on actions within CA, embodied actions are in this dissertation understood in terms of their import in accomplishing action, and are not considered an add-on that can be interpreted as separate from the interactional and sequential context in which they occur. Interaction is considered an integrated practice, where different sign systems – talk, gestures and material structure in the environment – are brought together and elaborate upon each other.

I will now open up for a broader understanding of cognition as social and situated, to then return to a discussion of the relation between interaction and cognition and how cognition can be conceptualized in a CA perspective.

Situated and socially distributed cognition

Just as a participationist perspective argues learning as social and situated, cognition is within such a perspective understood in a similar way. Lave (1988/1997) writes that cognition should be perceived of as taking place in the relations between people in different situated activities rather than as something that takes place inside individual mental minds. She suggests that the appropriate unit of analysis is “the whole person in action, acting with the settings of that activity” (p. 17). The boundaries of activity are thus placed well outside the individual mind to persons engaged with the world around them.

Knowledge and learning will be found distributed throughout the complex structure of persons-acting-in-setting. They cannot be pinned down to the head of the individual or to assigned tasks or to external tools or to the environment, but lie instead in the relations among them. (Lave, 1993, p. 9)

Processes of human cognition and learning are hence closely tied to situations and settings and cannot be abstracted from those same situations and settings. In a similar vein, Mondada and Pekarek Doehler (2004) state that competence cannot be defined in purely individual terms as a “series of potentialities located in the mind/brain of a lone individual” (p. 502) but involves a plurality of capacities embedded within particular activities.

Through history, Western thought has been dominated – and is to a large extent still dominated – by a dichotomization of mind and body. According to Gibbs (2005/2007), this has led to a neglection of the body, whereas human cognition is fundamentally shaped by embodied experience. The separation of mind and body has been connected to a hierarchical ordering of mind over body, most commonly associated with the French philosopher René Descartes. Descartes introduced the notion of a qualitative difference between the body and the mind, where mental phenomena were autonomous in relation to the body (ibid., p. 4).
The Cartesian dualism is perceived differently today, but nevertheless the separation of thinking and behavior is “alive and kicking,” Sfard (2008, p. 69) claims, and the dichotomization still highly influences our ways of thinking about cognition. The distinction is problematic for several reasons. In such a perspective the importance of bodily perception for human cognition tends to be underestimated (Gibbs 2005/2007). The separation of thinking and behavior often involves a hierarchical ordering of the two where thinking is considered superior (Sfard, 2008). This hierarchical ordering has as a consequence that it is possible to assume that thinking always precedes action, something that is sometimes the case, but where many of our actions are not deliberated in that way before being produced (see Coulter, 1999). Moreover, processes of learning and cognition are, in such a perspective, lodged inside the mind rather than as involving both mind and body.

From a cognitive psychology perspective, Gibbs (2005/2007) insists that the relationship between mind and body needs to be problematized and questioned. Gibbs describes the ways in which many aspects of cognition are grounded in embodied perception and embodied experiences. The perception of the world through action and embodiment is intrinsic to cognition and an understanding of cognition can hence not be separated from understandings of the way that we perceive the world and act in it. A distributed, embodied view of cognition offers “a vision of human thought that is far less internally computational and far more bodily extended into the real world of action than is traditionally understood in cognitive science” (ibid., p. 157).

Sfard (2008) thus introduces the notion of “commognition,” a word that she maintains will always remind us that whatever is said with its help, “refers to those phenomena that are traditionally included in the term cognition, as well as those usually associated with interpersonal exchanges” (p. 83). In such a way, thinking can be usefully defined as an individualized version of interpersonal communication. She writes that the foundational tenet of a participationist understanding of cognition and learning is that “patterned, collective forms of distinctly human forms of doing are developmentally prior to the activities of the individual” (p. 78, italics in original).

In a similar vein, Hutchins (1995a) proposes the perspective socially distributed cognition, and writes: “The emphasis on finding and describing ‘knowledge structures’ that are somewhere ‘inside’ the individual encourages us to overlook the fact that human cognition is always situated in a complex sociocultural world and cannot be unaffected by it.” (p. xiii). Hutchins (2006) suggests that socially distributed cognition is an approach to all cognition: distributed cognition is not a kind of cognition, but a perspective on cognition. The unit of analysis is therefore not decided beforehand, but should be defined in ways that “do not leave important things unexplained or unexplainable” (Hutchins, 2006, p. 376). In other words, the same cognitive models developed for understanding individual cognition, can be applied to the system as a whole (see also 1995b). On the other hand, what we learn about distributed cognition, about people thinking
together, simultaneously furthers our understanding of both socially distributed and individual cognition. Consequently, a proper understanding of not only cognition but also learning, involves taking into consideration the other kinds of organization that are present in the larger system surrounding the individual, as what happens inside the individual is not possible to understand without this reference (Hutchins, 1995a). Seeing human cognitive activity as an integral part of a larger system may bring a different sense of the nature of individual cognition. There is a heavy interaction of internal and external structure that suggests that the boundary between inside and outside, between individual and context, should be softened (ibid).

An understanding of why this softening of boundaries is motivated is, for example, through how the manipulation with the hand can lead to creative insights that are the cause rather than the effect of some kind of intention. The manipulation of the material world and embodied enactments is cognition, rather than the effect of cognition (Hutchins, 2008). There is an interaction between person and material environment, where people are not only operating on the world, but are acting with it. Folk theories assume that thought precedes actions, Hutchins (2006) asserts, whereas in (some) activity settings, acting in the world is thinking. It is significant that social interactions are composed of many elements, the meanings of which emerge from the network of relations among the elements, that cannot be “partialed out as being x percent in the brain, y percent in the body, and z percent in the world” (ibid., italics in original). The whole is larger than any of its parts (cf. Goodwin, 2007a).

Cognition in an interactionist perspective

Within the field of conversation analytic research on interaction and cognition, there is no general agreement upon how to understand the relationship between the two (cf. Potter & te Molder, 2005). Some researchers take a more cognitivist stance (e.g. Drew, 2005), others argue a complete respecification of cognition (e.g. Coulter, 1999, 2005), whereas still others study cognition as it is discursively constructed in interaction (e.g. Potter, 2006; Edwards, 1997).

The last position, which has been developed within the field of social psychology, is the perspective discursive psychology. Drawing on CA research, discursive psychology has emerged with an explicit interest in reflecting upon the relation between interaction and cognition through considering cognitive notions in terms of topics or orientations in participants’ talk. Three basic strands in this work can be discerned:

(a) it has respecified and criticized mainstream cognitive research; (b) it has produced analytic studies of the psychological thesaurus, exploring the situated and rhetorical uses of psychological terms in peoples’ talk; (c) it studies the way psychological themes and orientations are managed, whether psychological terms are used or not (Potter & te Molder, 2005, p. 49).
For example, Edwards (1997) writes that “mind and reality are treated analyti-
cally as discourse’s topics and business, the stuff the talk is about, and the analytic
task is to examine how participants descriptively construct them” (p.48, italics in
original). Treating cognitive categories as discursive, locates the study of cogni-
tion as a matter of what participants deal with and make relevant in discursive
practices. These topicalizations are interesting objects of study and they merit
attention in their own right. Lindwall and Lymer (2008) have in such a vein studied
topicalizations of “understanding” in science education, demonstrating their
interactional significance and how they are tied to the normative, disciplinary,
and institutional concerns of the setting in which they are produced.

As can be seen from the above, many positions can be taken toward the status
of the relationship between interaction and cognition. Rather than analyzing how
participants make relevant cognition in interaction, I will argue that the under-
standing of the meaningful organization of interaction as it has been described
within CA provides ground for arguing a close interrelationship between, or in-
deed an intertwinedness of, interaction and cognition. In fact, the description
of the organization relies on the fact that participants are constantly involved in
sustaining a shared understanding. Based in the CA literature, I will give a few
more specific examples.

As a sociologist, the issue of shared understanding was a central interest for
Sacks, one of the founders of CA, and something that he discussed in many ways.
For example, Sacks (1992a) makes the simple observation that the joint produc-
tion of a single utterance builds on the possibility of shared understanding.

Joe:  (cough) We were in an automobile discussion,
Henry: discussing the psychological motives for
Mel:  drag racing in the streets.
(Sacks, 1992a, pp. 144-145)

The way that the participants fit their talk together when telling a newcomer to
the group what they are doing, allows the hearer to see that they “know what’s on
each other’s minds” (ibid., p. 147) in a much more powerful way than had one
of them produced the whole utterance and the others agreed. Further, the mere
possibility of producing such a collaborative utterance relies on these participants
as inhabiting some same world of which they have shared experiences.

Another site for the exploration of how shared understanding is displayed is
the way in which people produce second stories in response to someone’s telling.
Sacks (1992b) observed that regularly, upon having heard the telling of a story by
a co-participant, people tell a story of their own in which what they understand
as critical elements in the first story are displayed. Sacks (1992b) comments that
“hearing in such a way as to analyze and analyzing in such a way as to produce a
second, is a basic way one goes about showing that one understands something
that another person has said” (p. 8). In this way, Sacks considers the questions of
shared experience and knowledge held in common as practical questions that are resolved interactionally.

Schegloff (1991) has directly addressed the issue of *socially shared cognition*, arguing the importance of a procedural sense of and basis for social sharedness and interaction as a strategic setting in which to study how social sharedness develops in interaction. Building on Garfinkel's argument (1967/2007), that “[t]he appropriate image of a common understanding is [...] an operation rather than a common intersection of overlapping sets” (p. 30), Schegloff (1991) points out that interaction enters into the very composition, design, and structuring of conduct and is part and parcel of whatever processes – cognitive or otherwise – are germane to the conception and constitution of acts, messages, or utterances in the first instance (Schegloff, 1991, pp. 153-154).

In such a way we have accessible for analysis how the participants orient to knowledge held in common through exploring how shared understanding is constituted turn-by-turn. Tying back to the analysis of second stories and their implications referred to above, we can come to the conclusion that this line of reasoning does not depend on the construction of second stories in response to a first. Instead, the way that talk and action is sequentially organized, where speakers display their understandings of the current undertakings turn by turn, and moreover through their actions are projecting possible nexts, is constantly relying upon shared understanding. Shared, or intersubjective, understandings are actively achieved as the outcome of concrete interactive processes.

Within such a perspective, the organization of interaction is not to be understood as a cognitive outcome that is produced by autonomous cognitive processes. Through each next turn participants display many understandings: of what has immediately preceded, or of what has occurred earlier or elsewhere and that figures in the talk of the turn. Most of the time these understandings are simply displayed *en passant* through the actions produced by talk, such as answering, responding, greeting and so on (Schegloff, 1992, p. 1300).

Something that was pointed out already by Sacks and that Schegloff (2006) writes about in relation to shared understanding, is that the way that people shape their actions in ways that are appropriate for co-present participants – *recipient design* – reveals the assumptions that speakers make about what is known in common by the participants. Through how turns are specifically produced with respect to the current recipient, for example visible in how things, places, and people are referred to, we can see what the participants are treating as shared knowledge and understanding. In other words, it is not only the very local understanding that is referred to, but references to knowledge and experience that participants assume more generally to be held by co-participants.

The organization for *repair* (Schegloff, Jefferson & Sacks, 1977) is fundamentally important for intersubjectivity, and repair has been formulated as a structurally provided defense for intersubjectivity (Schegloff, 1991, 1992). Through the
repair organization, participants have ways of assuring that if (when!) problems in understanding do occur, there are ways of coming to terms with these. Practices of repair make intersubjectivity into a matter of immediate and local determination, rather than a question of abstract and general facts, views, or stances. Participants display to each other their understandings, and thus problems in understanding are also made visible and possible to attend to and repair. Intersubjectivity or shared understanding are thereby always addressed for practical purposes about some determinate object in a here and now (Schegloff, 2006).

Goodwin (e.g. 2000a & b, 2003a, 2006, etc.) has developed an understanding of human sociality that both in theory and in practice demonstrates the relevance of understanding human action and development as public, embodied, and contextually situated. In several places, Goodwin (2003a; see also for example 2000a & b, 2006) has argued that the primordial site for the study of not only human action but also cognition is “multiple participants using talk to build action while attending to the distinctive properties of a relevant setting” (2003a, p. 239). In line with a rejection of views that situates all cognitive phenomena within the mental life of the individual, he asserts that

cognition is a reflexively situated process that encompasses both the sign-making capacity of the individual, for example through the production of talk, and different kinds of semiotic phenomena, from sequential organization to graphic fields, lodged within the material and social environment (Goodwin, 2000a, p. 1490).

In other words, cognition is a public and social process, and a theory of action must come to terms with both the details of language use and “the way in which the social, cultural, material and sequential structure of the environment where action occurs, figure into its organization” (Goodwin, 2000a, p. 1491).

This way of perceiving cognition provides us with the theoretical and analytical tools with which it is possible to override the dichotomies between individual mental life and sociocultural environment.

This framework is analytically different from many approaches to both cognition and embodiment that focus primarily on phenomena lodged within the individual. [...] While providing valuable insight into many kinds of conceptual organization, such focus on the interior life of a single actor does not develop a systematic framework for investigating the public visibility of the body as a dynamically unfolding, interactively organized locus for the production of relevant meaning and action (Goodwin, 2000a, p. 1517).

Human cognition encompasses and is embedded within the semiotic structure provided by historically shaped frameworks for actions, instantiated in both material media and the systematic practices of a group performing the activities that constitute its life world. It is crucial that other participants in the activity have the ability to systematically see how a co-participant’s body is doing specific things
by virtue of its positioning within a changing array of diverse semiotic fields (Goodwin, 2000a).

Thus far we have focused interaction and cognition. In the final section of the presentation of the theoretical framework, I will turn to the notion of learning, and how learning has been approached from a CA perspective.

**Previous CA research on learning and development**

Notions of learning or development have not until recently attracted much interest within CA. From early on there has however been an interest in exploring the organization of participation within educational activities. What has been investigated and described are how different educational tasks and practices are interactionally constituted, rather than processes of learning *per se*. Instead of dealing with the notion of learning, that has possibly also been understood as imbued with mentalistic assumptions and associated with things that are not readily accessible for analysis, interest has been directed at describing the interactional architecture of educational settings and instructional activities.

In a characteristic way, Lerner (1995) writes that rather than asking questions about what children need to know in order to participate effectively in the classroom, that is questions directly related to knowledge and learning, the question can be respecified. Instead, Lerner asks what the opportunities are for participation in instructional activities. The respecification consists in the question being about participation in classroom activities and its social-sequential organization rather than a question about knowledge.

The research result of this reformulation is not a stock of shared knowledge or list of competencies, but a description of interactional practices that produce the opportunities and possibilities for participation in instructional activities. These practices consist of the talk and visible behaviors of the participants. However, it is the organization of the recognizable *actions* that are realized through particular utterances and body behavior produced in particular ways at particular places in a particular course of action that is of interest here. So, I am not searching for the contents of a mind or the shared contents of several minds or even the raw materials of sociality. I am searching for and describing the shared practices that enable sociality in the classroom. (Lerner, 1995, pp. 111-112, italics in original)

The quote is included at some length, as it captures an important stance in many of the CA studies with an interest in educational settings, although not always as clearly formulated. It is a line of work that has been very successful, and that has provided important insights into how the organization of participation in itself is of consequence for the constitution of classroom activities and for the people participating in these same activities. Further, it has contributed to an understanding and description of what these participation structures look like. Obviously, the descriptions of participation structures are not unrelated to issues
of knowledge and learning either, but could be characterized as being about conditions for learning.

As my main interest is the analysis and description of learning processes, I will in the following focus studies that share this interest. Consequently, the studies that I will comment upon are all explicitly addressing the notions of learning and development.

Studies of processes of learning and development

As of today only a few studies have directly addressed the question of learning and its relation to interaction, arguing that someone is learning something and claiming to be able to demonstrate this learning, or in other words claiming to study and demonstrate processes of learning and development. Here, I will primarily pay attention to ways in which these studies have theoretically anchored their understandings of learning and development. Some of the studies presented here, and other, for my interests relevant research, will also be discussed in the analytical chapters (Chapters 6-8).

An early example of using CA to study development is Wootton’s (1997) monograph entitled Interaction and the Development of Mind, in which he presents and empirically argues for a sequential approach, where the perspective of CA is used to analyze a child’s development over time (in this case several years) in terms of changes in the way that she performs requests. Requests are ways in which the child is trying to enlist some form of assistance from her parents. Through studying requests, Wootton develops an understanding of how the child comes to gain access to the social and shared world that informs human thought and action from an interactionist perspective, and addresses work in cognitive developmental psychology, perhaps most notably the work of Piaget and co-workers.

Martin (2004, see also 2009) studied learning as interactional change. Based on data from a physiotherapy practice, she demonstrates patients’ learning in terms of changes in the way that the patients are able to identify and correct or repair (Schegloff, Jefferson & Sacks, 1977; Schegloff, 1992) problems in the ways that they are moving their bodies. There is a development over time in the way that these interactional patterns are carried out. In the beginning, it is the physiotherapist who both identifies and corrects problems in the patients’ movements, whereas toward the end of what could be labeled as successful learning, the patient is able to identify and correct possible problems him/herself. Martin thus conceptualizes learning as changes in interaction patterns, or changes in participation. She combines a sociocultural perspective of learning (e.g. Lave 1993; Rogoff, 2003) and CA, where CA is used to operationalize the definition of learning as changing participation in the culturally designed settings of everyday life (Lave, 1993).

Nishizaka (2006) analyzed two lessons where a child learns to play the violin, explicitly focusing how to play quarter notes. Nishizaka locates the developing
understanding of how to play these notes in interaction, at the intersection of bodies, artifacts, and talk. The study does not draw on a specific theoretical perspective on learning besides CA and CA inspired interaction studies.

In the second language acquisition (SLA) literature there has been a comparatively high interest in CA as a way of analyzing learning, both in terms of participation structures in the classroom and in terms of learning as changing participation (e.g. see Firth & Wagner, 1997, 2007; and the special issue in Modern Language Journal, edited by Markee & Kasper, 2004). It is perhaps not surprising that this field of research has rapidly evolved and proved fruitful, as interactional competence, or the management of participation structures, is an intrinsic part of language learning.

For example, Cekaite (2007) studied an L2 (second language learner) novice’s changing participation patterns during multiparty conversational activities in a classroom. The primary focus is on “the longitudinal microgenesis of the child’s interactional competence in the classroom” (p. 47). The analysis is done through the examination of the student’s emergent language and turn-taking skills and how the interplay between the two affects participation in classroom activities. Cekaite demonstrates how the trajectory from novice to expert is not unilinear, and that interactional and language competencies are interrelated (see also 2006).

Hellermann (2008) studied how a second language student develops skills over 40 weeks through the analysis of opening sequences of language tasks (see particularly pp. 69-81). Hellermann focused openings of group work (where there is a shift from teacher-student interaction to peer-to-peer interaction) as a fruitful place to approach the study of changing participation. In these opening sequences the students are using their own language skills, as that part of the task completion is not explicitly given instructions about. This represents a methodological way of isolating a specific interactional practice, that is, openings of group work, and analyzing how the learners’ participation changes over time. Through describing practices at different points in time, Hellermann (2008) has “attempted to show evidence of language development in micro-level language practices” (p. 143). In a recent study, Hellermann (2009), in similarity to Martin (2004), focuses changes in repair practices over time as indications of an L2’s learning.

A last example is Young and Miller (2004), who studied writing conferences where one teacher and one student got together to discuss texts that the student had written. In their analysis of learning, they highlight not only the student’s learning, but also show that the teacher changed her participation in the activity in ways that complemented the student’s learning, something that can be understood as the teacher being a co-learner. As in the other SLA studies referred to here, what is focused is the “acquisition of interactional competence” (ibid., p. 533).

All of the above-mentioned SLA studies, place their work within situated perspectives on learning, with references to primarily Lave and Wenger (1991) and Lave (1993), as a complementary perspective to CA. It is thus clear that the growth of a participationist perspective as presented in the beginning of this
chapter, has – perhaps not surprisingly – been something of a prerequisite to the emergence of a field of conversation analytic studies with an interest in learning (for a discussion of the relation between the perspectives, e.g. see Melander & Sahlström, in press; Mondada & Pekarek Doehler, 2004; Sahlström, 2009).

In conclusion, in the previous research presented here, learning is conceptualized as changes in interaction patterns. CA studies of learning have been very strong in demonstrating how participants learn to participate, or develop their ways of participating, in specific settings or activities. In this respect, Martin's (2004) study represents a slightly different perspective. In her focus on changes in repair or correction formats, she is not primarily highlighting the patient’s increasingly competent ways of participating in the activity, but rather how the patients' manage a specific movement of the body and how they do this in changing ways. In a similar way, Nishizaka (2006) claims, based on the participants' orientations, that the child has learned to play quarter notes. The difference might seem slight, but nevertheless represents a shift in focus, as it is not participation or interactional competence per se that is focused.

Toward learning as changing understanding in activity

In this dissertation, the reconceptualization of learning begun in previous research will continue. In contrast to previous research, my focus will be shared understanding as it progressively develops in interaction, rather than learning as changes in interaction patterns. The coherence and viability of interaction “depends on some considerable degree of shared understanding of what has gone before, both proximately and distally, and what alternative courses of actions lie ahead” (Schegloff, 1991, p. 157). This is as we have seen one of the foundational claims of CA, but a claim that has greater potentiality for learning research than has been acknowledged. Conceptualizing learning as changing understanding in activity, this dissertation could be seen as an effort of developing such a perspective.

Learning and knowledge are seen as distributed throughout structures of participants engaged in situated activities. Learning and knowledge cannot be pinned down to individual heads, to assigned tasks, or to material objects and tools in the environment, but lie in the relations between them (cf. Lave, 1993; Hutchins, 1995a). The primary unit of analysis in the dissertation is multiparty interaction in situated activities.

Analyzing learning in activities puts focus on collaborative doings, but does not mean that the individual does not matter or is unimportant. Not least do participants hold each other accountable for learning, something that is oriented to and made visible by the participants themselves. In such a way individual contributions to interaction are not obscured in CA analyses, but they are put in the light of the interactional context in which they occur. A focus on activities
helps us see things that would not be as visible were we to focus the individuals in isolation.

The framework for the analysis of embodied action in a material environment that Goodwin (e.g. 2000a) has developed is used and built upon in the analyses of the activities. An integrated approach to interaction puts into question dichotomizations of mind and body, and of mind and action. In such a perspective, these distinctions are not only challenged but the analytical framework moreover makes it possible to take into consideration the integrated way – in the sense of drawing upon many different resources – in which actions are produced in interaction.

From the above, I have formulated the following four points of departure:

- Multiparty interaction in situated activities is the primary unit of analysis,
- a members’ perspective on learning will be argued through anchoring the analyses in the participants’ orientations,
- cognition and learning are understood as deeply embedded within embodied interaction in situated activities, and
- learning is conceptualized as changing understanding in activity.
CHAPTER III

Methodological framework: recordings and fieldwork

The empirical basis for the analyses and discussions in this dissertation consists of video recordings. In this the first of three methodological chapters, the two corpora of recordings providing ground for the analyses will be presented. Some reflections will be made on considerations made in relation to fieldwork and the handling of data. In the next chapter, Chapter 4, I will describe how I have worked with transcriptions and representations of the video data, both as a part of the analytic process and as related to issues of (re)presentation of the data to an audience. In Chapter 5, I will present how I have proceeded in the analyses of the trajectories of learning.

Recordings of naturally occurring interaction

One of the fundamental features of conversation analytic research is that it is based on the careful scrutiny and analysis of recordings of naturally occurring interaction, rather than data elicited or in other ways arranged by the researcher. The availability of recordings has been crucial for the development of CA. The possibility of listening and watching, not only once in real time, but over and over again is a prerequisite for the approach. In an oft-quoted passage, Sacks (1984) writes:

I started to work with tape-recorded conversations. Such materials had a single virtue, that I could replay them. I could transcribe them somewhat and study them extendedly – however long it might take. The tape-recorded materials constituted a “good enough” record of what happened. Other things, to be sure, happened, but at least what was on the tape had happened. It wasn’t from any large interest in language, or from some theoretical formulation of what should be studied that I started with tape-recorded conversations, but simply because I could get my hands on it and I could study it again and again, and also, consequentially, because others could look at what I had studied and make of it what they could, if, for example, they wanted to be able to disagree with me. (Sacks, 1984, p. 26).

Today it might be said that the “studying” is not entirely free from theoretical formulations, as CA in itself is a theoretical framework with specific ways of approaching and analyzing the data. What the researchers pursues, however, is
to stay close to the data, analyzing them from a members’ perspective, paying attention to the details of the unfolding interaction as the participants orient to different aspects of it. Further, new theory is generated from the analyses, something that characterizes the inductive approach that is associated with CA (see Schegloff, 1996; see also Chapter 5).

Working with video recordings raises both methodological and analytical questions. The recordings are not unproblematic representations of life, representations of a world lending itself to the scrutiny of the researcher. Instead, all along the research process decisions of consequence to possible analyses are made. Using a video camera to document everyday practices is not simply documenting what people are doing, rather, the researcher’s interests can be seen already in the resulting recordings. For example, the choice of camera angle includes some events and excludes others. The camera’s eye is moreover different from the human eye. It is much more narrow and less flexible, thus excluding some aspects of the activities that are accessible to the human eye. Moreover, being a participant in the situation – which you inevitably are when being present in the situation even if the ambition is to not interfere – is qualitatively different from looking at the resulting recording. The recordings should however not simply be seen as “the best we can get,” but instead it is impressive how rich the data are. As Mondada (2006) remarks, video recordings can on the one hand be seen as a way of preserving naturally occurring interaction, but are simultaneously, on the other hand, the result of a professional practice, where the recordings can be understood as a configuring device. These aspects are “neither marginal (so that we may ignore them) nor problematic (so that they might ‘distort’ the phenomena at hand) with regard to the use of the resulting materials for analytic purposes” (ibid., p. 2). The important point to consider is that the researcher is highly involved in the production of data.

When doing the video recordings, it is important that relevant details of situated action are preserved. Three key dimensions should be considered, according to Mondada (2006). First, it is desirable that the whole activity is documented. This involves analytical considerations such as identifying openings and closings. As this is closely related to time, practical issues such as length of tapes, duration of batteries, etc. are also involved. Second, in order for the analyst to be able to attend to what the participants are attending to, participation frameworks and the interactional space must be considered and as far as possible respected. Analyzing the temporally unfolding processes of practices, taking into account both human interaction and tool use, requires as data recordings that capture not only talk but also encompasses the movements of the participants in the activity and the phenomena that they are attending to (cf. Goodwin, 2000b). Third, an attention to embodied actions, (i.e., language, gaze, gesture, body positionings, facial expressions, etc.) requires that the recordings are done in such a way so as to make these features available for analysis (Mondada, 2006).

Through the video recordings of people engaged in activities, we have access to the fine details of conduct, both talk and bodily comportment. Through being
able to play and replay them, we can track the emergence and development of
gestures, we can determine body positions and gaze directions, as well as orienta-
tions to the material environment.

Moreover, as Heath and Hindmarsh (2002) comment, the recordings provide
the opportunity to show the data to other researchers and discuss the analyses
with members of the research community. This is an important way of ensuring
quality in the analyses.

Data corpora

The recordings that provide ground for the analyses in the dissertation, come
from two different settings and data corpora: the early school years in the el-
lementary school and an aviation academy. The first corpus was collected within
a larger research project called Preschool and School in Collaboration\footnote{\textit{Preschool and School in Collaboration} (FISK) project was financed by
the Swedish National Agency for Education and progressed between 1999-2005 (Project number
15009).}, and consists
in video recordings of children that were followed periodically through their last
year in preschool, the year spent in the preschool class and finally their first year
of school. The second data corpus consists in video recordings of flight lessons
collected by myself, where three students were followed individually and recorded
during three consecutive flight lessons.

The FISK-project

The overall aim of the \textit{Preschool and School in Collaboration (FISK)} project was to
study the consequences of the introduction of the preschool class (for six-year-
olds, in Swedish \textit{förskoleklassen}) for both children and institutions, something
that was approached from three perspectives: interaction analyses, professions
analyses, and policy studies (\textit{e.g.} see Pérez Prieto, Sahlström & Melander, 2003;
Karlsson, Melander, Pérez Prieto & Sahlström, 2006; see also Heikkilä, 2006;
Karlsson, 2006). Providing ground for the interaction analyses, video recordings
of children participating in the different institutional settings were made, with
the rather open and general aim of documenting the children's everyday lives.
I participated in the last part of this fieldwork (for a general description of the
fieldwork see Häggblom, Melander & Sahlström, 2003). However, people other
than myself have recorded the activities that I have chosen for analysis in the dis-
sertation.

From this data corpus, I have chosen to work with two activities. The first one
is a recording of a group of children reading a book together. The second record-
ing is from the schoolyard, where three children are jumping rope together. The
jump rope activity was recorded at the same school were I did fieldwork, whereas
the book reading activity occurred in another school that I have only visited.
Both of these activities will be presented in more detail in the analytical chapters: the reading activity in Chapter 6, and the jump rope activity in Chapter 8.

The study was, as mentioned above, designed to explore the consequences of the introduction of a new institutional setting for six-year-olds: the preschool class. The aim with the recordings was general, and they were not designed in order for it to be possible to follow specific activities and/or individuals over time, in spite of the overall longitudinal scope of the project. The aviation study was to a high degree designed in specific response to these issues, and its focus was narrower and more specified.

The aviation study

The aviation study was designed and carried out by myself. The recordings were done in an aviation academy in Sweden during Spring 2006. In total three students were each followed and recorded during a series of three consecutive flight lessons. Each flight lesson consists of a pre-flight briefing session, the flight lesson itself, and a debriefing session. The flight lessons are part of an aviation course offered within one of the three-year natural science programmes of the Swedish upper secondary school.

When deciding upon the design of the study it was considered important, given the experiences I had from working with the FISK-corpus, that a number of consecutive lessons were recorded. The decision was grounded in the fact that I wanted to be able to study processes that unfold over time, where I could as far as possible control that I had recorded each instance, in the sequential order in which they occurred, that the students had, for example, practiced a maneuver. The recorded flight lessons thus follow one upon the next. I did not want to unnecessarily open up for the possibility for the argument that the students had learned something “in between” the recorded flight lessons. If learning was occurring in the data, then that learning would be accessible to me and I would not have to speculate in what had happened during a flight lesson when I was not present. This was considered crucial in order to argue processes of learning, or in other words, in order to be able to study learning in a here-and-now, as it occurs.

The students participating in the study were taking the first, basic course representing the very first step on their way to becoming commercial airline pilots. The choice of students was not done by me, but by my contact at the aviation academy. The only instruction that I had given regarding criteria for selecting the students, was that I preferred that they had approximately the same experience of flying. At the time of the study, they had done approximately thirty hours in the air.

In this aviation academy a group of teachers were working as instructors of a group of students. (Another practice, that was not used at this school, is that each student is assigned a particular teacher that takes her/him through the whole process.) This meant that five teachers participated in the study. In total, the data amounts to approximately 14 hours of recordings. In addition to the recordings, I
collected copies of some of the documents (e.g. lesson plans, protocols with written evaluations of the students’ performance, maps, etc.) that were used by the participants during the lessons.

In the dissertation, I am using the recordings of one of the students. The reasons for this choice are both practical and analytical. First, the student is flying on instruments only, which means that she is relying on the information provided by the instruments without looking outside the airplane for reference points (what this involves will be described in Chapter 6). This facilitates analysis, as it was possible to capture the computer displays and other instruments that the participants are orienting to with the video camera. Second, she is practicing the same maneuver in all three of the flight lessons. This made it possible to capture a development in her performance over time.

The recordings were done following the students with a handheld camera. The sound was recorded through the video camera in the classroom on the ground. In the airplane, I put an external microphone inside a pair of headsets similar to the ones used by the participants. In this way, I was able to record talk between the pilots in the airplane as well as their (and others) communication with the air traffic control. Moreover, it was also possible to discern for example adjustments in power that the pilots did as well as warning signals.

I was present during all the recordings. I did not interact with the participants through asking questions etc. during the recordings, however, I sometimes talked with the students when walking between the airplane and the classroom, although no regular interviews were carried out. With a camera in hand and a restrictive stance toward talking to the participants, with the status of an onlooker rather than that of an active participant, mine was a rather strange participant role, but still that of a participant (cf. Goffman, 1981). The participants seemed more aware of the presence of the camera in the classroom on the ground where the briefing and debriefing sessions took place. The rooms were rather small, and I was crammed up against the wall attempting to fit both participants into the camera’s eye, in order to be able to capture the relevant details of the participants’ actions and current undertakings (cf. Mondada, 2006). In other words the camera and I constituted a rather tangible presence in that setting.

In contrast, I was sitting in the back seat in the airplane, recording the pilots’ actions from behind. With respect to most importantly gaze orientation and facial expressions, this was on the one hand severely limiting. Moreover, I could not record what the pilots were doing with their feet that are also used to maneuver the airplane. On the other hand, I had access to what they were mainly orienting to, and I could record their actions in relation to computer displays, etc., something that constitutes a crucial aspect of the activities in which they were involved. This is a good example of how the way that the recordings are set up sometimes has to be adjusted with respect to the specific conditions of, in this case, the material environment. It was my impression that the participants rather quickly forgot about me during the flightlesson, and that especially the students were fully occupied flying the airplane.
The time in between the recordings was spent in the coordinator’s room, where people were coming and going, picking up information, keys to the airplanes, headphones, filling in forms and documents, etc.

Ethical considerations

Video recording people in their everyday lives requires careful consideration of ethical issues. It is important to acknowledge that the presence of a camera documenting the ongoing activities with the purpose of later analyses, does to some degree constitute an intrusion into the participants’ everyday lives. It is the obligation of the researcher to act ethically during the recordings, as well as later during the analytical work. Presentation and publication of analyzed data must also be done in ways that protect the participants’ integrity. The collection and handling of data, in both the FISK-project and in the aviation study, follow the ethical directions of the Swedish Research Council concerning humanities and the social sciences.

Heikkilä and Pérez Prieto (2003) have made a general description of the ethical considerations that were made in designing and conducting the FISK-project. The participants in the study were given the possibility of participating to different degrees (in the case of the children this meant the parents). First, a consent to full participation, which meant that the recordings in which they are participating can be shown at research conferences and used in teaching activities. Second, a more limited participation: “in the project only,” which meant that the recordings cannot be shown at conferences or used in teaching. Third, they had the possibility of denying consent altogether.

Working with recordings from a collected corpus, hence requires awareness of what the participants had actually agreed to. In both of the activities that I have chosen for analysis, there are participants that have given consent to full participation as well as participants who have consented with restrictions with regards to how the recordings can be shown (i.e., the limited participation version). The fact that two of the participants have limited their consent means that I have restricted the way that I have shown these data to others.

In the aviation study, all participants were informed about the overall purpose of the project. I explained that I was interested in learning and how that can be understood as something that occurs in the relations between people. I also informed them that I was not interested in evaluating their performance or the activities that they were participating in, but rather in documenting processes of learning.

The participants were asked to consent in writing, something that they all did. I pointed out to them that they had the right to withdraw from the study, also after having consented to participation in the project. I further specified how the recordings would be used, and that I wanted to be able to show them in research
conferences and to use them in my own teaching. They received written information with contact details so that they would be able to get in touch with me.

The recordings from both projects are stored in a burglar- and fireproof steel cabinet at the Department of Education in Uppsala.

To ensure the quality of the analyses, a tradition within the community of CA researchers is to work together in data sessions, looking at and analyzing chosen activities and sequences. The seminars represent a possibility for discussions over interpretations of the recorded activities. There is a shared understanding that what is talked about during these sessions is done in a respectful way, and that ethically sensitive information about the recordings is not spread outside the group participating in the seminar.

In Chapter 4, I will present and discuss how I have worked with the transcription and representation of the data – something that also involves ethical considerations, not least in relation to how to publish images from the data.

Ethnographic knowledge and frames of reference

Working with data from different settings, and further some data that I have recorded myself and others not, raises questions about the role of ethnographic knowledge and frames of reference or prior experiences.

The recordings from the early school years that I have worked with were in a sense familiar to me. First of all, I participated in the fieldwork and the research project more generally. But the school setting is further something that I had prior knowledge and experience from through my own experiences of having been a pupil (albeit long ago, I am convinced that these are part of the frames of reference with which I interpret and understand what I see happening in the recordings). Further, having children in school that at the time were about the same age as the children in the study, also contributed to a feeling of familiarity with the setting.

Working with material recorded by someone else is a specific practice. For example the choice of where to put the camera has been made by someone else. Hence, when choosing the activities for analysis it was considered important that the participants were visible during most of the time and that it was possible to see and hear what they were talking about and doing. The most important difference instead concerns the matter of having experienced – or not – the situation. Consequently, an important question that is raised when working with materials recorded by others concerns the role of ethnographic knowledge. In my case, I did have some ethnographic knowledge of the setting, particularly from the school where I did field work myself. Working as part of a team in a research project also made it possible to take part of the other team members’ ethnographic knowledge.

The role and importance of ethnographic knowledge does not stand undisputed within CA. It is a generally made claim that the analyses should be grounded
in the participants’ orientations rather than in ethnographic information. For example, Maynard and Clayman (1991) state that “conversation analysts rarely rely on ethnographic data and instead examine if and how interactants themselves reveal an orientation to institutional or other contexts” (p. 407). In other words, the mere fact that talk is being produced within an institution does not make it into institutional talk. Rather, the institutionality of talk needs to be grounded in what the participants are doing and how they are treating the unfolding talk as – institutional (cf. Drew & Heritage, 1992).

Schegloff (1996) has argued that “we need to press inquiries into what speakers can do – do do – with language and the other resources deployed in interaction. And we need to press those inquiries especially with materials to which we bring native competence and cultural membership.” (p. 167). This quote can be taken to imply that ethnographic knowledge is indeed very important: in order to make correct sense of the ongoing interaction we should analyze data from practices in which we are members. It is however not entirely clear what the implications of this statement are. It does imply that it is preferable that we as analysts work with materials in which the language spoken coincides with our mother tongue. But there is also something more at issue here: cultural membership. This is a somewhat more tricky issue, as the notion of culture indeed can imply many different things. It seems that analyzing materials that we already have a very close knowledge of further runs the risk of obscuring the role of ethnographic knowledge. When is it that we are drawing on that kind of knowledge in order to make sense of what the participants are doing?

Goodwin (2000a) takes the stance that ethnography is required. Moreover, the interesting question is not whether we need ethnographic knowledge, because that we clearly do, but instead what we need to know. Goodwin (ibid.) argues that this is something that emerges from “the visible organization of the activity in progress” (p. 1507). In relation to the field of archaeology that he has studied, he remarks that we need not know in general what life is like for archaeologists, but rather

what precisely is the structure of the specific semiotic fields and activity systems that are providing organization for the actions they are performing in order to do the work that constitutes their lifeworld. What is going on with that little book and why is it so important? (Goodwin, 2000a, p. 1508)

In a similar vein, Edwards (1997) writes that the knowledge we as analysts need is in order to understand the ongoing talk rather than as a means of explicating what the participants are doing. In other words, we do not generally need to know precise details of participants’ background knowledge unless they become relevant in the ongoing interaction.

In my work with the recordings of the flight lessons, I have found that I have learned a lot through watching and listening to what the participants are doing and how they are making relevant different aspects of the ongoing activity. What I know about aviation more technically has developed in this encounter, and I
was confronted with a technical terminology of which I did not have any prior knowledge. Besides learning from the participants in the recordings, I have found it useful to check my understandings of the ongoing events with my contact at the aviation academy and another professional pilot. At the same time the difficulties should not be exaggerated. What I could recognize was for example the educational setting. My understanding of what was going on was moreover facilitated by the fact that the students did not have much experience, and that things that are later taken for granted, were oriented to and talked about at this early stage of their training.

My outsider’s perspective has made it possible to not take for granted ways of understanding how to do things. I have not approached the data with preformed ideas about how best to, for example, teach the student a specific maneuver, or ways of describing the maneuver. As Moerman (1996) – who has done extensive work on foreign language materials – claims, an outsider’s perspective is at times useful: “those materials make it easier to see strangeness, to notice managedness and constructedness, to be struck by the problematic and the enchanting in everyday talk” (p. 149).

In conclusion, it is necessary to understand the sorts of activities in which people engage, the events with which they deal, and the sorts of tools and technologies they rely upon to do their work. This suggests, as Heath and Hindmarsh (2002) write, that we sometimes need additional resources if we hope to explicate the details of human conduct in its naturally occurring environments.
CHAPTER IV
The art of representation

A CRUCIAL PART of the scientific practice of conversation analysis is the transformation of video data into transcriptions and representations of different kinds. As Goodwin (1994) so elegantly formulates it: “the rich record of complicated vocal and visual events moving through time provided by a videotape must be transformed into something that can silently inhabit the printed page” (p. 607). There are fairly well developed methods of transcribing verbal interaction, whereas the representation of embodied action has not been treated in a similarly systematic way. Consequently, a comparatively long discussion of possible ways of representing this integrated interaction will follow in this chapter.

Transcription involves not only practical, but also theoretical decisions (cf. Ochs, 1979). I have argued the necessity of analytically approaching interaction in the integrated way that it is produced (see Chapter 2). This is a theoretical standpoint that has as its consequence the importance of representing not only talk but also embodied action and orientations to a material environment in the transcripts.

One of the most obvious reasons for transcribing data is that we need to be able to present it to an audience that is very often communicated with in text. The representations are an invitation to the reader to “see what is being said” (Lynch, 1990, p. 155). To this could be added, that we are also inviting the reader to see what is being done. In this respect, the transcripts reflect two somewhat opposing aims. On the one hand, the transcript should make the data accessible for (re)analysis. The transcript should thus be as close to the original data as possible, and the endogenous structure of the situated interaction systematically described (Goodwin, 2000b). As ten Have (1999) puts it: “the audience requires a kind ‘independent access’ to the data being analyzed” (p. 33). On the other hand, the transcripts must reflect analytic interests. Aspects of the ongoing interaction that are important to the analysis should be highlighted through attempting to present relevant descriptions as clearly and vividly as possible (Goodwin, 2000b). It is a challenge to strike a balance between readable transcripts and transcripts from which it is possible for the reader to make an independent analysis.

Communicating with an audience is however but the last step, whereas the process of transcription is first an intrinsic and important part of the analytical work.
The intimate relation between analysis and transcription

A crucial part of the situated analytical practice of CA is the constant return to the recordings, and the possibility of playing them over and over again (Sacks, 1984). The analysis is always based on the recordings, where an important part of the analytical work is the development of transcripts and representations. The process of transcribing is thus part of the analytic practice but the resulting transcripts and representations, as is also widely recognized today, do not constitute the data (cf. Mondada, 2007).

The work of transcribing could be described as a method of disciplined observation. Moerman (1996) observes that it takes the work of transcribing to make “the texture and structures of conversation real” (p. 154). Transcription makes available for analytic consideration what was said and done and how it was said and done (cf. ten Have, 1999). Transcribing what can be seen and heard on the recordings makes you sensitive to what it is that is going on. In fact, many times you actually hear and see the evolving structure of interaction in the process of writing it down, deciding on what it is that you can hear and see, and how these actions are produced in relation to each other. A small movement of a hand, a shift of gaze, or a slight hesitation in the production of a word can reveal that something interesting is going on, something that at times alters, at other times corroborates the first impression.

Transcription provides a resource through which the researcher becomes more familiar with details of the participants’ conduct. Mondada (2004) argues that in order to make the phenomenon observable and accessible for analysis, it is crucial to produce a detailed transcription that pays attention to the temporality of both talk and embodied action. In this sense, a quick or approximate transcription could have as effect to destroy or render invisible the phenomenon that is analyzed.

The transcripts are part of what constitutes the researcher’s professional vision (Goodwin, 1994), where different aspects of the ongoing interaction are highlighted and made salient by the researcher developing his or her analysis. As Goodwin (ibid.) points out, the highlighting made in the transcripts guides the reader to see within a complex perceptual field just those events that the researcher finds relevant to the analytical points being developed.

The work with the transcription of data and the refinement of my representations has been a constantly ongoing process, and it is something that has been done and redone all along the work. Transcription is an activity embedded within a series of research practices, from data production to annotation and analysis (Mondada, 2007). Different stages of analysis and presentation require multiple transcriptions. However, it is not a matter of working toward a single perfect transcript, but rather the representations reflect the interests of the researcher in a here-and-now, and can thus change as different arguments are being made. There is a recursive interplay between analysis and methods of description.
Transcribing talk

Intrinsic to the development of CA as a theoretical and methodological perspective was the development of a system for transcription. For example, early descriptions of interaction as a turn-taking organization relied upon detailed transcriptions of the way that turns are produced in themselves and in relation to each other (see Sacks, Schegloff & Jefferson, 1974). Already from the beginning the smallest details were considered of potential importance and thus worthy of analysis. We cannot know in advance at what level the transcription should be stopped, as capturing the details of how words are pronounced may add a layer to interaction, something that might not be seen before we attempt to capture it (cf. Jefferson, 1983).

Although many researchers refer to the transcription system developed by Jefferson (for a systematic overview of the system, e.g. see 2004), it is not a closed system in the sense that there is once and for all a way of representing interaction. Perhaps most importantly, it refers to a way of approaching the data, a way of making visible different aspects of the production of turns, providing the research community with a kind of common language for ways of representing talk.

Transcribing in a CA tradition is hence a matter of capturing in written text what can be heard, and in so doing staying faithful to the data. This sounds easier than it is, particularly if – as is the case for conversation analysts – even the smallest details are of potential interest. This is in a sense further complicated, as the researcher does not know exactly what s/he is looking for during the initial stages of transcription (cf. period of ‘unmotivated’ examination, Schegloff, 1996, p. 172, see also Chapter 5).

A quite practical issue with analytical implications is how to spell the lexical units of which the verbal turns are constructed, in a way that captures the way that they were produced. Spoken discourse and written language have different rationales. We are used to ways of representing spoken language in the literature. The way that this is handled within CA is that the spelling of the written word is changed so as to accommodate the spoken utterance. However it is usually (and so too in my case) done using non-standard ways of writing the spoken words, and not, for example, a phonetic system. Bucholtz (2000) criticizes this stance, and argues that a phonetic transcription might sometimes clarify the analysis where it is blurred by an imprecise use of non-standard orthography.

This is something that has to be resolved in relation to what the research interests are. When transcribing the talk, my aim is to give the reader a ‘feel’ for what the talk sounds like (cf. ten Have, 1999). Bucholtz (2000) claims that some words simply are always pronounced in a specific way, such as the Swedish mig ‘me’ which is regularly pronounced mej. Following Bucholtz, in this case it would make sense to simply write mig as the readers would read it as the sought for mej. However, as Linell (1994) remarks, conventionalized ways of representing spoken language in text have been developed, where the choice of mej indicates as well the sound production of the lexical unit as the fact that it is a transcription of spoken language. Other examples are words ending with -ig, -igt and –iga, for ex-
ample *riktn* ‘the real’ (*e.g.* Excerpt 8, Chapter 6). It is necessary to continuously reflect upon the relation between the way that the turn sounds as it is produced and the conventions of the written language that is played upon when transcribing. I have considered alternatives in each case. A more complicated example than *me* ‘me’ is for example *världens* ‘the world’s’ (*e.g.* Excerpt 3, Chapter 6). In spoken Swedish the letter “l” is not pronounced but the conventionalized way of writing the word. In this specific case I have chosen to write *världens*. The reason is that I have judged it more accessible to the reader and most importantly nothing is happening in interaction that indicates for examples problems with understanding what is being said. Importantly, the spelling of the spoken word should always correspond to the way that it is actually produced. As long as we use written language (rather than phonetics, *etc.*) to represent talk there will always be a tension between talk and written word. With the risk of being caught with inconsistency, I have made somewhat different choices depending on the specific word in its interactional context, and where one of the parameters involved in the decision is always readability.

In addition to the question of spelling, symbols for stretches, latched talk, overlap, *etc.*, has been used to indicate aspects of the production of talk, that is, issues related to prosody. In the Appendix, I have listed the different symbols that have been used in the representations in this dissertation. In a somewhat humoristic tone, Moerman (1996) writes that “[s]uch markings on transcripts (stretches, latching, overlap, pauses, emphasis or volume change) are not merely our version of the graffiti that youth gangs use to mark their territories” (p. 153). Rather, these markings record actions that are essential to the organization of conversational interaction, actions no less – and sometimes more – important than words (*ibid.*).

**Transcribing joint activities in situated practices**

If the question of selectivity and level of detail is at times a difficult one to decide on in the transcription of talk, it does become an even more complex matter when transcribing embodied action and the participants’ orientations to the material environment. For the representation of these non-vocal actions there is no elaborated system similar to the one developed for talk.

Common ways of handling this issue is by including written descriptions of embodied action *etc.* into the transcripts of talk, or by including images, most often framegrabs from the recordings. These framegrabs are sometimes inserted into the transcripts, but very often the choice has been to put the images in a separate place – either in an additional representation or for example below the transcript of talk, with references to the images within the transcript. Separating representations of talk from other actions and descriptions however runs contrary to the ambition of integrating these same actions in the analysis and thus in the representations. As Ochs (1979) reasons, in placing the verbal and the non-verbal
actions in different places on the paper, the transcriber heightens the perception of these behaviors as distinct. It gives an impression of interaction going on in different channels, an understanding of interaction that I actively resist. Describing non-vocal actions in written text is often quite complicated requiring many words and is thus not always a very practical solution. Goodwin (2000b) comments: “The complexity of phenomena involved requires multiple methods for rendering relevant distinctions (e.g. accurate transcription of speech, gaze notation, framegrabs, diagrams, etc.)” (p. 161).

As has been argued analytic interests are seen – and should be seen – in the way that the representations are designed. Already in the transcription of the talk the interests of the researcher are visible (for example, how much of prosody is represented, etc.). When it comes to the inclusion of embodied action the necessarily selective character of transcripts is highlighted (Mondada, 2007). One solution is to publish, whenever possible, the video clip upon which the analysis is based. However, in most circumstances it is not possible to do so, and perhaps not even the best thing – ethical issues notwithstanding. A video clip embedded within a paper does not provide an analysis of how the events are being parsed by the participants and seems only to address the issue of giving the reader independent access to the data. Transcripts help to highlight phenomena and create a shared focus among audience and analyst (ten Have, 1999).

From framegrab to drawing

A frequently used method for representing embodied action is to include frame grabs from the video files in the transcripts. It is an efficient method of demonstrating what the participants are doing and attending to. However, the publication of images does present us with ethical issues. A promise to the participants in the study that their identities will not be revealed is not easily fulfilled if publishing frame grabs from the video recordings. In my case, some of the participants in the analyzed data have agreed to participate with restrictions in relation to how the resulting recordings can be shown (for a presentation of the sets of data and a discussion of made ethical considerations, see Chapter 3). It is of course important to acknowledge that the publishing of an image is not per se a violation of the participant’s integrity and the use of images is not necessarily problematic.

There are also other issues when it comes to how to represent embodied action and participants’ orientations to a material environment. In print the framegrabs are at times quite difficult to discern. Even if the framegrabs represent a frozen moment in time selected by the researcher in order to highlight a specific phenomenon, the images are often cluttered and it is difficult to see clearly what is going on. In order to address both ethical concerns and the possibility of highlighting as clearly as possible relevant aspects of the ongoing interaction, I have chosen to work with drawings, transforming frame grabs from the video recordings into drawings. The drawing makes it possible not only to stop the passing
time in a specific moment, but they allow for a highlighting in the chosen image of what the analysis focuses on.

To give a very brief description of how I worked technically in the production of the drawings, I first made framegrabs from the sequences of video recordings that were chosen for analysis. These were opened in a software for editing images (Adobe PhotoShop) where I traced the outlines of the participants and aspects of the surrounding environment. The resulting paths were exported to a vector graphic software (Adobe Illustrator), in which the paths were transformed into drawings. All the time, great care has been taken to stay faithful to the original image, something that cannot be overly emphasized. What is in the resulting drawing is a representation of what can be seen in the framegrab, and every drawing is tied to a specific framegrab. The final construction of the representations was done in a layout software (Adobe InDesign).

A first decision concerns what to highlight in the sequential context, that is, which specific frame in the recording that should be transformed into an image. A second decision has to do with what to highlight in each specific image. The frame grab and the drawing constitute a pair, and they have a directional relationship to one another. Each is an independent representation but they are not equivalent. One is moreover dependent upon the other: the drawing operates upon what is shown in the framegrab. There is thus a sequential ordering, the framegrab being an “original” and the drawing a rendering of it (cf. Lynch, 1990).

The drawings “transform previously hidden phenomena into visual displays for consensual ‘seeing’ and ‘knowing’” (Lynch, 1990, p. 155). Writing about the use of representations in a scientific context, Lynch (1990) has identified several transformative practices to describe the work done by a diagram or representation on the original image. Two of these are filtering and upgrading. Using these descriptions on my work, the drawings are first filtered representations of the frame grabs. They exhibit a limited range of visible qualities in comparison to the frame grabs. Some elements in the frame grabs are not visible in the drawings. Such elements are, in my case, mainly details in the background that the participants

![Figure (1): From framegrab to drawing](image)
are not making relevant in interaction, such as the window and the notice board (see Figure 1). Second, the drawings could be understood as upgrading the frame grabs. That is to say, that borders are made clear and distinct, and that shapes and divisions between distinct surfaces are made more distinct. Figure-ground relations are emphasized, relations that are initially visible but less apparent in the framegrab than in the drawing. Returning to Figure 1, the participants and the model airplane are highlighted through the use of the color black (figure) whereas the table and the papers on it are grey (background).

I have found that the drawings moreover facilitate an interpretation that is less personalized, less tied to the specific individuals participating in the study.

Representing movement

When the framegrab is taken and the drawing is done, a passing moment in time has been fixed. However, embodied action is motion. The passing time is an intrinsic part of interaction that is constantly moving onwards, where there is a flow of movements: words are uttered and dissolve, facial expressions change, hands trace a line in the air, fingers point out a direction, gaze is directed at different things in the environment. In the fixed image aspects of the ongoing action are highlighted. What is however lost, is the sensation of movement and passing time, an aspect that is crucial to the participants in interaction.

The present dissertation is formulated within a theoretical framework stressing the importance of taking into account the emergent dynamics of interaction in the analyses. The representation of time hence concerns not only time measurements but also the spatialization of the flow of talk as well as the multilayered representation of simultaneous and coordinated streams of actions (Mondada, 2007).

Different ways of findings solutions to the question of representing movement can be discerned in the literature. For example, Heath and Luff (2007), in a study on gesture and institutional interaction building on data from auctions, placed frame grabs one beside the other, thus demonstrating how the auctioneer through body posture and gestures in a stream of speech and bodily movements orients to the different bidders in the audience. A first version of the representations is done where several turns-at-talk are reproduced, at this time with no comments upon embodied action. In a second version, the turn in focus only, is represented in relation to a sequence of frame grabs representing the emergence of embodied action in relation to talk.

In a study on preschool children's participation in multilingual play, Björk-Willén (2007) integrates images into transcripts of talk. In this way, the children's movements in relation to each other in a material environment are highlighted. At times, vocalizations and talk are also represented within the frame grabs in white boxes, thus integrating representation of talk and embodied action.

In order to highlight visual and mobile aspects of work in a science lab in secondary/university level mechanics courses, Lindwall (2008) has drawn inspi-
ration from conventions from comics when constructing his representations. An important merit with this way of doing the representations is that visuality is foregrounded. In that sense, it challenges the priority that is usually given to talk (cf. Ochs, 1979).

In my representations, I have included several drawings in each excerpt in an attempt to highlight visual aspects of interaction. I have judged it important not to separate drawings of embodied actions from the coordinated talk, and have thus placed the drawing in near proximity to simultaneous talk. Boxes around parts of utterances means that the action represented in the image is upheld during that part. If there is movement, for example a moving pointing finger or gestures demonstrating the manipulation of the airplane controls, this movement has been highlighted through the use of arrows in the drawing. The part of the utterance within a box thus represents the duration in time of the changing embodied action. Sometimes boxes containing descriptions of embodied actions have been enclosed in the representation. At all times, I have considered the sequential development of talk and embodied action.

Figure (2): Representing movement I
As can be seen in Figure 2, movement is represented in the drawings through arrows. In some cases I have included shaded parts of another frame grab, in order to depict between which positions the gesture is produced (Figure 3).

![Representing movement with the use of arrows and shaded elements from another frame grab.](image)

**Figure (3):** Representing movement II

A line attaching a drawing to a specific place in talk, marks the moment in which the original frame grab was taken (*e.g.* Excerpt 2, Chapter 6). In some cases I have also used more conventional ways of describing actions and gestures within double parentheses (*e.g.* Excerpt 3, Chapter 6).

As a consequence of the arguments made in this chapter about the need to simultaneously provide the reader with an independent access – to the extent that it is possible – to the data represented in the transcript and a representation that reflects my analytic interests, there is an interplay between text and representations. It is not intended that the representations in this dissertation be read separate from the surrounding text, but rather they mutually elaborate upon each other.

Before turning to the final part of this chapter, which is about translations, it is appropriate to comment upon the fact that transcriptions are not objective representations of a known world, but instead reveal choices made by the transcriber. As Bucholtz (2000) has argued, transcriptions “testify to the circumstances of their creation and intended use” (p. 1440). This is forcefully demonstrated in Goodwin’s (1994) analysis of the Rodney King trial. In order to make sense of events rapidly unfolding in real time, it is crucial that we can play and replay the recordings (*cf.* Sacks, 1984). We select representative images for what it is that we want to focus our analysis on. But, as Goodwin remarks, “the work of the viewer is radically changed when these scenes [displaying King’s movements, my comment] are transformed into the photographic array” (p. 622). What was movement in time is now movement in space in the shape of (cropped) images in a sequential order. In the Rodney King trial this was of great consequences, as prosecutors and defenders made different selections, moreover highlighting and giving meaning to different aspects of the events in the images. Luckily, the stakes are usually not as high and the decisions not as consequential in the researcher’s everyday life. Nonetheless, it is important to keep in mind that selecting one
specific moment in time requires a high degree of awareness of the continuum of movements wherein the selected moment occurred.

Translations

The language spoken in the data that are analyzed in this dissertation is Swedish, and thus, a translation of talk from Swedish to English has been necessary. This is an important undertaking that requires great care and minute attention. Moerman (1996) writes that “we all must recognize, that it is never as a certified unchanging truth that the analyst presents an utterance in one language as the equivalent of an utterance in another language” (p. 150). Translating talk into another language requires that care be taken to preserve the social action that the original language conveys. This not only involves translating words, but mediating the poetics and the speech level of the utterance, and at the same time maintaining the way that words are chosen and the utterances are formulated in the original language, as that is sometimes of consequence.

Matters of representation and translation are important to consider in general terms but in the end decisions are made in relation to each represented sequence. One of the choices is whether to use two- or three-lined transcripts. Some researchers choose to write three-lined transcripts, with one line for the original language, a second for a literal word-by-word translation and a third line that contains a more idiomatic translation than the word-by-word order and that thus conveys the meaning of the utterance in the English context. As Swedish and English have a comparatively similar word order I have mainly used only two lines – one line with the original Swedish utterance and another with an English translation of that utterance. However, when the structure of the whole or a part of the turn was considerably different, I have included a second line with a word-by-word translation, and then a third line containing a more idiomatic translation. In all cases I have taken care to stay as close as possible to the construction of the Swedish turn, something that sometimes leads to a somewhat strange English. Temple and Young (2004) have remarked that the way that others and their languages are represented, influences how they are perceived. Decisions have been made in relation to each line in the transcripts and I have considered it important to strike a balance between what the participants would have said in English and the fact that they are speaking Swedish. That the Swedish language sometimes shines through the English version is something that has been considered as not necessarily problematic, although I have tried to avoid using translations that present the participants as being strange or unnecessarily badly formulated.

The translations were initiated early on in the analytical process, something that has at times involved the translation of larger sequences than the ones that are represented in the dissertation. However, the analysis is always based on the Swedish version. Beginning to work with the translations early on in the process, I regard them as yet another part of the analytical work as there is no simple
translation of one language into another. When attempting to say something in a different language, aspects of the original language are highlighted.

Working with the recordings from the aviation academy, I have involved professional pilots in the translation process. I have asked them about the technical terminology, but also about how things more generally would be expressed in an English-speaking aviation context. This has led to considerations of when to do a more idiomatic translation, with a more correct English version, and when to stay closer to the Swedish wording. For example, the pilots say dina roder/mina roder when transferring responsibility for flying the airplane. As it is a formulaic expression used by the community of pilots in general, I have translated this into ‘your controls/my controls’. Looking up the word in a dictionary however, the word roder would be translated into ‘rudder’. As the participants in the recordings are treating this as a formulaic expression it was reasonable to use the correct English version.

Another example is the translation of the word läge. This is first of all part of what the flight maneuver is called that the student is practicing in the analyzed data: onormala lägen that has been translated into ‘unusual attitudes.’ However, the word läge has other possible translations, and depending on the context in which it is produced I have translated it into ‘position’ (e.g. Excerpt 11, Chapter 6), ‘situation’ (e.g. Excerpt 6, Chapter 7), or as already mentioned ‘attitude’ (e.g. Excerpt 9, Chapter 6). This has to do with whether it is the maneuver, the position of the airplane, or the kind of situation that is referred to.

When spelling the words in English I have at times drawn on conventionalized ways of writing spoken English (cf. Linell, 1994). However, the question of how it would have sounded is hypothetical, and rather than being speculative I have most of the time used conventions for written English. To the English translations I have added sound stretches, emphases etc. in a way that corresponds to the production of the turn in Swedish. I have attempted to represent what I perceive of as the rhythm and (aspects of the) prosody of the original Swedish utterance, into what it could have been like had it been in English. This has been done in order to give the non-Swedish speaking reader the possibility to grasp something of how the turns were produced.
Analyzing trajectories of learning

Theoretical and methodological concerns are closely intertwined in conversation analytic research. The theoretical standpoints have quite literally been elaborated through the exploration of data, taking as its point of departure the ethnomethodological concern with anchoring the analyses in the members’ perspectives.

The analyses in this dissertation have evolved through the examination of video data where research questions have been formulated and developed as part of this process. The principal arguments have “arisen out of” the detailed examination of particular sequences of interaction, as Wootton (1997, p. 16) puts it. What this means is that the analyses have not been done with pre-formed ideas or hypotheses as to what key parameters that could be expected to unfold.

In this chapter, I will describe and reflect upon the analytic process, that is, how I have proceeded in the analyses of the data. I will discuss criteria for the selection of the activities that are analyzed in the dissertation. The organization of the trajectories of learning that have been constructed is presented, and I will describe how the construction of the trajectories was done. Following upon this chapter are the three analytical chapters, and the empirical analyses will be introduced here.

A description of the analytic process

Conversation analysis is, as has been mentioned, generally described as an inductive approach, where analytic categories emerge in the analysis of data. This is said in contrast to a deductive approach, in which hypotheses are derived from theory and thus are formulated before the actual analysis of data. According to Duranti (2005), the latter approach is characterized by the claim that the researchers “know what they are searching for” (p. 413) in the sense that they formulate hypotheses that are tested on the data. In an inductive approach, the analyst instead analyzes data discovering phenomena s/he might have had no previous interest in or knowledge of (see also Schegloff, 1996). The criticism of the first group, Duranti (2005) writes, is that they will always find what they are looking for and that they are unable to see what else is going on besides their interest. The usual criticism of the second group is that even though the claim is that they start their analysis without pre-formulated expectations, preconceptions, and theoretical as-
sumptions, they do have all or some of the above, but they keep them hidden (maybe even to themselves).

Characterizations such as these are useful in order to make different stances visible. However, as Duranti (2005) also remarks, it is hardly the case that any researcher would fit perfectly in one or the other of the categories. In Duranti’s words: “Even the most inductive among us start from certain assumptions about how an interaction is likely to proceed and what elements constitute the nuts and bolts of any face-to-face encounters” (p. 414). On the other hand, even the most theory-driven researchers are sometimes surprised by their findings. Moreover, the acceptance of some principles might be based on experience from having analyzed a large amount of data (ibid.).

Most importantly, it is a matter of analytical attitude, of what position you take as an analyst vis-à-vis the data that is being analyzed. In the analyses in the dissertation, I have worked inductively through initially looking at the data with an open mind, and finding things that I was interested in continuing working on. In her description of the analytical process, Martin (2004) divided it into two different parts: a first phase of unmotivated looking at data, and a second of motivated looking (p. 79, see also Schegloff, 1996). The first phase is characterized by an open-minded “looking,” where it is what the participants are orienting to that is searched for and analyzed. This involves a careful investigation of the activities that the participants are engaged in, finding ways of primarily describing what it is that the participants are doing, and in so doing beginning to discern what phenomena that would be interesting and fruitful to continue analyzing and working with. Having identified items or phenomena that seem to be useful to continue working on, the next phase of motivated looking is a matter of narrowing down your interests, and chiseling out specific analytic interests.

In my case, a first period of unmotivated looking involved looking at larger parts of the data corpora, and then selecting activities for a more in-depth analysis. In line with Goodwin’s (2000a) suggestion that a primordial site for the analysis of cognition and action is situations in which participants are carrying out courses of action in concert with each other (p. 1492), I have chosen activities for analysis in which all the participants, what they are saying, doing, and what they are orienting to in the surrounding environment, are both visible and audible on the video.

The analysis of the selected activities begun with a careful description of how the activities are interactionally constituted, paying attention to the different resources that the participants are drawing upon in interaction. This could be characterized as a way of looking at the data that was still of unmotivated character, and it is in the encounter with the activities of the children and young adults, that my research questions have been specified and refined.

However, of importance for my analytical process was also that I started analyzing the activities from the FISK-corpus. When I first worked on the reading activity, which has turned out to be an analysis of how the participating children co-construct a content of learning, I was studying how the practice of reading...
a book together was constituted in interaction (see Melander, 2004a & b). It was when doing that analysis, that I noticed that the children were several times returning to one topic, a content of interaction that could be tracked over time. Thus begun a phase of motivated looking, when attention was directed to how the participants establish and sustain topics over time, and how they return to a topic.

The analyses of the selected activity from the recordings of the flight lessons, as well as the jump rope activity, were approached with a more motivated looking already from the beginning, as I from working with the reading activity had developed an idea of how to approach the data analytically. As was described in Chapter 3, the whole design of the aviation study was done considering what I had found when working with the data from the FISK-corpus. When making the choice of following how the participants in all of the three flight lessons were orienting to a specific maneuver, I was thus drawing on a finding made in the initial analyses.

The jump rope activity was something that I had worked on in a different context, and where I did an analysis focusing issues of inclusion and exclusion (see Melander, 2006). For the dissertation, I returned to it and (re)analyzed it with a different focus. However, already in the first analysis, I had noticed that the children were returning to two different contents: where to stand when jumping in and how to turn the rope.

**Trajectories of learning**

An organizing feature when constructing the trajectories of learning is the participants’ orientations to aspects of the activity as being the same. In other words, a criterion for the selection of a specific activity was that it was possible to follow the development of a content of interaction over time. These topicalizations of contents of learning are what form the frame for the construction of the trajectories of learning. Tracking the topicalizations opened up the possibility of arguing continuity and change in relation to a specific content, oriented to and accomplished by the participants (see Chapter 6). These are thus not merely methodological questions guiding the compilation of the orientations to a same content at different moments in time, but an analytical issue intrinsically related to the aims of the dissertation.

Within CA there are roughly speaking two common ways of working with data: through analyzing single cases and/or through constructing collections of phenomena. The single case analysis aims to describe the specificity of a particular corpus whereas the analysis of collections aims at describing generic and systematic features occurring in several corpora (Mondada, 2005, p. 102). As indicated by ‘and/or’ these are not mutually exclusive ways of working with data, and the choices reflect the aims of the study.
In her dissertation on learning as interactional change, Martin (2004) argues the importance of constructing longitudinal collections, where the collections of interactional phenomena are organized in a way that respects the sequential and thus chronological development of the activities. In a similar way I have organized the analyzed instances in a chronological order.

In the presentation of the analyses, the order in which the activities developed is also followed. To track how the activity unfolds is crucial in order to capture and analyze processes of learning, how shared understanding evolves, and how the participants are orienting to change and continuity.

The concept *trajectory* has within the CA literature been used to describe a development in the immediate sequential context (e.g. see M. Goodwin, 2006b; McHoul, 1990; Schegloff, 2007). In some learning research (i.e., subject-matter education) the concept is also used as a normative concept describing desired or sought-for learning that is evaluated in relation to preconceived notions of what constitutes a correct content of learning (e.g. Constantiou & Papadouris, 2004; Cobb, McClain & Gravemeijer, 2003; etc.).

The notion *trajectories of learning* is in this dissertation used to describe “collections” of sequences that are related to each other through being about the same content. It thus describes trajectories both beyond the immediate sequential context and beyond action sequences. The construction of trajectories of learning has gone hand in hand with the analysis of how contents of learning are constituted in interaction between the participants. Rather than finding a specific interaction phenomenon of interest, such as for example repair or directives, instances of orientation toward the same content, determined through topicalizations, have been collected. The instances are chronologically ordered, and it is this order that constitutes the trajectories in the present study. Thus, there has been a close interplay between the construction of trajectories and the emerging analyses.

I have analyzed activities from different empirical settings that are contrasted with each other, thereby demonstrating how the same issues are relevant in quite diverse activities and contexts (cf. Goodwin, 1994; 2000a; 2007a). To be able to contrast the different materials, what is first of all required is a thorough investigation of the activities by themselves. Through a detailed scrutiny of particular cases, the analysis is directed toward explicating the resources upon which the participants rely when interacting with each other. The reason for working with data from different contexts is to be able to discuss learning in conceptual terms, rather than focusing children’s interaction, literacy, aviation, etc. Through the analyses of data recorded in diverse settings, finding similarities and differences, it is possible to claim that the made observations are not necessarily particular to the studied setting. The generalizability of observations in single cases can in these ways be corroborated through the analysis of very different situations (cf. Mondada, 2005, p. 97).
Overview of topicalizations in the analyzed data

In the following tables (Tables 1-4), the topicalizations constituting trajectories of learning are presented, and the excerpts that are analyzed in the dissertation are listed with their headings. The instances appear in the chronological order in which they occurred in the different sets of data and the same order is followed in the analyses. In the analyses I present and analyze all of the instances. That has been considered important so as to demonstrate the participants’ evolving understanding in activity, which provides ground for arguing processes of learning. The activities are presented only briefly here, but more detailed descriptions will be provided in close proximity to the analyses.

The reading activity

The reading activity comes from the FISK-corpus. It is a recording of an activity in which a group of children who are in the first grade (seven years of age) are sitting by a table. They are reading in a book about animals that contains both text and pictures, although the children are exclusively orienting to the pictures. It is thus a peer-group activity and it takes place within free activities, when the children are allowed to choose for themselves what they want to do. The trajectory of learning consists of a suite of sequences in which the children are talking about “the size of blue whales.”

Table (1): The size of blue whales

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Excerpt number and heading</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td><strong>First topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (3): The world’s largest animal</td>
<td>01.59-02.05¹</td>
</tr>
<tr>
<td>6</td>
<td><strong>Second topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (4): Much larger than the elephants</td>
<td>02.31-02.45¹</td>
</tr>
<tr>
<td>6</td>
<td><strong>Third topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (5): The elephants are tiny</td>
<td>02.52-03.06¹</td>
</tr>
<tr>
<td>6</td>
<td><strong>Fourth topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (6): Absolutely not larger</td>
<td>03.11-03.27¹</td>
</tr>
<tr>
<td>6</td>
<td><strong>Fifth topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (7): That big ship is nothing</td>
<td>05.20-05.25¹</td>
</tr>
<tr>
<td>6</td>
<td><strong>Sixth topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (8): What if it’s larger than the sea</td>
<td>10.48-11.12¹</td>
</tr>
</tbody>
</table>

¹Video file and date: LG-020822-2-I.reading
The recoveries from unusual attitudes

From the recordings from the aviation academy, a maneuver that a pilot student and her teacher are orienting to and practicing in three consecutive flight lessons, and that is called recoveries from unusual attitudes, has been selected for analysis. The overall aims with the flight lessons (that clearly constitute an educational setting) are first, a high workload priority-practice, and second, emergency handling. The trajectory of learning consists of orientations to the content “unusual attitudes with a low nose position.” Each time that the participants either talk about recoveries from a low nose position, or practice doing it, are analyzed.

Table (2): Unusual attitudes with a low nose position

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Excerpt number and heading</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>First topicalization</td>
<td></td>
</tr>
<tr>
<td>(9):</td>
<td>We will do unusual attitudes</td>
<td>00.17-00.52</td>
</tr>
<tr>
<td>(10):</td>
<td>A very low nose</td>
<td>01.20-02.38</td>
</tr>
<tr>
<td>(11):</td>
<td>Do you just bring the nose up</td>
<td></td>
</tr>
<tr>
<td>(12):</td>
<td>Level the wings</td>
<td></td>
</tr>
<tr>
<td>(13):</td>
<td>The speed will increase</td>
<td></td>
</tr>
<tr>
<td>(14):</td>
<td>As soon as you see that you have a low nose position</td>
<td></td>
</tr>
<tr>
<td>(15):</td>
<td>Not possible to say always reduce or always add power</td>
<td></td>
</tr>
<tr>
<td>(16):</td>
<td>Different strange nose positions quite simply</td>
<td>03.07-03.17</td>
</tr>
<tr>
<td>7</td>
<td>Second topicalization</td>
<td></td>
</tr>
<tr>
<td>(2):</td>
<td>Now you’re diving</td>
<td>11.05-12.10</td>
</tr>
<tr>
<td>(3):</td>
<td>And then we pass the horizon</td>
<td></td>
</tr>
<tr>
<td>(4):</td>
<td>I could have brought the nose up earlier</td>
<td></td>
</tr>
<tr>
<td>(5):</td>
<td>That’s how it’s supposed to feel</td>
<td>12.11-13.11</td>
</tr>
<tr>
<td>(6):</td>
<td>You should feel that you are doing a recovery</td>
<td></td>
</tr>
<tr>
<td>(7):</td>
<td>When the speed went red</td>
<td>13.47-14.32</td>
</tr>
<tr>
<td>(8):</td>
<td>A low nose position means reduce power</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Third topicalization</td>
<td></td>
</tr>
<tr>
<td>(9):</td>
<td>You have to act already when you have a low nose</td>
<td>04.03-04.37</td>
</tr>
<tr>
<td>(10):</td>
<td>Same principle: reduce power, level the wings, bring up the nose</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Fourth topicalization</td>
<td></td>
</tr>
<tr>
<td>(11):</td>
<td>Like if you were below the horizon</td>
<td>03.02-04.15</td>
</tr>
<tr>
<td>(12):</td>
<td>It feels logical to reduce the power</td>
<td></td>
</tr>
<tr>
<td>(13):</td>
<td>It’s about situational awareness</td>
<td></td>
</tr>
<tr>
<td>(14):</td>
<td>That’s like fast. And downward.</td>
<td></td>
</tr>
<tr>
<td>(15):</td>
<td>There’s no standard answer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Fifth topicalization</td>
<td></td>
</tr>
<tr>
<td>(16):</td>
<td>Most important was to level the wings</td>
<td>19.11-19.32</td>
</tr>
</tbody>
</table>
Table (2): Unusual attitudes with a low nose position (cont.)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Excerpt number and heading</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td><strong>Sixth topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(17): We will shut down a few things</td>
<td>00.52-01.16</td>
</tr>
<tr>
<td>7</td>
<td><strong>Seventh topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(18): We begin by leveling the wings</td>
<td>04.20-04.54</td>
</tr>
<tr>
<td></td>
<td>(19): You have to incorporate this reflex</td>
<td>05.56-06.22</td>
</tr>
<tr>
<td></td>
<td>(20): You don't have to stop there at the horizon</td>
<td>06.46-07.51</td>
</tr>
<tr>
<td></td>
<td>(21): Here somewhere you got the controls</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(22): Did you notice a difference from what you did</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(23): That's how it's supposed to look</td>
<td>08.04-08.17</td>
</tr>
<tr>
<td>7</td>
<td><strong>Eighth topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(24): Don't stop at the horizon</td>
<td>06.20-06.46</td>
</tr>
</tbody>
</table>

1 Video file and date: F3-060509-1.briefing
2 Video file and date: F3-060509-2.flightlesson1
3 Video file and date: F3-060509-3.debriefing
4 Video file and date: F3-060515-1.briefing
5 Video file and date: F3-060515-2.flightlesson2
6 Video file and date: F3-060515-4.briefing
7 Video file and date: F3-060515-5.flightlesson3
8 Video file and date: F3-060515-6.debriefing

The jump rope activity

The jump rope activity comes from the FISK-corpus. It is a recording of a group of girls that are jumping rope on the schoolyard, and who are between six and seven years old. It is a peer group activity that takes place during recess. In this activity two contents of learning have been identified. Tables 3 and 4 are compilations of the analyzed topicalizations. In table 3 topicalizations of “where to stand when jumping in” to a turning rope are listed and in table 4 the orientations to “how to turn a rope” are collected.

Table (3): Where to stand when jumping in

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Excerpt number and heading</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td><strong>First topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (1): Should I stand here</td>
<td>01.27-01.45</td>
</tr>
<tr>
<td>8</td>
<td><strong>Second topicalization</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (2): You're so far out in that direction</td>
<td>03.42-04.33</td>
</tr>
<tr>
<td></td>
<td>Excerpt (3): You should jump in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (4): You're standing here</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (5): But I’m standing here</td>
<td></td>
</tr>
</tbody>
</table>

1 Video file and date: BS-020415-2.jumprope1
Introducing the analytical chapters

Having presented and discussed the theoretical and methodological frameworks of the dissertation, it is now time to turn to the analysis. Three analytical chapters follow. All three of them revolve around the notions of change and learning. In each chapter different aspects of change are highlighted. The analytical chapters build upon each other and are designed to be read in the sequential order in which they are presented in the dissertation.

In Chapter 6, the analytical focus is on the co-construction of contents of learning and on how content is intrinsically intertwined with the organization of participation. Trajectories of learning within single activities are traced through the participants’ orientations to something as being the same – and changing. In this first analytical chapter two activities are focused – the reading activity in an elementary school and a first part of the recoveries from unusual attitudes from the flight lessons.

In Chapter 7, the approach developed in Chapter 6 is expanded to change over extended amounts of time and activities. Providing ground for the developed argument is a continued analysis of the recordings of the flight lessons that was initiated in the previous chapter. It is explored how participants make relevant relations over the time span of several activities and between different material settings, and how they, in so doing, are oriented to trajectories of learning. In this second analytical chapter two activities are focused – the reading activity in an elementary school and a first part of the recoveries from unusual attitudes from the flight lessons.

In Chapter 7, the approach developed in Chapter 6 is expanded to change over extended amounts of time and activities. Providing ground for the developed argument is a continued analysis of the recordings of the flight lessons that was initiated in the previous chapter. It is explored how participants make relevant relations over the time span of several activities and between different material settings, and how they, in so doing, are oriented to trajectories of learning. In this second analytical chapter two activities are focused – the reading activity in an elementary school and a first part of the recoveries from unusual attitudes from the flight lessons.

Table (4): How to turn a rope

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Excerpt number and heading</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>First topicalization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (6): You can’t turn</td>
<td>01.00-01.12¹</td>
</tr>
<tr>
<td>8</td>
<td>Second topicalization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (7): I didn’t do it like that</td>
<td>00.00-00.44²</td>
</tr>
<tr>
<td></td>
<td>Excerpt (8): You have one chance left</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (9): It’s you that are jumping like this</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Third topicalization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (10): Can I never jump</td>
<td>01.30-01.59²</td>
</tr>
<tr>
<td>8</td>
<td>Fourth topicalization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excerpt (11): I don’t want to anymore</td>
<td>02.42-03.05²</td>
</tr>
</tbody>
</table>

¹Video file and date: BS-020415-2.jumprope1
²Video file and date: BS-020415-3.jumprope2
The two first analytical chapters argue learning through focusing how the participants are orienting toward the activities as joint commitments, and how the participants are moreover oriented toward trajectories of learning. In the third and last analytic chapter, Chapter 8, the notion of change is problematized. Participants’ ways of ‘negotiating’ change and how they can actively relate to the progressing activity in ways that demonstrate that they are not oriented toward change is focused. The analysis is mainly based on analyses of the jump rope activity, in which the participants misalign with and take a resistant stance toward the unfolding activity, thus resisting change.
CHAPTER VI
Co-constructing contents of learning: Change within activities

The interactive construction of contents of learning is the focus in this the first of three analytical chapters. What is learned is highlighted. However, it will simultaneously be argued that the how and what of learning are inextricably intertwined, and that this intertwinedness needs to be taken into account when analyzing processes of learning. The interrelatedness of content and form is a logical consequence of the integrated approach to the production and analysis of interaction formulated by Goodwin (e.g. 2000a; see also Chapter 2). The close relationship between content and participation has not been sufficiently studied and analyzed in other learning research, and within CA studies on learning, the issue of content has not been highlighted analytically to a large extent.

To be able to trace trajectories of learning, it is necessary to establish something as being the same over time, that is, continuity (cf. Martin, 2004). In order to demonstrate how it is possible to empirically address contents of learning in an interactionist perspective, I will analyze data from two, in many respects different, settings. Through the detailed analyses of a reading activity in an elementary school and of a flight maneuver in an upper secondary aviation academy, it is explored how contents of learning are constituted in interaction in situated activities. The participants’ orientations toward content are taken as point of departure: how contents of learning are established and upheld in interaction, or in other words, how contents of learning are locally negotiated. Through using data from different settings it is possible to escape the particularities of the respective settings in order to elaborate a more general method for tracing trajectories of learning (see also Chapter 5).

In order to discern change and to be able to say not only that something changes but also in what ways, we need to be able to “isolate” something as being the same in relation to which change can occur. The analysis is complicated by the fact that in an interactional world change is in a broad sense always present, and moreover, continuity and change co-exist. In this chapter ways of establishing “sameness,” or continuity will be the main focus. Change is here treated as background but will be the focus of Chapters 7 and 8.
Studying contents of learning

Studies conducted within the socio-cultural perspective have convincingly demonstrated how the learned content is closely related to the social and cultural setting in which it is encountered (e.g., see Säljö & Wyndhamn, 1993; Chaiklin & Lave, 1993). Lave (1993) writes that the fact that learning occurs is never problematic, but that what is learned is always complexly problematic. Other learning research considers content a core issue (see for example the phenomenographic perspective or the “theory of variation,” e.g. Marton, Runesson & Tsui, 2004; Runesson, 2006; Emanuelsson, 2001. For a discussion on the relation between how and what (content and participation) from a phenomenographic and conversation analytic perspective, see Emanuelsson & Sahlström, 2008).

The attention to contents of learning is not new, of course. What this study contributes to earlier research is to approach content as a joint accomplishment, as a co-construction, in other words not focusing either on teacher or student understandings as separate entities, but analyzing the participants’ shared understandings as they develop in the moment-by-moment interaction. Another difference is that the evolving content is not validated in relation to a normative content, that is, what I am presenting is not an investigation of whether the participants are understanding a pre-defined content in a correct way or not. Instead, what is highlighted is how the participants are dealing with content in a here-and-now and as part of a trajectory of learning that extends over time.

The ethnomethodological principle of focusing members’ methods is observed. Accordingly, the participants’ own orientations to and constructions of contents of learning are taken as point of departure. In this way the constitution of a content of learning can be extended to activities where there is not a pre-established educational goal. As Lave and Wenger (1991) have argued, learning is an intrinsic part of all social practice, and not reserved for educational settings. Instead, learners are constantly involved in formulations and reformulations, in cultural and social settings. One of the activities that will be analyzed is a non-instructional activity. Ways of tracing the development of a content of learning in an activity where no explicit learning task or goal has been formulated will thus be suggested.

The relative absence of focus on content in CA studies of learning

Content is something that is with few exceptions passed by in CA studies of learning. The strength of these studies has instead been in describing the interactional structure of learning. In other words, the analytic focus is on a how of learning, whereas what is learned is at times considered but not analytically focused, and in many cases not problematized at all.

When Wootton (1997) studied a child’s development, it was in terms of how she managed requests in changing ways over time. Hellermann (2008) analyzed how there is development in the way that a student participates in the openings
of and disengagements from classroom tasks in an L2 (second language learning) classroom. Hellermann’s (2008) study is in the way that it is conducted similar to Wootton’s study. It focuses changes in interaction patterns (that is, requests, moving in and out of tasks) without regard to a specific content of learning. However, whereas Wootton’s study is not dependent on a content of learning, the content of learning could be said to coincide to some extent with the interactional structure in Hellermann’s study. In the SLA (second language acquisition) literature, there is in that sense indeed a content of learning underlying the assumption that there is development: language skills intertwined with interactional competence. Being able to manage interaction is at least partly the content of learning.

In her study of patients’ learning in the physiotherapy practice, Martin (2004) conceptualized learning as changes in repair practices in relation to a specific content of learning, that is, a movement of the body, for example, moving a shoulder in a correct way. She claims the necessity of establishing something as the same, as a learning task that the participants return to. In her analyses, she studied how the participants initially establish a learning task, but the analytic focus is then directed to changes in the repair practices. The contents of learning are not analytically highlighted beyond this first establishment of a goal for learning (Martin, 2004; see also 2009).

Nishizaka (2006) is one of the few, who have explicitly addressed what is learned, something that is indicated already in the title of his article: What to Learn: The Embodied Structure of Environment. Nishizaka defines learning as a matter of restructuring the world and learning to play the violin consequently involves learning to perceptually restructure the world. The content of learning is the playing of quarter notes on the violin. Through the careful analysis of two separate violin lessons, Nishizaka demonstrates how the participants are orienting to a content of learning as being the same and how they perceive and make use of structures of the environment to restructure that same interactional environment.

In line with the argument formulated in this dissertation, Mondada and Pekarek Doehler (2004), focusing task accomplishment in an L2 environment, have argued that learning tasks should not be treated as products but as processes, and that they cannot be understood as “stable predefined entities” (p. 505). The tasks are configured by the learner’s own activities and interpretation processes. The authors focus the learners’ active involvement in the definition and reconfiguration of tasks; for example bringing in a cultural context when the original focus was grammar.

**Topic orientations as constitutive of contents of learning**

To be able to highlight the content aspect, and in order to qualify the understanding of content, I have chosen to approach it through a related field of research within CA, which is topic. When questions of content beyond the content of turns in their immediate sequential environment or action sequences have been addressed within CA, it is as issues of topic. Prior research on topic will be used
as a resource in order to address what the participants are talking about and how they are doing that, as a way of tracking evolving contents of learning.

In previous research it has been demonstrated that in everyday conversation, topics are rarely marked but that participants gradually shift the topical thrust, a practice that has been called “topic shading” (Schegloff & Sacks, 1973) or “step-by-step transition” (Jefferson, 1984). In that vein, Goodwin and M. Goodwin (1990) have shown how participants, through invoking different participation frameworks, use topic changes to sustain an ongoing argument. Topic shifts are used to accomplish certain actions, where the action can be the same in spite of a change of topic. Instead of attempting to understand and define what topics are, conversation analysts explore how topicality is accomplished by participants-in-interaction. Topic is conceived of as something that is achieved, turn-by-turn, rather than defined externally by the analyst (Stokoe, 2001; see also Schegloff, 1990). Consequently, conversation analytic studies on topical talk have often focused the “mechanics of topicality production” (Stokoe, 2001, p. 187), perhaps most importantly topic transition, that is, how topics are initiated and closed and how shifts in topic talk are managed (e.g. Button & Casey, 1984, 1985; Jefferson, 1984, 1993; Maynard & Zimmerman, 1984; McKinlay & McVittie, 2006; Stokoe, 2001).

The relative absence of focus on content in previous CA research in learning, could thus in part be understood as a consequence of the sequentially oriented re-conceptualization of learning as participation, but it could also in part be a consequence of the somewhat cautious attitude within CA more generally of studies explicitly dealing with content. Schegloff (2007) writes:

> Whatever may be the case about topics and topicality, it is important to register that a great deal of talk-in-interaction – perhaps most of it – is better examined with respect to action than with respect to topicality, more for what it is doing than for what it is about. An utterance like “Would somebody like some more ice tea” [...] is better understood as “doing an offer” than as “about ice tea,” as can be seen in the response to it, which does not do further talk about iced tea, but accepts an alternative to what has been offered. (Schegloff, 2007, p. 1)

This argument is important to understand in relation to research focusing exclusively on topic, thus missing the important arguments about action that Schegloff points us to. However, it seems erroneous to neglect the fact that the utterance “Would somebody like some more ice tea” is not only about “doing an offer” either, but also – and perhaps as much – “about ice tea.” That the ice rather than the tea is picked up on, and the utterance treated as an offer that is half rejected half accepted, does not imply that Mom is not talking about tea when doing the offer in the first place. Instead, it seems that a more reasonable way of understanding the relations between content and action, is that they are interrelated. What action an utterance is doing, is understood in relation to the content of what is being said and done. The participants then have the possibility of picking up on different aspects of the utterance and the action that it is doing. In this case, what
the recipient builds upon when orienting to the offer, is the “ice” of the “ice tea,” as he responds to the offer through saying that he will have some more ice (Schegloff, 2007, p. 2). In a sense, it is of course, as Schegloff claims, an alternative to what has been offered, but it is parasitic upon what has been offered. In line with this way of reasoning, Edwards (1997) claims that the distinction between the form and the content of an utterance is not valid in a CA perspective, as the action that an utterance is doing can only be decided taking into account both aspects.

The interest in content as developed in this dissertation, is not simply about defining or categorizing action within a single turn or a sequence of turns-at-talk, but as a content of learning and how this is co-constructed by the participants in interaction. No matter what content of learning that is defined in documents or other pedagogical goals – it is in a here-and-now that the participants need to create a shared understanding of what the content to be learned is. According to Mondada and Pekarek Doehler (2004), tasks are accomplished in a “locally contingent and socially distributed way through the actions of the participants involved and through their ongoing interpretations of the instructional setting” (p. 510). The distinction between form and communicative content is to be doubted. They write:

Social interaction and the related coordination of perspectives, activities, and cognitive efforts contribute to creating the task at hand, to defining the problem to be solved, and thereby to shaping the context of learning, as well as the meaning of what learning is (Mondada & Pekarek Doehler, 2004, p. 514).

This understanding stands in contrast to notions of content as a fixed pre-existing content to be learned, and to understandings of a learned content as something of an outcome of interaction.

Maintaining focus on sequential organization I take into account the development of a topic over time (i.e., topic beyond the moment-by-moment sequential structure), analyzing similarities and changes in topic organization through addressing how the content develops. Previous research on topic organization is used in order to establish that some same content is being invoked. In establishing a topic that is the same in different instances, I am relying on the participants’ orientations to some aspects of things being talked about as being of the same kind. The “sameness” is tied to the participants’ use of the same lexical units to describe something, and their orientation to particular aspects of the environment around them.

We will now turn to the analysis. First, I will analyze the interactional work involved in establishing a shared focus of attention. I will then argue a way of establishing contents of learning through the participants’ orientations to topic over time, that is, through their topicalizations of a content. An analytical approach to content as constituted in interaction will be suggested. Third, the method of establishing contents of learning that has been developed provides ground for ar-
guing a trajectory of learning. Here, it is the co-construction of a shared content of learning that is in focus.

**Analyzed activities**

Focusing how participants in interaction collaboratively construct a content of learning, different activities occurring in different material settings are analyzed. Video recordings from a first grade elementary school and recordings from an aviation academy will be used.

First, an activity in which three seven-years-old children are reading in a picture book together. This is an activity in which there is no explicit pedagogical goal formulated, and it is constructed as “free activities,” that is, when the children have the possibility of choosing what they want to do from a range of activities such as drawing, playing games, and reading. It is not a teacher-led activity with a prescribed learning task to be negotiated and interpreted by the participants.

Second, the analysis of content will be expanded to a flight lesson, in which a teacher and a student, in a classroom on the ground, co-construct a flight maneuver in talk, and that will later be performed in an actual airplane. This is an educational context with explicit learning goals formulated in different documents, or protocols, that the participants in different ways orient to. However, it will be demonstrated that the understanding of what the goals are – the contents of learning – needs to be investigated in the practical doings of the participants rather than in the documents.

In the first activity, the book reading activity, a way of establishing trajectories of learning through the use of the participants’ topicalizations, establishing something as being the same, is in focus. In the second part of the analyses, using the example from the aviation context, a different aspect of the relation between content and participation is highlighted, in that the interactive construction of contents of learning is focused (the topicalizations are listed in Tables 1 and 2, in Chapter 5).

**Reading as collaborative activity**

The book that the children are reading is about animals (*Stora djurboken* [The Big Book of Animals], Tison & Taylor, 1984). On each book opening there are both text and pictures. The book is encyclopedic in character, and each page simultaneously affords and constrains the creation of new stories as animals are compared to each other in different ways: their size, their speed, the length of their tongues, *etc.* When reading the book, the children most of the time orient to different pictures, talking about them and creating small stories around them. The way that these children read it, the book invites to the telling of many stories. Much of the interactional work is about the establishment of a joint focus of at-
tention, something that the children (attempt to) accomplish through the use of both verbal and embodied resources.

Establishing a shared focus of attention

It is considered a prerequisite for learning that a shared focus of attention is first established and then sustained over time (see Chapter 2). In the book reading activity, the children actively work to engage each other in the construction of stories around the pictures that they are seeing. All through the reading activity as a whole they are pointing at the pictures, describing them and in different ways attempting to interest the others in what it is that they are pointing at and talking about. What drew my attention to talk about blue whales was that it was a topic that was sustained over time, whereas most of the things that the children talk about are talked about and then dropped.

Before turning to the analysis of the orientations to the size of blue whales, I will, in order to make visible the interactional work that is required to accomplish a shared focus of attention, begin by analyzing a part of the reading activity in which the children initially establish such a shared focus of attention, but which is then abandoned and replaced by negotiations over what to focus.

The children have the following pages of the book opened in front of them (Figure 1).

Figure (1): Tison & Taylor (1989, pp. 22-23)
Excerpt (1): He hears really well
LG-020822-2-I.reading; 03.41-03.48

When the sequence begins, Maria is looking at the book page whereas Ebba and Gustaf are looking elsewhere. Maria points at a couple of ostriches on the book, as she says å titta här ra.=han hö:r. ‘and look here then.=he can hear.’ Upon turn completion, she looks at Ebba and finds that her hearer is looking away. She touches Ebba’s arm, first verbally calling her attention through du (.) ti- ‘you (.)’
lo-` and then, as Ebba has changed body position and leans toward Anna, looking to where she is pointing. Anna restarts her turn and elaborates it: **han hör väldit bra.** ‘he hears really well.’ Ebba giggles, thus displaying an orientation toward the funniness of what Anna is pointing at. Anna looks up at Ebba at turn completion, securing her recipient’s attention.

Although not the primary recipient (displayed through Anna’s bodily orientation toward Ebba), Gustaf upon hearing the utterance in line 4, turns his gaze toward the book page to where Anna is pointing and leans somewhat over the book, in such a way “doing participating” in looking at the ostriches. In other words, a shared focus of attention has been established.

However, it is not enough that a joint focus of attention is established, but it also has to be sustained. In the next section I will, through continuing the analysis of this part of the reading activity, analyze the interactional work involved in upholding shared attention, and how the children could be seen as negotiating a joint activity and a topic for talk.

**Negotiating a content**

Following upon the successful establishment of a shared focus of attention the children volunteer different topics, pointing to and talking about different pictures on the same book page. Through the failed attempts to focus on specific pictures, it is visible how a topic, or content of talk, needs to be locally negotiated.

**Excerpt (2): Look**

LG-020822-2-I.reading: 03.49-04.12

6 Anna titta. look.

7 (0.5)

8 Gustaf kolla. look.

9 (1.3)

10 Ebba (nå./här.) va söta. (no./here.) how cute.

11 (0.9)

12 Gustaf söta. cute.

13 (0.8)
Anna titt a vicken mi-.hh ödlan ba.
and look what expre-.hh the lizard like.

Anna enacts the lizard’s expression.

(1.8)

Ebba (men vi-)
and look what expression the lizard like.

(1.8)

Gustaf coola.
cool.

Gustaf coola.
cool.

(1.5)

Gustaf en fågel. e:m.
a bird. uh:m.

((Gustaf and Anna turn the page together, whilst Ebba returns to her magazine))

Next Anna points at another place on the book page, saying titta ‘look’. At the same time as Anna initiates her pointing gesture, Gustaf also points, but at a different place. He scratches his finger on a picture, producing the attention-seeking kolla. ‘look’, however without providing any further descriptions of what it is that he is seeing. Anna looks to where he is pointing, whereas Ebba’s gaze wanders over the part of the book page that is close to her (the right side). She points at some newly hatched ostriches, as she rather than using an attention seeking ‘look’, in line 10 says (nå./här.) va söta, ‘(no./here.) how cute’, thus providing her potential hearers with a description, resembling what Goodwin (1996) in a storytelling context has called a “prospective indexical” (p. 384), which is guiding them into seeing not just something, but something cute. Anna turns her gaze toward Ebba’s pointing finger. Gustaf moves his finger over the book page, until he reaches what Ebba is still pointing at. He stops, and says söta, ‘cute’, using the same adjective as Ebba when describing the picture. Briefly, the children all seem to be orienting to the same thing (line 12).
However, Anna immediately orients to something else. Slightly below the young ostriches, there is a lizard. Anna points at this picture, first initiating a verbal comment on the expression of the lizard, and then enacting the lizard’s posture and expression (lines 14-15). Ebba quickly glances at her, whereas Gustaf is looking at the part of the book page closest to him, neither of them paying attention to what Anna is doing. Neither Gustaf nor Ebba picks up on Anna’s proposed topic.

Instead, Gustaf and Ebba in overlap initiate activities of their own. Gustaf again points to a picture of two monkeys, this time accompanied by the (slightly more) descriptive coola. ‘cool.’ in line 17. What Ebba is saying is difficult to hear on the video uptake, but it is probably an initiation of the question that is restarted and brought to completion in line 18, as she points to approximately the same place as before. Rather than engaging in one of the proposed activities, Anna points to a new picture, and then lets her finger wander over the page.

Let us first look at what Ebba does at this time. Ebba, who has produced a question, vicka e de dä:r. ‘who are those.’ (line 18), finds herself without any responsive actions from her co-participants. She then, temporarily as we will see, abandons the proposed topic, and instead ties to Anna’s earlier talk about the lizard, saying that she thinks that lizards are cute. A swift pointing to the lizard follows, and Anna quickly glances at it.

When not succeeding in getting the others’ attention in response to his turn and pointing at the monkeys in line 17, Gustaf grabs Anna’s hand and shakes it (when Ebba produces her turn in line 20). When Anna turns her gaze towards where he is pointing, he further describes what he sees with the adjective fu:la. ‘ugly,’ thus moreover providing a contrast with the cuteness of what has earlier been looked at. However, before he has even started the production of his utterance, Anna is already looking in a different direction. Gustaf, rather than pursuing his initiated topic, stretches his arm out and begins pointing at something in the vicinity of where their joint attention was earlier.

At this time it is fair to say that there is no joint focus of attention, but rather competition over what to focus on. Ebba reformulates her question in line 23, and now asks va e re här för nånting. ‘what kind of thing is this.’. She is not successful in getting a response this time either. Gustaf instead stretches his arm over the book page and points at the lizard, saying gulli. ‘sweet.’. Following upon a brief silence, Gustaf says en fågel. ‘a bird.’, something that might be an answer to Ebba’s twice repeated question, as he simultaneously points at the bird just below the lizard. However, Anna and Gustaf now turn the page to a new book opening, and this sequence ends. As the page is turned, Ebba disengages from the activity and repositions her body, sinking down over the magazine in front of her.

Different layers of the activity can be discerned. At one level, the children are indeed engaged in a collaborative activity, that is, reading a book together. Perhaps it could moreover be claimed that they are talking about cute (and ugly) animals. We could describe the activity as the children pointing at and describing different pictures that they are looking at, and that the activity in fact consists
in pointing at pictures of different animals. However, we can also see, not least through the analysis of the embodied actions in relation to the design of the book page, that the children are proposing different topics and negotiating what to talk about. They seem to be oriented toward the fact that an important part of the activity does consist in establishing shared foci of attention. Hence, through returning to the topics and attempting to (re)establish them as joint foci of attention, when they have not been followed up on immediately or in a, to the children, satisfying manner, the children can be understood as insisting on their proposed topics. This is what renders the activity a competitive dimension, which in turn provides ground for arguing that they are not successful in accomplishing a joint focus of attention more than very briefly.

**Tracking a content of learning: The size of blue whales**

As we have caught a glimpse of, the children mainly talk about different animals and pictures, sometimes in more extended sequences, and sometimes in the way that we have just seen an example of. I will now proceed to analyze a content that the children recurrently talk about. The size of blue whales is topicalized several times, and all of these instances will be traced.¹

In the first part of this activity, there are only two participants – Anna and Ebba. Gustaf joins them a little while into the activity.

**The size of the blue whale as matter-of-fact**

In the beginning of the reading activity (i.e., before the part of the activity that was analyzed above), the size of the blue whale is explicitly established as a socially shared matter of fact, through the interactionally accomplished convergence of talk, embodied action, and material environment. This occurs two minutes into the activity. Anna has the book about animals in front of her, and Ebba sits right next to Anna reading a magazine. For a little while Anna has been looking at the pictures of a book opening where there are images of different whales (Figure 2).

¹ Melander & Sahlström (in press) contains a version of the analysis presented here.
Anna: "Have you seen a large whale?"

Ebba: (gazing at book)

Anna: "A blue whale."

Anna points at the blue whale in the book.

Anna pecks with her finger on Ebba’s arm.

Having secured Ebba’s gaze, Anna points again at the blue whale.

- Anna: "Havu sett en stor val."
- Ebba: "En blåval.
- Anna: "Ja, det är det världens största djur.
- Ebba: "Det är det världens största djur."

Excerpt (3): The world’s largest animal

Figure (2): Tison & Taylor (1989, pp. 16-17)
Anna is the one who introduces the topic of the blue whale. Looking at a picture of a whale hunt, she asks Ebba **haru sett (. en (0.4) (stor) val.** ‘have you seen, (. a (0.4) (large) whale.’. Through prefacing the description of the picture with the lexical unit **sett** ‘seen’, Anna calls her hearer’s attention to a specific place with an instruction to look there (cf. Goodwin, 2007a). During the initial part of the turn Anna moreover points at the picture in the lower right corner of the book. At this time however, Ebba is reading a magazine of her own and does not attend to what Anna is pointing at. Taking into account Ebba’s lack of attention, Anna’s turn is withheld by a micro-pause followed by the word **en** ‘a’ and another pause. During the second pause Anna taps Ebba’s arm with her finger. Ebba interrupts her reading and shifts her gaze to the picture that Anna is pointing at, upon which Anna completes her turn.

As Goodwin (e.g. 1980, 1981, 2000b; see also Goodwin & M. Goodwin, 2004) has demonstrated, not only speakers but also hearers actively engage in the interactive work. Speakers attend to their hearers as active co-participants, and systematically modify their talk as it is emerging so as to take into account what hearers are doing (or not doing). Speakers have systematic ways of determining whether or not someone is positioned as a hearer to their talk. Further, hearers in interaction have, rather than simply listening to what is being said, a range of embodied ways of displaying active participation (Goodwin & M. Goodwin, 2004). One of the crucial aspects that both speakers and hearers orient to is the direction of gaze. Goodwin (1981) has shown how speakers interrupt their talk when they find that they lack the visible orientation of a hearer, and ensure themselves of hearer’s gaze before completing their utterance.

This active work by the speaker to ensure herself of an active hearer can be seen in how Anna through talk and embodied action elicits Ebba’s participation in the reading activity. The way Anna’s talk in line 1 is produced with interruptions in the production of talk is finely tuned to her orientation toward her hearer’s initial lack of attention. An even clearer example of how she requires Ebba to attend to her actions is when she taps Ebba’s arm. As has been mentioned, Goodwin has shown how relevant hearer gaze is at the speaker. What we find here, where the activity is book reading, is that the material structure that plays a central part in the activity is immediately oriented to by Ebba as the focal point of attention. Anna’s talk also directs her gaze, indicating that she is to look at a certain place. Ebba thus directs her gaze to the part of the page to which Anna is pointing (see Melander, 2004a).

As we have seen, Anna’s turn in line 1 is initiating topical talk on the size of whales, an invitation that Ebba accepts. This is accomplished through her shifting the focus of attention from the magazine that she has in front of her to the book and the picture that Anna is pointing at and talking about. Moreover, Ebba responds by providing more information about the whale – that it is a blue whale, something that she later develops in line 6 through stating that **de e världens största djur.** ‘it is the world’s largest animal.’.
In this first instance of mentioning the size of the blue whale, Ebba and Anna construct the blue whale as being the world’s largest animal. This is done through a coordinated use of talk, pointing, and the semiotic resources provided for by the book opening, and the way that these sign systems are sequentially tied and layered. It is thus not possible to locate the size of the blue whale in either of the book, the talk, or in the embodied actions alone, but precisely in the way that these sign systems have been brought together at this moment in time. The understanding of whales and size should further be understood as part and parcel of the public and shared on-going situated accomplishment of the children’s everyday life. It is not the expression of something else; it is not merely a “display” of inner states or prior knowledge, it is what it is made to be there and then.

Writing about cognition as socially shared, Schegloff (1991) argues the importance of a preoccupation with the “procedural sense of – and basis for – ‘social sharedness,’ and with talk-in-interaction as a strategic setting in which to study social sharedness” (p. 150, italics in original). A procedural sense of common or shared allows us to explore practices by which “actions and stances could be predicated on and displayed as oriented to ‘knowledge held in common’ – knowledge that might thereby be reconfirmed, modified, and expanded” (ibid.). So what Schegloff suggests, and what coincides with my interests, is a concern with the processes of sharing and its embeddedness in the context of social situations. We will now see how the shared understanding of the size of blue whales that has been established here, evolves over time.

In the subsequent excerpts, five in all, the understanding of blue whales and their size, is elaborated in interaction between Anna, Ebba, and Gustaf. In the course of interaction, the initial matter-of-fact understanding of the whale as the largest animal on earth is developed, in continued interplay between different sign systems. In the analysis, I focus on how the expressed understandings of whales and size are accomplished and change in the interaction of the children.

Specifying the size of the blue whale in relation to other animals

Following the establishment of the blue whale as the largest animal, the understanding of size is developed by contrasting the whale to other animals, once again relying on the coordinated use of different sign systems. Of particular relevance in this second instance of talk about the blue whale is the book itself and the ways in which it provides for topical development.

Continuing from Excerpt 1, Anna turns the page from the initial picture she pointed at and starts talking about another image. On the book page that they have just opened, is a picture of different animals that are compared according to their sizes, where the blue whale is the largest and a tiny mouse the smallest (Figure 3).
Excerpt (4): Much larger than the elephants
LG-020822-2-I.reading; 02.31-02.45

1 Anna de e fuskit närom-
it is cheaty when they-

(0.5)

2 Anna dår ::r e blå valen.
the ::re is the blue whale.
((points))

3 Ebba a me:hehehen
yes bu:huhuhut
((points at an elephant...)

(1.9)

4 Ebba kolla den e större än elefan ten.
look it’s larger than the elephant.

................................. ...

5 Anna titta där ra.
look there then.
((points at hippos))

6 Ebba kolla dom e myck*e större än elefan tena.
look they are much larger than the elephants.
((points over whale))

7 Ebba points over the elephants.

8 Ebba draws her finger over the whale and back toward the elephants

9 de ser man ju.
it see one [PRT].
you can see that.

(0.4)

10 elefan tena;, the elephants:;
((points at elephants))
Anna is pointing at the picture of the blue whale, denoting it as a blue whale. Through the use of the lexical unit blue whale, the topic of the blue whale is addressed in relation to a picture on the book page. The topical talk is taken up by Ebba, who in line 6 refers to the blue whale with the indexical den ‘it’, elaborating on its size in relation to a couple of elephants that are also in the picture.

In the book reading activity, the nomination of topics is closely related to on the one hand the design of each book page, and on the other hand the turning of pages. Each book opening contains both text and pictures that afford and constrain interaction, and can be seen as a semiotic structure used and elaborated upon by the children. The design of this specific semiotic structure – the book – provides the children with an activity framework in relation to which they organize their actions (cf. Goodwin, 2000a). These actions are related to the way that they are positioned vis-à-vis the book and each other; Anna is sitting with the book in front of her, with Ebba sitting beside her with more limited access to the book.

Anna can easily attend to the different parts of the book opening. She is also in control of the book, in the sense that she can decide when to turn the pages. Being the one who decides when to turn a page is not only about the turning of a page, but perhaps more importantly about what is going to happen with the story that is currently being told. The turning of a book page can provoke the continuation of the story, but it can also mark the end of one story and the beginning of another one (and consequently a shift in topic). By changing book opening, the semiotic structure affording one array of possible interpretations or topics to be talked about, is also changed. Hence, the activity framework is changed, and each book opening provides a new framework both affording and constraining interaction.

Just prior to this excerpt, Ebba and Anna have been talking about how all animals have the right to live. Anna has initiated the turn de fuskit närom- ‘it
is cheaty when they-', as she simultaneously turns the page of the book. Upon seeing the picture of the blue whale (Figure 3), she cuts off her current turn and instead starts up a new one, a turn that is initiating a new topic and that is placing the ongoing interaction on a different trajectory.

Schegloff (1990) has pointed out that one of the problems with the analysis of topical talk, is that topic shifts are seldom clearly discernible, as a common practice is topic shading where participants gradually shift the topical thrust (Schegloff & Sacks, 1973; see also Jefferson, 1984). Button and Casey (1985) write that a “systematic feature of topic organization is that topics flow from one to another,” which means that “a distinct beginning of a topic may not be readily apparent” (p. 3). However, in certain environments there are disjunctive topic shifts. One such environment that has been identified by Button and Casey (1985), is when participants are doing news inquiries or news announcements. In the reading activity the topic shifts are in a similar way marked as the children orient to the pictures of the book and in so doing quite disjunctively change the topic.

One example of such a disjunctive topic change is when Anna cuts off her turn in line 1 and instead initiates the new topic by saying in line 3, därr e blåvalen. ‘there is the blue whale.’ as she simultaneously points at the picture of the blue whale that is so big that it has to bend it’s tail in order to fit on the book page. Ebba points at one of the elephants placed on top of the blue whale, saying that it is larger than the elephant. She thus accepts the invitation to topic talk by Anna, and further develops it through introducing a contrast in size between the elephants and the blue whale.

Anna picks up on the activity introduced by Ebba by pointing at the animals on top of the elephants, that is the hippopotamuses. However, instead of pointing further up and commenting on those animals, Ebba continues her reflection on the size of the blue whale in comparison to the elephants. She repeats what she earlier said, upgrading the description of the difference in size between the animals through saying kolla dom e myck e större än elefanterna. ‘look they are much larger than the elephants.’. When saying this she first points over the two elephants, then lets her pointing finger sweep over the whole length of the blue whale and then once more over the elephants.

This sweeping pointing gesture reinforces the shape of the picture and strengthens the impression of the differences in size between the animals. To point over the elephants requires a quite small movement of the hand, whereas she has to lean forward and move her whole arm in order to cover the blue whale. This is a pointing gesture that could be understood as a pointing carrying an iconical component (Goodwin, 2003a). It is a gesture that traces the shape of what is being pointed at, and in such a way superimposes an iconic display on a deictic point within the performance of a single gesture. The moving finger and the target of the point are brought into a dynamic relationship in which each is used to understand the other. The gesture elaborates on the picture, providing more information about what is being pointed at than is laid out in the picture alone. Thus, the pointing and the way it is carried out explicitly address the topical
aspect of size. The shape of the blue whale is embodied in the pointing, and its large size is invoked as the shape of the whale is being traced. Further, the pointing gesture and the verbal turn elaborate upon each other, together giving a more vivid impression of what it is that Ebba is referring to than one of the sign systems alone can provide.

We can here note that Ebba is at this time using the picture as evidence for the conclusion that the blue whale is bigger than the elephant (the de ser man ju. ‘you can see that.’ in line 10), it is something that can be seen in the representation. That you can see it in the representation is taken to corroborate the fact that this same difference be present in “real” life. This can be compared to how Anna later states that the blue whale is in fact larger than the book (see Excerpt 8).

The analysis of this second excerpt has made visible the evolving understanding of the size of the blue whale, and how it has been accomplished through the coordinated and converging use of the book and its semiotic properties, pointing, and talk. In the following extracts, another participant, Gustaf, takes part in the continued development of “size.” In addition to aspects already discussed, it is of particular interest in this excerpt to find how knowledge of the world as mediated by the picture book explicitly is relied upon for continuing the development of the size of the whales, in Excerpts 5 and 6 as comparisons of the size of the whale in relation to other animals, and in Excerpt 7 as comparisons to other material objects.

**Excerpt (5):** The elephants are tiny

LG-020822-2-I.reading; 02.52-03.06

1 Ebba kolla. (.) blåvalen  
look. (.) the blue whale

2 å värsta elefanterna e pyttesmå.  
and “the worst” elephants are tiny.

3 Gustaf ee ee ee ee ee ee  
L((draws finger over hippopotamuses))  
L((draws finger over rhinoceros))  
L((draws finger over cow and pig))
As Gustaf sits down, Ebba introduces him to what they have been talking about: that in comparison to the blue whale, the elephants are tiny. In so doing, she is turning the comparison around. Instead of focusing the blue whale as being much larger, the elephants are highlighted as being much smaller.

Here is another example of how talk and embodied actions elaborate on each other and indeed how intertwined with each other that they can be. How this is being done is captured in the concept environmentally coupled gestures (Goodwin, 2007a & b). Ebba’s talk – kolla. (.) blåvalen är värsta elefanterna är pyttesmå. ‘look. (.) the blue whale and “the worst” elephants are tiny.’ – is taken literally saying that both the blue whale and the elephants are tiny. However, Ebba’s turn does not consist of talk alone. Taking into account the embodied actions that Ebba is simultaneously producing, we can see how she, when pronouncing the lexical blue whale, is pointing at the blue whale in the picture. She then points at the elephants as she talks about the elephants. The talk in itself is simply not enough for Anna and Gustaf to properly grasp what Ebba’s utterance is about. The comparison in size between the blue whale and the elephants is enacted and made visible in the performed gestures in relation to the pictures in the book and not primarily in the talk. Moreover, the construction of the utterance relies on the design of the book page, where the animals are explicitly compared in terms of size. In other words, it presupposes that it is indeed size that is being compared, and that this is something that can be seen in how the book page is organized. Consequently, the utterance further presupposes that the participants are all attending to a specific place on the book page, something that is framed by the lexical kolla ‘look’ in the initial part of the verbal turn. Ebba’s turn is thus built through the simultaneous use of language, gesture, and the structure of the

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2 The expression “värsta” literally means “the worst.” However, in vernacular Swedish, the term is also used as an intensifier, marking the extremeness of some property of a noun. This latter use is the one in play in the reading activity. In other words, Ebba’s description in line 2 of the elephants as “the worst,” is to be understood as underlining the absurdity of the “tinyness” of an animal that is usually conceptualized as very big. Similarly, the later description in line 7 of the cat as “the worst ant” underlines how the cat is really small in comparison to the other animals in the picture.
book page. Different sign systems are brought together and mutually elaborate each other, creating a whole that is both different from and greater than any of its constituent parts (cf. Goodwin, 2007a).

Gustaf throws himself into the activity and starts designating the rows of animals by pointing over the hippopotamuses, the rhinoceros, the cow and the pig, arriving at the cat. At this stage, Ebba interrupts him and says <katten> e ingenting. ‘<the cat> is nothing.’, followed by ↑katten e värsta myran. ‘the ↑cat is “the worst” ant.’. There is no ant in the picture, so Ebba is here drawing on her experience of ants as being very small, and the lexical unit ant could be understood as doing the job of an adjective, as an alternative to saying that the cat is small. Further, in the “real” world, the cat is big in comparison to an ant, so the everyday experience of the relation in size between the cat and the ant is a parallel to the difference in size between the blue whale and the cat on the book page.

The topic is now temporarily abandoned, as Anna as part of the introduction of Gustaf to the activity, turns the pages to the beginning of the book. After a short digression into how boring the beginning of the book is, they return to the picture of the blue whale that they have just been looking at (Figure 2).

Embodied constructions of size

Gustaf now enters into the activity, taking an active part through an embodied development of size.

Excerpt (6): Absolutely not larger
LG-020822-2-I.reading: 03.11-03.27

1 Gustaf  >kolla<. (.) >kolla<.  
>look<. (.) >look<.

2 va::l- elefanter e inte större. 
wha::le- elephants are not larger.

3 (0.7)

4 inte större. 
not larger.

5 (0.3)
Gustaf initially says >kolla.< (.>) >kolla.< va:]l- elefanter e inte större. ‘>look.< (.>) >look.< wha:]le- elephants are not larger.’ As he says this, and then repeats inte större. ‘not larger.’, he works himself up through the pyramid of animals with a pointing gesture that captures the differences in size between the animals. Over the picture of the elephants, he holds his hand with his fingers spread, embracing the two elephants. Reaching the top of the pyramid, his thumb and middle finger form a pointed shape, simultaneously highlighting and emphasizing the smallness of the animal. This embodied enactment of the differences in size is tied to the picture, and in other words to what can be seen on the book page. As in the environmentally coupled gestures described earlier, they rely on the co-participants having access to what Gustaf is pointing at.

Starting in the first excerpt, when Anna and Ebba for the first time talked about the blue whale, Ebba stated that the blue whale is the world’s largest animal. The girls then once more oriented to the topic of the blue whale’s size, this time together with Gustaf, comparing the blue whale to other animals on the book page, thereby for example specifying that the blue whale is much larger than the elephants, and that the elephants are indeed tiny in comparison to the blue whale. Gustaf builds on earlier talk about blue whales, and expands on the topic of how much larger the blue whale is through shaping his hand in more pointed ways.
Specifying the size of the blue whale in relation to a material object

The children continue reading, talking about the different pictures as they are browsing through the book. The topic of the blue whale is then once more talked into being, as Anna turns the pages back to a picture of a whale hunt that the girls have earlier talked about (see Figure 2). The (disjunctive) topic shift is thus done in relation to a specific picture that they have earlier looked at and talked about. That it is the same topic that they are addressing can be tied to the use of specific lexical units and to their orientation to a picture that they have earlier looked at and are now looking at again. Further, it is arguably the same topic for the participants as they are engaged in telling Gustaf what they have been doing before he came, explicitly orienting to doing the same topic as before.

Excerpt (7): That big ship is nothing
LG-020822-2-I.reading; 05.20-05.25

1 Gustaf ja: yes:

2 Ebba >kolla.< (. ) de där stora skeppes ( . ) that big ship

3 de e liksom <ingen thing> för hela valen.
   it's like <nothing> to the whole whale.

4 (1.2)

Embedded in a discussion about the whale hunt and the children’s concern with all animals’ right to live, the size of the blue whale is briefly mentioned. Ebba comments on the size of the blue whale: de där stora skeppes de e liksom <ingenthing> för hela valen. ‘that big ship it’s like <nothing> to the whole whale.’. As in the first excerpt, the size of the whale is compared to something on the book page. It is highlighted by Ebba’s sweeping pointing gesture over the whale, the hunting people in a boat, and an initial >kolla.< ‘look.’, drawing attention to
the picture. This time, the comparison does not concern other animals, but the size of the ship—a material object. The “big” ship is construed as “nothing” for the whale. This elaborates on the size of the whale, but there is no further discussion at this time.

Tying the size of blue whales to things in the environment
The children have, up until now, oriented to the size of blue whales in relation to specific pictures in the book. Their discussions have been tied to images, where it is in relation to what they (and we) can in fact see in the pictures that the size of the blue whale has been elaborated. Since the prior mention of the size of the blue whales approximately five minutes have gone by, which is a considerably longer time lapse than between the other instances. This last time that the size of the blue whale is oriented to, it is done in a different way.

During the time that has passed since they last talked about the size of blue whales, Ebba has put away the magazine that she earlier had in front of her. She is now fully engaged in the collaborative reading, something that is displayed by her body position. She is leaning into the book and toward the other children, thus marking a higher degree of engagement in the activity.

Excerpt (8): What if it’s larger than the sea
LG-020822-2-I.reading; 10.48-11.12

1 (1.5)
2 Ebba kolla här e <masser av sort-> dinosaursorter.
look here are [lots of kind-> kinds of dinosaurs.

3 Anna fast e- .hh den riktia måvå- (.) må- .hh blåvalen e
but uh- .hh the real muwh- (.) mu- .hh blue whale is

Anna pats the book opening with her whole hand.

4 större än den här boken.
larger than this book.
((gaze at Ebba))

5 Ebba <MY:CKE:> >den e (ju)< större:
<MU:CH:> >it’s ([PRT])< larger:
((gaze at Anna))

6 Anna än oss. (den e stö-)
than us. (it’s la-)

7 Ebba den e kanske lika stor som <skolan>.
it’s maybe as large as <the school>.

During the time that passes between the start of Anna’s turn in line 6 to the end of same speaker’s turn in line 8, Gustaf is turning a page.
The page that is open in front of them has got birds on it. Initially, Ebba orients to the pictures, claiming that there are dinosaurs on it. However, Anna is not responding to this topic, and instead in line 3 returns to the topic of the blue whale and its size; "but uh-.hh the real muwu- (.) mu-.hh blue whale is larger than this book." This statement is produced with several interruptions and audible inbreaths and Anna’s voice, as well as her gestures, are intense. She pats her hand on the book, leaning forward into the book. At first she is looking at the book opening intensely to then turn her head and gaze towards Ebba, explicitly inviting Ebba to participate in the activity (and in other words not Gustaf as Ebba is seated on her right side and Gustaf on her left).

Anna begins by saying that the blue whale is larger than the book. Through studying mothers reading to their (very young) children, Snow and Ninio (1986) have demonstrated that the children are initiated to what the authors call a “contract of literacy.” Among other things, this contract involves an understanding of how to interpret the pictures in books; that they are not things or objects in themselves but representations of these same objects. In other words pictures should be interpreted symbolically. It is precisely this kind of understanding that Anna is displaying when she says that the blue whale is bigger than the book they are reading, a statement that might at the face of it seem self-evident (cf. earlier discussion in relation to Ebba’s turn de ser man ju. ‘you can see that.’ in Excerpt 4).
Here, the children are still strongly oriented toward the book, even if it is in a slightly different way than before. The difference lies in the fact that they are now not reading in the book, or looking at the pictures, but that Anna is using the book and its materiality as an object whose extension in space is compared with the size of blue whales.

Ebba accepts the topic talk, and she agrees with and upgrades Anna’s utterance through the rather emphasized `<MY:CKE:>` >den e (ju) större:< `<MU:CH:` >it’s ([PRT])< larger:, something that Anna continues and brings to completion by saying än oss. ‘than us.’, in line 6.

Ebba’s utterance, the way that it is produced with a sound stretch on större: ‘larger:’ and then interrupted, indicates a word search. Sacks, Schegloff, and Jefferson (1974) noticed that one property of the basic units used to produce talk – the turn-constructional units (TCU) – is that it “allow[s] a projection of the unit-type under way, and what roughly, it will take for an instance of that unit-type to be completed” (p. 702). And in this case, the TCU has been interrupted after it has begun but before it has reached a point of possible completion. Moreover, it is projecting a comparison, upgrading the one already done by Anna. Unlike word searches for a specific word (e.g. see Goodwin & Goodwin, 1986) in this case a large amount of possible candidate completions is opened up with the sole constraint being that an appropriate object to be compared is larger than the book. Anna provides the candidate completion: än oss. ‘than us.’ (cf. Lerner, 1995, 2004). The word-search organization thus provides a structure for searches through which such a sentence can be collaboratively constructed.

Ebba accepts the candidate (at least she does not object to it – that she continues the upgrade might be an indication that she did not accept the candidate but she does nothing to highlight a possible misunderstanding), and at first possible completion she continues upgrading the comparisons.

This is done in overlap with Anna, who starts up a new comparison, something that can be seen by the way that the girls make use of format-tied utterances (see M. Goodwin, 1990, 2007):

the real blue whale is larger than … in lines 3-4,  
it’s larger … in line 5,  
it’s la- initiated and abandoned turn in line 6.

Ebba now suggests that the blue whale might be as large as the whole school (line 7), whereby Anna says that it might be as large as the schoolyard (which implies that it is indeed larger than the school building).

Ebba’s turn is formulated in a slightly different way, a format that is picked up by Anna, and the turn builds parasitically on the prior turn, through the repetition of the start of the utterance (cf. M. Goodwin, 2007). Notice also the slight reservations that both girls make by using kanske ‘maybe’.
Ebba then confirms Anna’s utterance that the whale is as large as the school yard with a very emphasized ja:ja: ‘ye:es:.’

In contrast to the earlier sequences that have been analyzed and where relevant gaze has overwhelmingly been on the book, from lines 6 to 11 the children are looking at each other and out into the open air. Gustaf is initially looking at Anna and Ebba, and then out into the air. The focus of attention is thus slightly different than earlier. For example, when Anna in line 8 compares the blue whale to the schoolyard, all children are looking in different directions, none of them looking at the book or at each other (see Figure 4).

**Figure (4): Gaze directions**

This disinterest in the book as a focal point of attention can further be seen in how Gustaf is turning a page in the book, first of all without himself actually looking at the book, and second without the girls attending to what he is doing. This is a quite remarkable thing in this activity, as the one who usually oversees the turning of pages is Anna. This observation is corroborated by Anna’s vigorous protest in line 14 upon discovering that Gustaf has turned a page.

After a silence in line 10 Anna continues elaborating on the size of the blue whale by saying tänk om den e större än ↑have. ‘what if it’s larger than the ↑sea.’, something that is concluded by a giggle and is treated by the participants as a joke. It should be noted that through situating the blue whale in the sea, Anna displays that she knows where blue whales live and the “ridiculousness” of her proposal, of course, comes from the notion of the blue whale being larger than its natural habitat. Ebba expresses this in line 12, when she says men knäppgök. ‘but stupid cuckoo.’, which is further produced with a voice filled with laughter.

In this last excerpt, the children turn by turn build a shared understanding of how large a blue whale is. That it is larger than the book seems self-evident. But it is also (probably) larger than both the school and the schoolyard. That it be larger than the sea is treated as a joke. Through this they determine the borders of how
small respectively how large a whale is – something which begun with a picture in a picture book, was extended and developed in interaction and now has been brought to its end.

An evolving understanding of the size of blue whales

What has been traced is how the children return to the topic of the size of the blue whale, discussing and developing the theme through a book reading activity. The first time that the topic is oriented to it is in a matter-of-fact manner, Ebba stating that the blue whale is the world’s largest animal.

The second time that the size of blue whales is oriented to is in relation to a picture that invites to a comparison of size. That the blue whale is the world’s largest animal is here developed and specified, where the blue whale is found to be much larger than all other animals on the picture, something that includes for example elephants and hippopotamuses. This difference is not only talked into being, but also enacted in gestures performed in relation to the picture on the book opening, where pointing over the blue whale requires a much larger movement than pointing over the elephants. Thus, in this instance, the discussion is tied to the picture in the book, taking the picture as basis for claims of differences in size between the animals.

The third time that the topic is blue whales and their size it is also in relation to a specific picture – the picture of a whale hunt. Here, the blue whale is compared, not with other animals, but with a ship, where the “big” ship is construed as “nothing” for the whale. This further elaborates on the size of blue whales, this time in relation to a material object.

The fourth and last time that the size of the blue whale is oriented to, the children are tying its size to material things in the environment. Up until this instance they have been discussing the matter of size in relation to what they could in fact see in the pictures. What happens now is that they instead elaborate the topic by first of all stating that the real blue whale is larger than the book, continuing by escalating the comparisons first with the blue whale being larger than themselves, larger than the school and then suggesting that it might even be as large as the school yard. Finally, having reached what they orient to as being the limits of how large the blue whale can be, it is jokingly established that it cannot be larger than the sea.

Before proceeding with the next part of this chapter, a few points will be made. Through tracing each time that the size of blue whales is oriented to we see a content of learning evolve. It could be argued that the children are of course also talking about other things. As has been remarked upon in previous CA research on topic, one of the intrinsic difficulties with topic is that it is sometimes difficult to decide what it is that people are talking about and when the topic has changed.

The content of what is being talked about is a members’ concern, something that cannot be overly emphasized. It is not an analyst’s category that is being
imposed on the children’s activities, and it is not a question of exploring what the children are understanding of some pre-decided content, or how they are conceptualizing a content that was decided before the actual analysis begun. What is focused is instead their ways of establishing a shared understanding of how large blue whales are and how that changes over time.

The analytical approach to content developed here, moreover consists in tracking a topic that the children return to several times. It is a matter of being able to analytically anchor a trajectory of learning in the participants’ own activities and orientations, through the analysis of the participants’ negotiations of a shared understanding of a content of learning. In the reading activity, it is moreover crucial that the artifact (i.e., the book) is oriented to, as it is the changing orientations to different parts of the book page that provide ground for arguing that the topic changes. What is useful for research on learning from an interactionist perspective is the ability to be precise in deciding what the content of learning is. Tracking topical orientations, is in this way, an analytical point of entry to the analysis of contents and trajectories of learning.

This analytical framework will now be used in order to follow the development of a content of learning within another setting: a pilot student learning to perform a maneuver at an aviation academy. The analysis is begun in this chapter, but will continue in the next, that is, in Chapter 7. An overall description of the topicalizations in this next data set can be found in Table 2, in Chapter 5. The analysis is rather extensive, and differs from this first analysis of the reading activity in that it extends over several activities across occasions and material settings. Further, each topicalization results in sometimes rather lengthy discussions, at other times more brief exchanges.

In this chapter, it is the very first part of what constitutes a trajectory of learning that will be in focus, that is, what will be analyzed here is the first topicalization of the maneuver. It is in this instance that the participants are establishing a content of learning that they will return to at several occasions.

Co-constructing a content of learning: Recoveries from unusual attitudes

The method developed for tracking trajectories of learning in the analysis of the reading activity, has been used in order to establish a participants’ content of learning in the recordings of the flight lessons: how to recover from unusual attitudes with a low nose position. In contrast to the reading activity, this interaction is task-related. The participants have available a protocol in which the contents and the goals of the lesson are listed. That the interaction is task-related and that it involves a participant who represents a formal organization, in this case a teacher, is something that renders the activities the characterization of institutional talk (Drew & Heritage, 1992/1998). In this respect, this activity differs from the reading activity that was just analyzed. The orientation to contents of learning
is more explicit here, as it constitutes a core aspect of instructional activities. However, the protocol is very brief, and does not say very much more than that it is a high workload priority-practice (first and second lesson), and emergency handling (third lesson). Regardless of the level of detail in these protocols, the importance of the local and situated negotiations and renegotiations of content of learning will be suggested, and the development of shared understanding as it is built turn-by-turn in interaction will be analyzed.

I will begin by describing what the maneuver is. In this chapter, the first pre-flight briefing session will be focused. In the description of the maneuver, however, a description of the overall structure of the whole flight lesson will be provided, thus extending somewhat beyond the scope of this first analytical chapter.

### Description of the maneuver

The activity in focus is a flight maneuver called *recoveries from unusual attitudes*. The participants are a student and her teacher, and the analysis focuses how they co-construct the unusual attitudes in the classroom on the ground and in the airplane. The maneuver is hence both talked about and actually performed. Each lesson consists of a preflight briefing session in a classroom on the ground, and is followed by the flight lesson itself, which takes place in an airplane. The lessons are concluded by a debriefing session, again in a classroom on the ground.

An unusual attitude is a position of the airplane that is recognized as not normal and as something that requires that you take action to recover from. The unusualness of the attitude has to do with the positioning of the nose and wings in relation to the horizon in combination with speed (Figure 5). The horizon, visible as a separating line on the instruments in the airplane, is an important point of reference, in relation to which many of the actions are organized.

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**Unusual attitudes**

When flying, the position in relation to the horizon (nose and wing position) and speed is crucial, and the parameters require constant calibration. An unusual attitude is a position of the airplane that is not normal in the sense of, for example, the nose position being too low in combination with a right bank angle and high speed.

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*Figure (5): Unusual attitudes*
In the *briefing session*, the teacher and the student go through different documents and talk about the content of the flight lesson. The content of each flight lesson is regulated and presented in a printed document that is read and used during the lesson. The preflight briefing session is also an opportunity for the student to ask questions and for the teacher to check the student’s understanding of the content or to make theoretical reviews. In the briefing session that is analyzed here, the question of unusual attitudes and how to recover from them is raised by the student and is followed by a comparatively long discussion. In general, the briefing sessions last approximately 10 minutes.

Later, in the airplane during the flight lesson proper, the teacher flies them into an unusual attitude while the student has her eyes closed. The teacher then says “your controls” which is a standardized way of transferring responsibility between the pilots, and which is a sign that it is now the student that has to take over the control of the airplane (cf. Nevile, 2004). The student has to find out what kind of unusual attitude it is and what to do in order to recover from it. When doing the recovery there are three aspects that need to be taken into account: nose position, wing position, and speed. However, what is required to be done and in what order depends on the specific situation.

Up until the time of the recording, the student had had her training in an older type of airplane with mechanical instruments. Prior to the three consecutive flight lessons that are analyzed in the dissertation, the student has only once flown a highly computerized airplane, referred to as a glass cockpit. The instrument panel is in such an airplane dominated by two computer displays where information from many different instruments is brought together in one display, thus making it into a complex visual field.

Further, the greater part of this student’s experience has been flying with visual flight reference (VFR). This means that she is used to flying relying on her own visual perception of the world outside the airplane, and how the airplane moves in relation to that framework. During this lesson however, she is wearing a hood so as not to be able to look outside the airplane for reference points, but instead to be forced to focus on the instruments. In other words, the resources that the student has for performing her actions are the instruments and displays inside the airplane. Further, she has the resource of her own body and how she physically experiences the movements of the airplane. Flying a small airplane is a very physical experience and the unusual attitudes are no exception. Flying in and out of the attitudes one moment presses the body down into the seat to the next moment make you feel as if you are weightless. A crucial feature of the flight lessons is that they are “for real.” Unlike in the ordinary classroom, every action can be consequential beyond the pedagogical goals of the lesson and could literally be a question of life and death.

In the *debriefing session* the participants talk about the flight lesson and what has happened during it. The teacher evaluates the student’s performance, and grades her efforts. The two somewhat competing aims of the flight lessons, as on the one hand an occasion for instruction and learning, and on the other hand an
examination, is here explicit. Sometimes, as will happen in the first flight lesson explored in this text, the student’s performance is judged as unsatisfactory and she does not pass the lesson. However, this is not directly related to her performance of the recoveries, but to a more general claim of her not having prepared enough for flying an airplane with a glass cockpit. In any case, a report is written about the student’s failure and she has to do the same lesson over again.

Discursive embodiments of speed, nose position, and wing position

The first time that the student and teacher talk about the unusual attitudes in the first preflight briefing session, this results in a rather long question-answer sequence, in which a correct order of actions recovering the airplane from the unusual attitude is established. Initially, the teacher introduces the lesson as being more or less identical to what the student has already done.

Excerpt (9): We will do unusual attitudes
F3-060509-1.briefing; 00.17-00.52

1 Teacher vi kommer köra (. ) branta svängar (. ) vi kommer
we will do (. ) steep turns (. ) we will
2 köra låg fart. (. ) stall. (0.7) e: onormala lägen.
do slow speed. (. ) stall. (0.7) uh: unusual attitudes.
3 (0.5)
4 och=
and=
5 Student mhm=
6 Teacher =allt de här me hood. kommer du göra.
=all this with the hood. you will do.
7 e: och onormala lägen kommer du dessutom få (0.9)
uh: and unusual attitudes you will moreover get to (0.9)
8 och= då kommer de inte gå till som förra gången
and= then it will not happen as the last time
9 som mer eller mindre va en demonstration utan då
that more or less was a demonstration but then
10 kommer ja lägga oss i olika (. ) onormala lägen
I will put us in different (. ) unusual attitudes
11 som du får ta dej ur sen da.
that you will have to recover from then.
12 Student °okej. °=va e de till exempel.
°okay. °=what is that for example.
13 Teacher (å f-)
(and f-)
14 Teacher <till exempel att e:->
<for example that uh:->
15 (0.9)
16 d- de kommer gå till så hår du får
i- it will be like this you will
The teacher makes a list of maneuvers that they will do. It is part of the preparations for the flight lesson when the participants are talking through what they will do during the lesson. The teacher mentions four different maneuvers, ending with unusual attitudes. The student produces a minimal mhm in line 5 in response to the list, immediately following upon the first topicalization of unusual attitudes. This response could be analyzed as oriented toward the fact that the list is coming to an end. However, it can also be understood as oriented toward the unusual attitudes constituting a potential difficulty, something that is corroborated by the fact that the recoveries from unusual attitudes will occupy not only a considerable amount of time in this first briefing session, but moreover is topicalized in all three flight lessons.

The teacher then picks out the unusual attitudes as being somewhat different from the other maneuvers that will be practiced, in that the student will be expected to perform the actual recoveries. Referring to last time, the teacher says that then it was more or less a demonstration, whereas this time kommer ja lägga oss i olika onormala lägen som du får ta dej ur sen da. ‘I will put us in different unusual attitudes that you will have to recover from then.’ (lines 10-11). The student acknowledges this with a quiet okej, ‘okay.’ and in overlap with the teacher asks what the unusual attitudes are: va e de till exempel. ‘what is that for example.’ (line 12). The teacher has presented the unusual attitudes in a way that explicitly expects the student to be familiar with the maneuver. He starts up with <till exempel att e-> ‘<for example that uh:–’ something that could be on its way to giving examples of unusual attitudes. Rather than proceeding in that direction,
he orients to the student’s question as being about what is going to happen in the airplane, or in other words how the exercise will be done. The teacher thus enacts how the student is going to close her eyes, face down toward her lap, while the teacher flies them into an unusual attitude.

The distribution of roles is also emphasized. In the enumeration of maneuvers in lines 1-2 it is a “we” that are going to do different things. In line 6, the personal pronoun that is used is instead “you,” indicating that the student will play a more active role. This is reinforced through the setting up of a contrast between the last time that was a demonstration, and this time when the teacher – “I” – will fly them into unusual attitudes that the student – “you” – will be responsible for recovering from. The participants will be present in the airplane together, and will thus in a more general sense do the maneuvers as a “we.” Within this common and shared project, however, the participants will be expected to do different things and occupy different roles or identities.

This is part of what constitutes the present activity as an educational setting, in which an uneven knowledge distribution between teacher and student is being made relevant. The student is the one who will be held accountable for knowing things and for demonstrating what she knows. It could also be noticed, that the explicit distribution of roles is of particular importance in this specific setting – the airline cockpit. Flying an airplane as a team, requires the pilots to decide who is responsible for doing what, for example with respect to who is responsible for flying the airplane (cf. Nevile, 2004).

Already in this first mentioning of the unusual attitudes, a trajectory of learning is oriented to. The participants are preparing for what they are going to do during the flight lesson in the airplane, and in so doing they are projecting future actions. The unusual attitudes are picked out as a maneuver that is going to be done in a different way than the last time (lines 8-9). The exercise is hence set up as containing new elements, where this time it is the student who will be the one responsible for recovering the airplane. At the same time, a previous shared experience is invoked, where the student is expected to know something about the unusual attitudes through having participated in a demonstration. This will be discussed in more detail in Chapter 7.

**Initiating talk about recoveries from low nose positions**
The teacher initiates a question-answer sequence, first asking the student what she would do if they have a high nose and are stalling when she opens her eyes and takes over the controls. He then sets up a contrasting case, instead asking what she would do if they have a low nose position, as he demonstrates an unusual attitude that has a very low nose.
The exchange follows a familiar pattern of classroom recitation: the teacher asks a known information question, which is answered by the student, and then in some way assessed by the teacher either through evaluating, offering clues or as in the initial part of this case, doing nothing. The teacher asks the student *om du: tittar upp å så har du väldit låg nos. istället. va göru då?* ‘if you: look up and then you have a very low nose. instead. what will you do then?’ When demonstrating the low nose position, the teacher holds his hand straight, palm facing down, in front of his body. The fingertips correspond to the nose of the airplane, and the hand and arm are held with the fingers pointing down. Thus the only aspect of the unusual attitude that is highlighted is the nose position, whereas wing position and speed are not made relevant neither in embodied actions nor in talk.

The teacher’s turn *va göru då?* ‘what will you do then?’ is making relevant an answer from the student, thereby providing the opportunity of an evaluation by the teacher. What differentiates this activity from question-answer activities in other (non-instructional) settings, is the participants’ orientation to a distribution of knowledge displayed in the way the teacher’s turn is produced and the instructional activity this implicates (Lerner, 1995, p. 121).
As the teacher has asked the question **va göru då**: ‘what will you do then?’, the student during the 1.6 second silence gradually shifts gaze, from looking at the teacher to looking down at the table. The silence is followed by a prolonged sound **e::** ‘uh::’ and then there is another 1.5 second pause before the student answers **ja tar upp ↑nosen**, ‘I bring up ↑the nose’. The silence and the prolonged sound could be taken as indicating possible difficulties in answering. As answers are responsive actions, their syntactic structure is shaped by their position as second actions. This is clearly visible here, where the answer produced by the student, that she will bring the nose up, is closely tied to the teacher’s question about what she would do if they had a low nose position.

The prolonged sound in line 5 is what Lerner (1995, p. 123) has called a prepausal token. The token shows that the student is engaged in the search of an answer. The turn is produced rather softly, where the lexical “nose” is said with a flat and high-pitched voice. It is not until she has completed the first TCU that she looks up at the teacher, and then, upon not (immediately) receiving a response, continues by adding an increment **â gas**, ‘and power,’ during which she is gazing at the teacher.

The intonation curve of the turn in line 7 moreover rises on **nosen** ‘the nose’, staying up high. There is a short silence, and then the student adds **â gas**. ‘and power.’. This is first dropping down low over the **â** ‘and’, to then slightly rise over **gas** ‘power’. **gas** ‘power’ is further produced in a rather flat way, which renders the turn a flair of uncertainty. Taken together the answer is epistemically marked as a try rather than as a claim of being sure.

As noted above, the teacher is highlighting the nose position in his question. It is thus worth noticing that the student is able to recognize that an unusual attitude involves not only nose position but also other aspects such as speed. However, she is not indicating whether to add or reduce speed.

The student responds to the question through both talk and embodied action. She produces a verbal turn describing what she would do, that is **ja tar upp ↑nosen**, ‘I bring up ↑the nose’. She simultaneously performs the required action holding the imagined controls with her hands and pulling towards her. When performing these gestures, the student is making relevant a relation between the different settings, that is, the room in which they are at this time and the airplane. LeBaron and Streeck (2000) argue that gestures originate in the “tactile contact that mindful human bodies have with the physical world” (p. 119). Without this relation to the world of things, the movement of the hand could not be seen as action.

Further, the student is making visible an object and an action known to both the teacher and herself. It is this shared experience that enables the teacher to see what the gesture indexes (see LeBaron & Streeck, 2000, p. 135). The gestures are evoking a world of experience held in common. Following Koschmann and LeBaron (2002), it could be characterized as an **insider gesture** (p. 256), as it presumes certain forms of special knowledge shared by the participants. This shared world is further not limited to this particular student and teacher at his moment.
in time, but also part of the professional community of practice of pilots (cf. Goodwin, 1994).

Excerpt (11): Do you just bring the nose up
F3-060509-1.briefing; 01.30-01.42

The teacher ignores the student’s added å gas, ‘and power,’ and asks tar du upp den direkt bara, (. ) så, ‘do you just bring it up straight away, (. ) like that,’. As he produces the indexical den ‘it’, he initiates a gesture demonstrating the trajectory of a climbing airplane. In this gesture the bank angle of the wings is actually present, as the hand is held slightly tilted to the left. However, the gesture in itself is not made the focus of attention through for example gazing at it by neither teacher nor student. Instead, the student orients to the question as being about in what order to do things, and she answers nej ja måste ju kolla farten först. ‘no I have to check the speed first.’. The teacher treats her answer as correct in principle, or in other words that it is correct that she has to check the speed, but he then continues his turn – as it turns out in overlap with the student. The
student has heard the first part of the turn and starts talking at a turn transition relevance place, which however the teacher continues beyond. She initiates an elaboration on what she would do about the speed, but cuts off. Very possibly she is orienting to something that the teacher is doing, as for example the content of what he is saying in overlap with her in line 14 (which is not hearable on the video but might very well be heard by the student) or simply the fact that there is overlapping talk, something which is regularly minimized by participants-in-interaction (see Schegloff, 2000). Further, the teacher is now shifting the position of his body, starting to move around.

**Shifting contextual configurations**

Again the teacher confirms that the student is right about the importance of bringing up the nose quickly. In so doing, he is putting within parentheses, or even ignoring, the whole section about the speed, as his turn is tying back to the position of the nose. Further, the teacher picks up a wooden model of an airplane that is hanging on the wall, thus bringing in a new semiotic resource. Consequently, a new contextual configuration (Goodwin, 2000a, 2007a) is brought into play.

**Excerpt (12): Level the wings**

F3-060509-1.briefing; 01.39-01.47
The teacher describes a situation – säg att vi ligger i ett (0.8) sånt här läge. ‘say that we are in a (0.8) position like this.’ Upon completion of his turn, he places the model in front of him, positioning it so as to be seen by both him and the student. Up until now the greater part of the gestures have been performed without the participants specifically orienting to or highlighting the gestures. The student gazes at the teacher when he is doing the gestures, but it seems that she perceives him as “a whole,” and not the gestures as a specific salient feature that needs to be attended to in its details. And the teacher has not highlighted his gestures through for example looking at them or placing them so as to be focused upon. However, when the model is introduced, it is immediately made the center of attention where both the student and the teacher are fully orienting to the model through gaze and body posture. The artifact makes relevant that both student and teacher look at the airplane, thus highlighting what is being done with the model. This makes the model different from the enacted actions and trajectories or movements of the airplane that were demonstrated earlier. It provides the participants with an activity framework in relation to which they orient their actions (cf. Goodwin, 2000a).

The model is making the bank angle of the wings visible, something that the teacher has not been able to visualize with his hands and gestures clear enough for the student to “see.” The bank angle is further exaggerated, with the airplane in an almost 90 degree angle in relation to their normal position (supposing that that is in line with the horizon). That the teacher is holding the model in front of him has as consequence not only that it is placed for the student to visually orient to it, but it is also almost offered to the student, so that she can touch and manipulate it.

The teacher continues by asking what the student in such a case would do first. Considering the exaggerated position of the model together with the parameters that need to be taken into account when analyzing the unusual attitude, the teacher has now limited the array of possible answers to one that has not earlier been mentioned by the student. And interestingly, the student immediately says skeva upp så: ‘level the wings like this;’ (line 23) as she reaches forward to turn the airplane, thus leveling the wings of the model. In other words, what she could have been understood as not knowing before, is within a different material environment, when a different contextual configuration is brought into play, something that she does know.

The model has facilitated and made it possible for the student to perceive an aspect of the unusual attitude that was not possible to discern from talk and the demonstrations made with the hand and arm. It was an aspect of the unusual attitudes that – considering both talk and action – was missing in the teacher’s original question, when the verbal turn was about a low nose position, and the demonstration of the position of the airplane was done with a straight, flat hand. However, it could also be argued that making the student aware of this specific aspect of the unusual attitude has a price, which is that leveling the wings is con-
structured as the first appropriate action, which is contrary to what will be shown to be the reinforced correct order of actions (see Excerpt 14).

The teacher now continues talking them through the recovery, demonstrating with the model how the airplane will move through the air.

**Excerpt (13):** The speed will increase

F3-060509-1.briefing; 01.52-02.07

1 Teacher e: därefter **upptagning.**
   uh: after that **recovery.**

2 (. ) övergå till stigning. (. ) .hh de som (. ) transition to climb. (. ) .hh what

3 e viktigt e att som sagt farten is important is as said that the speed

4 (. ) kommer å komma (. ) will come

5 (. h) väldit väldit fort (. hh) så att (. h) very very quickly (. hh) so that

6 i de här läget- in this position-

7 Student vadå komma fort. what (do you mean) come quickly.

8 Teacher **farten.**
   the speed.

9 Student a.
   yes.

10 Teacher den kommer (. ) **öka väldit fort.**
    it will (. ) increase very quickly.

11 Student a när du lägger oss s- å.
    yes when you put us like that.

12 Teacher **precis.**
    exactly.

13 när vi **ligger i ett sånt här läge.**
    when we are in a position like this.

14 Student a.
    yes.
After having demonstrated the procedure of the recovery, the teacher returns to the question of speed. In so doing he ties back to what the student earlier said; **men om de e väldit hög fart så-** ‘but if the speed is very high then-’ (line 15, Excerpt 11). Already then he treated her answer as in principle correct, and he is now going to further develop the issue of speed. The student having mentioned the possibility of the speed being high, seems to warrant the teacher’s presupposition that there is a common understanding that the speed will be high. What is now highlighted is that the speed will increase quickly: **de som e viktit e att som sagt farten (. ) kommer å komma (.h) väldit väldit fort** ‘what is important is as said that the speed (. ) will come (. ) very very quickly’ (lines 2-5). The **som sagt** ‘as said’ is doing the tying back to what was earlier said by the student (who is the only one who has been explicitly talking about high speed).

However this presupposition is at least in part wrong. Instead, this is a source of trouble to the student, who initiates repair (see Schegloff, Jefferson & Sacks, 1977; Schegloff, 1992), asking the teacher what he means by **farten.** ‘the speed.’, to which the student answers a. ‘yes.’ but no more. The teacher does another repair, expanding the trouble source to being about the quick increase in speed: **den kommer (. ) öka väldit fort.** ‘it will (. ) increase very quickly’.

The student formulates her understanding of what the teacher is saying through her utterance in line 11 **a när du lägger oss så.** ‘yes when you put us like that.’, something that the teacher immediately picks up on, once again demonstrating with the model what an attitude would look like in which the speed quickly increases. In his verbal turn he further confirms her understanding through saying **precis. när vi ligger i ett sånt här läge.** ‘exactly. when we are in a position like this.’.

In this preflight briefing session, the questions are formulated in ways that display an orientation to future actions. For example, in Excerpt 10, the teacher asks the student **om du: tittar upp å så har du väldit låg nos.** ‘ if you: look up and then you have a very low nose.’ (lines 1-2). The way the utterance is grammatically shaped, with the verb in present tense, stages a future scene in a here-and-now. The use of the personal pronoun **du** ‘you’ highlights how it is the student that will find herself in this situation and how she is the one responsible for doing something (**va göru då;** ‘ what will you do then;’ in line 3). Another related example is when the teacher in Excerpt 13 says that what is important is that the speed will increase very quickly when they have a low nose position (lines 2-5). Again, the way that the utterance is grammatically shaped, places them in a future scene indicating that this is something that is going to happen and that the student should know about.
**Formulating a generic rule**

Toward the end of the session the teacher formulates what is required to do when recovering from an unusual attitude with a low nose in terms of a generic rule.

**Excerpt (14): As soon as you see that you have a low nose position**

F3-060509-1.briefing; 02.07-02.19

15. **Teacher** så så fo- så fort du ser att
   as as so- as soon as you see that
16. du har ett lågt nosläge. (.)
    you have a low nose position. (.)

17. 1. av me gasen på en gång å
     reduce power at once and

18. 2. uppskevning. (0.8)
     level the wings. (0.8)

19. 3. å så (0.6) övergå till stigning.
     and then (0.6) transition to climb.

20. (.) .hh [når vi passerar horisonten=]
    (.) .hh when we pass the horizon=
    (demonstrating passing the horizon))

21. **Student** vadå av me all gas.
    =what (do you mean) reduce all power.
22. **Teacher** mm. all gas.
    mm. all power.
23. **Student** m=
24. **Teacher** =de e bara å dra av
    =it is just to reduce power
    (gestures reducing power))
25. *på en gång då*. (.)
    *at once then*. (.)
When you see that you have a low nose position you have to reduce power at once, level the wings and do a transition to climb (lines 17-19). Co-occurring with the verbal turn are gestures. uppkevning, ‘level the wings,’ and övergå till stigning, ‘transition to climb.’ are both demonstrated with the model, where it is the movements of the airplane that are highlighted. Speed is however not made visible with the model. Nose position was as we have seen earlier rather easily shown with nothing but the hand, although the model is used here. Wing position was clearly highlighted by using the model airplane. But neither gestures nor model afford the demonstration of speed, and certainly not differences in speed or the dynamics of speed. Instead, when saying that the power is to be reduced, the teacher moves his hand thus demonstrating the action of reducing power (cf. LeBaron & Streeck, 2000). This contrasts somewhat to the gestures used in Excerpt 13, where the teacher in line 10 says that the speed will increase very quickly. Parts of this utterance co-occurs with the teacher gesturing with his right hand. He holds his hand with an open palm facing up, as he moves the hand and arm in direction from his body, enacting something increasing or growing. The notion of speed that is enacted in that context however, is a speed that is increasing because of the fact that the airplane is positioned in an unusual attitude with a low nose, rather than the pilot performing actions in relation to speed. It could hence be seen as a way of demonstrating the airplane’s trajectory, or how the airplane moves through the air.

When talking about the recoveries the teacher and student have co-constructed what the correct procedures are when recovering from an unusual attitude with a low nose. The student however, asks vadå av me all gas, ‘what (do you mean) reduce all power.’ something which the teacher initially confirms, but then retracts and rephrases. It turns out that the generic rule that he has formulated about what to do when you have a low nose position is at least partly misleading. The construction vadå + X and its interactional consequences will be analyzed in more detail in Chapter 8.
Excerpt (15): Not possible to say always reduce or always add power
F3-060509-1.briefing; 02.19-02.38

26 Teacher där- (0.5) de år: (. ) de går egentli there- (0.5) it is: (. ) it’s really
de är: ( . ) de går egentli not possible to say in a general way always
27 inte å säga generellt sett allti it’s really
28 av me gasen eller allti på reduce power or always add full gas.
29 nej. no.
30 Student (0.9)

31 Teacher har vi ett halvt ( . ) nos ner låge if we have a half ( . ) nose down position
32 me väldigt låg fart. då kan du with very low speed. then you can
till å me ge lite gas. (. ) eller bibehålla den som even add a little power. (. ) or keep it like
33 vi hade innan. (. ) bara se till så att vi we had before. (. ) only make sure that we
34 kommer upp. (. ) å sen (. ) när vi passerar go up. (. ) and then (. ) when we pass
35 horisonten. (. ) då: skjuter du på full gas. the horizon. (. ) then you add full power.
The teacher now says that de går egentlien inte å säga generellt sett allti av me gasen eller allti på me all gas. ‘it’s really not possible to say in a general way always reduce power or always add full power.’. Up until now, he has indicated that first, there are certain actions that are appropriate and second, that there is a specific order in which the actions recovering the airplane from an unusual attitude with a low nose position should be performed. It turns out that this is too simplified. Instead, the teacher now explains, that if the nose is in a half down position with a very low speed, this would even require additional power rather than a reduction of power (lines 31-33). The complexity lies in the fact that the parameters speed, wing position, and nose position can vary in so many ways, rendering each unusual attitude slightly different from the other. When in the air, the situation will certainly be less unequivocal than it has been constructed discursively in the classroom. It will require of the student an awareness of the situation as a whole so that she can decide, for example, whether to add or reduce power and what the appropriate order of actions is.

*Establishing a shared understanding*

Closing talk about unusual attitudes is the establishment of a shared understanding of what the unusual attitudes are. The student is focused on the unusual attitudes *per se*, rather than what to in order to recover from them. She initiates the closing activity through demonstrating her understanding of what the maneuver is going to be about.

*Excerpt (16): Different strange nose positions quite simply*

F3-060509-1.briefing; 03.07-03.17

1. Student de e bara typ asså om vi ligger s-
   it’s only like that is to say if we are s-
   ((demonstrates

2. eller liksom står välldit lågt. or like are standing very low.
   with hand.................. . . .

3. Teacher a, olika liksom olika yes, different different
   ((demonstrates with hand

4. Teacher konstiga noslägen helt enkelt it is.
   strange nose positions quite simply
   .................)
   ((noding......................))

5. Student a=okej. yeah=okay.

6. Teacher de=e inte värre än så. it’s no worse than that.
The student produces the verbal turn **de e bara typ asså om vi ligger s- eller liksom står väldit lågt.** ‘it’s only like that is to say if we are s- or like standing very low.’ a verbal turn that in itself is not transparent. It is however co-occurring with hand gestures where her arm and hand are describing first a high nose position and then a low nose position. The student is here for the first time using gestures demonstrating positions of the airplane rather then required actions, and she is reusing the gestures that the teacher earlier used to demonstrate the two contrasting cases: high nose – low nose. Koschmann and LeBaron (2002) have analyzed how gesture reuse in learning settings work as displays of mutual understanding. The gestures can be understood as **learner articulations.** These are ways in which the learner gives voice to his/her understandings, something that has been shown to contribute to new learning (see *ibid.*, pp. 250-251).

Without hesitation, the teacher confirms the student’s understanding, and in overlap starts up a verbal turn **a, olika** ‘yes, different’. Upon finding himself in overlap with the student he cuts off and restarts his turn, continuing by first repeating **olika** ‘different’ (still in overlap with the student) followed by **konstiga noslägen helt enkelt e de**. ‘strange nose positions quite simply it is.’ In talk he is thus (again) highlighting that it is the nose position that is the most crucial aspect of the unusual attitudes. In the co-occurring gestures however, he is doing something different than before. The earlier gestures depicting the movement of the airplane have all been parsing its trajectory into different stages. His left arm is now moving up and down, the hand turning in different directions. Rather
than describing the unusual attitudes as cases of a high or low nose position, the gesturing hand is depicting the trajectory of the airplane as it flies in and out of different unusual attitudes where both wing position and nose position are included. In other words, this sequence of gestures produced by the teacher display a different version of what the unusual attitudes will be like, a version that can be understood as oriented toward the student’s initial, rather general, question (Excerpt 9, line 12) about what the unusual attitudes are. Talking about the recoveries as being about nose positions, implies that we have here a way of denominating the maneuver that in itself carries with it much more than nose position “quite simply,” where it is understood without saying that a “strange nose position” also implies “strange” speed and “strange” bank angles of the wings.

In sum, in the preflight briefing session the teacher and student have, relying on embodied social interaction, constructed a generic rule (with exceptions) for how to recover from unusual attitudes with low nose positions. In so doing, it has become clear that the complexity of the taught event resists straightforward solutions. Throughout the interaction, the focus has been on either one or several of the aspects – speed, nose, and wing position – where a sequential order in which the actions recovering the airplane from the attitude should be carried out has been established. This is a parsing of the activity that will prove to be different in character when actually doing the recovery in the airplane.

The co-constructed content of recovering from unusual attitudes

When the student first asks what the unusual attitudes are, the teacher initially interprets the question as being about how the maneuver will happen in the airplane: who will be responsible for doing what and how the maneuver will be set up. He thus describes how the student, with the hood on, will close her eyes while the teacher flies them into an unusual attitude. The student’s task will then be to take over the controls and recover the airplane from the attitude.

This is then transformed into a question of how to do the actual recovery, something that the participants establish a shared understanding of through an extended question-answer sequence. A specific order in which to do certain appropriate actions – reduce power, level the wings, and transition to climb – is established, and consequently the recovery is parsed into different segments. The teacher also notices that there may be problems in arguing a generic rule for what to do with power, as whether to add or reduce power depends on the character of the specific unusual attitude.

There is a tension between the formulation of a generic rule and the understanding that each particular situation might differ from the other, and that it is therefore “not really possible” to say that there is a rule that is applicable in all situations (Excerpt 15). However, the overall impression is that there is indeed a correct order of appropriate actions that should be attended to when recovering from an unusual attitude with a low nose position.
Adding to the complexity in the understanding of this generic rule, is that what is established as a first correct action initially is attending to the bank angle of the wings (Excerpt 12). The teacher’s initial question was comparatively open, in the sense that it asked what the student would do if they had a very low nose (Excerpt 10). The student replied by proposing two different actions, neither of them accepted by the teacher. Instead, he pursued asking the student for what turned out to be one specific aspect of the unusual attitude: what to do about the bank angle of the wings (Excerpt 12). At this moment in time, attending to the bank angle was rather strongly reinforced as being the appropriate first action, whereas in the formulation of the generic rule it is the reduction of power that is mentioned first.

Concluding talk about the recoveries, the student volunteers her understanding of what the unusual attitudes are, and in doing so ties back to her initial question. At that time she, upon hearing the teacher say that they were going to do unusual attitudes, asked for examples of what that was (Excerpt 9). In the end, the student and the teacher co-construct a shared understanding of the unusual attitudes as being about different strange nose positions. This puts focus on what the attitudes will be like before doing the actual recovery rather than what is required to do in order to recover from the attitudes (Excerpt 16).

In sum, a shared understanding of three different aspects of the unusual attitudes is established: (1) what they are, that is, different strange nose positions, (2) how the maneuver will unfold in the airplane, and (3) what actions are required to recover from an unusual attitude with a low nose position.

Content and the organization of participation

Topicalizations and topic orientation as a basis for contents of learning

The issue of what is learned, or in other words contents of learning, is, as was initially stated, an important issue for learning theories. In the analyses it has been shown how the organization of participation is intimately linked to the co-construction of contents of learning. What is afforded as a learning task is intertwined with the organization of participation, and the detailed analyses reveal how the content of learning is established as part and parcel of the sequential organization of interaction.

In this chapter a framework for the analysis of contents of learning from an interactionist perspective has been developed. Through the articulations of topics and the tracking of the development of these topics over time, the analyst has available a procedure for analytically coming to terms with the co-construction of participants’ own contents of learning.
As has been argued in previous research on topic organization, a difficulty in deciding what topic the participants are orienting to, is that topics are often layered, and that different topics quite unnoticed merge into one another. In the analyses, I have decided what the topic is through how the participants actively work to establish shared foci of attention as part of a topicalization.

Orientations to topics have been demonstrated as not only being verbal. It is also possible to treat the participants’ embodied actions in relation to each other and the material environment as invoking topics, thus being part of the co-construction of contents of learning. Including the material environment and embodied action into analysis permits us to treat not only verbal topic nominations but also embodied references as constitutive of content, for example how the size of blue whales is enacted in relation to the pictures in the book. However, this is not only a matter of how topic nominations are being done. In the analyses, it has also been shown that the way in which the participants draw on different resources – both talk, embodied action, and structure in the material environment – is consequential for the co-construction of contents of learning. An obvious example is how the participants’ use of gestures and references to a material environment (e.g. the model airplane) when talking about the recoveries from unusual attitudes, is crucial to the way that the activity unfolds.

It has further been demonstrated how the participants’ bodily orientations are attended to. In the reading activity analyzed in the first part of this chapter, the participants worked to ensure that the others were looking at an indicated place on the book page. Involvement in the activity was displayed through the ways that their bodies were positioned vis-à-vis each other and the book, creating an “ecological huddle” (Goffman, 1961) around the book. In the preflight briefing session, the participants were positioned face-to-face, creating an interaction space between them within which gestures were performed and structures in the environment were made relevant.

Content and the establishment of shared understanding

Topic nominations and the establishment of joint foci of attention have been taken as a starting point for analytically establishing contents of learning. The local negotiation of content is analyzed through the participants’ constantly ongoing interactional work to establish shared understandings within the unfolding activity. Through exploring the moment-to-moment evolving shared understanding, we have ways of problematizing contents of learning as they are established in interaction.

Knowing more about what the teacher’s intentions were, how he retrospectively understood what happened, and about how the student perceived of the situation, for example through interviews, might enlighten us on aspects of the situation. However, a strength in the analyses of embodied interaction in situated activities is that they deal analytically with the way that the participants have to and do make relevant contents of learning and shared understanding
in interaction, in a here-and-now. Regardless of what the participants know in other situations and settings, in the encounter with each other they make explicit and relevant aspects of these understandings to each other. As CA and research on cognition as social and situated has argued, this is not a (simple) matter of two minds coming together but something that has to be accomplished in the moment-to-moment interaction between participants (cf. Garfinkel 1967/2007; Goodwin, 2000a; Hutchins, 2006; Schegloff, 1991).

It has been made a point of the fact that the reading activity is a non-instruc-
tional activity in which the co-construction of a content of learning did not rely upon expectations formulated within an educational setting. On a general level, the children in the reading activity are being socialized to literacy, and they could be understood as developing different skills, such as reasoning skills, etc. However, the analysis and the developed argument shows that it is possible to be more specific in relation to what – as an intrinsic aspect of participation – it is that the participants are learning. Conceptualizing learning as changing understanding in situated activities, the children participating in the reading activity are learning about the size of blue whales.

In contrast, the participants in the flight lessons are explicitly oriented toward educational goals and learning tasks that are to be dealt with. As such, an expectation that recoveries from unusual attitudes should be practiced is present. But as could be seen in the list of maneuvers that were going to be practiced during the flight lesson – that is, stall, slow speed, steep turns, and unusual attitudes (Excerpt 9) – any one of these was a potential candidate for elaborate discussions in a similar way as the one about recoveries from unusual attitudes that was analyzed here. The point is that these other maneuvers were not talked about, something that highlights the very local and situated character of the interactive constructions of contents of learning, and the evolving shared understanding of these contents as they are established in interaction, regardless of contents as formulated in curricula or other documents. In such a way, the question of contents of learning is approached as an empirical question, rather than as a matter of investigating what the participants have understood of a pre-decided content.

Analyzing contents of learning from a participants’ perspective facilitates and enhances the possibility of seeing different aspects of the interactively constructed content. When the pilot student and her teacher co-construct a shared understanding of what the unusual attitudes “are,” it is possible to discern, as has been shown, that the participants are talking about the maneuvers in different ways. They are talking about them as what they are (i.e., strange nose positions), as procedures for recovering from them (i.e., the establishment of a generic rule that should be followed in order to recover the airplane from the unwanted position), and as an educational exercise (i.e., that the teacher will fly them into an unusual attitude while the student is not looking and that she will then take over and recover the airplane).
Co-constructed content as a basis for arguing trajectories of learning

The analyses make apparent the importance of not taking subject content for granted, but to explore how contents are interactively constructed. It is the participants’ own contents of learning as they are constituted in interaction that are focused and provide ground for arguing trajectories of learning.

In the reading activity, contents of learning as an analytical approach and point of entry was introduced. By focusing the evolving content of the size of blue whales through analyzing the participants’ embodied orientations to a topic, it was possible to establish a trajectory of learning. The analysis of the interactive constructions of the content “size of blue whales,” provided ground for analytically approaching orientations toward content in the flight lessons. The reading activity is not an instructional activity, whereas the situated teaching-learning character of the aviation context is visible in the participants’ orientation toward a content and a trajectory of learning where the student is expected to change, or in other words, to learn.

The content of learning was in the reading activity established and sustained in interaction between the participants without any explicit orientations to expectations about talking about the size of blue whales beyond this occasion. There is nothing in what the children are doing that provides ground for the argument that they will later continue talking about the size of blue whales, just as much as there is no clear indication that they will not do that. When they do return to the same topic they do it in slightly changing ways. Every topicalization represents a new time, but is full of references to what has been established in interaction before. However, there is no orientation toward that changing their ways of talking about the blue whale is a preferred development of the activity.

In contrast, the pilot student and her teacher are visibly oriented to activities continuing beyond what they are doing in an immediate here-and-now. The participants are here clearly oriented toward a trajectory of learning. That is, if the participants in the reading activity are not displaying an explicit orientation toward the fact that they will talk again about the size of blue whales, in the interaction between the teacher and student in the preflight briefing session there is a demonstrable orientation toward a projectable trajectory that is related to a content of learning.

Expressed somewhat differently, there is an orientation toward continuity and change in relation to the topicalizations of contents of learning in the flight lesson. The participants are oriented to a trajectory of learning that is accomplished in relation to the co-constructed content of learning. This orientation to a trajectory of learning can be argued as part of what constitutes this as an instructional activity within an educational setting.

Looking closer at what the trajectorial orientation consists of, the question-answer activity that constitutes a large part of the briefing session, is through asking the student questions about how to recover from low nose positions, oriented toward what they are going to do later, in the airplane, where the student will be
held accountable for knowing things (as in Excerpts 10 and 13). The establishment of shared understanding toward the end of talk about the recoveries (Excerpt 16) could be understood as the student preparing for what kind of situation it is that she will find herself in. It is not only matter of being able to talk about the recoveries in a here-and-now, but in a short while she will find herself in the situation where she will in addition be responsible for recovering the airplane.

In sum, it is important for an interactionist perspective on learning to analytically approach the issue of what is learned, that is, contents of learning. This first of all adds to previous interaction research on learning, in which content aspects have not been analytically highlighted. But an interactionist perspective can moreover contribute to learning theory in this respect. Highlighting the required interactive work to establish and sustain contents of learning makes visible all participants’ contributions to the evolving contents of learning. It demonstrates the local contingencies of task formulation (cf. Mondada & Pekarek Doehler, 2004). As has been argued, the analytical approach developed in this chapter allows us to be precise in relation to what, as intrinsically intertwined with how, from a members’ perspective, the participants are learning.

This way of understanding content as constituted in interaction, and as intrinsically intertwined with the organization of participation, provides ground for the analyses in not only this first analytical chapter, but also in the following two chapters. Chapters 7 and 8 build upon this way of analytically approaching contents of learning from an interactionist perspective, thus establishing sameness, or continuity, from a participants’ perspective, a continuity that will be used in order to analyze change.
CHAPTER VII

Learning trajectories: Change over time and activities

How participants establish relations between activities in interaction, how they make relevant earlier experiences, and how they orient to future actions, are in focus in this chapter. In the analysis I build upon the way of establishing contents and trajectories of learning that was developed in Chapter 6. The way of approaching what is same, or continuous, is expanded and further developed, highlighting the participants’ orientations to how some aspects of the activities change. An important argument in situated perspectives is the strong relationship between learning and cognition and the situation in which they occur, social as well as material. The aim of this chapter is also to expand on the notion of the situatedness of a situation, through exploring how participants make relevant change and continuity of situationally specific activities across occasions and contexts.

Through analyzing how participants orient to aspects of change and continuity processes of learning are made visible. To learning research, the question of how people orient to and make relevant that activities are related in changing ways, can contribute to an understanding of the transfer of learning, that is, how it is that people come to use knowledge from one setting in another. The notion of transfer has been called into question by for example Lave (1988/1997), as a notion that belongs to an acquisitionist perspective on learning (see Chapter 2). In line with an actor-oriented perspective on transfer (Lobato, 2003, 2006), I will demonstrate how the participants, through their changing orientations to a content of learning, are making relevant influences from previous activities and construe situations as similar – and different (see Marton, 2006). Providing ground for the argument is a continuation of the analysis of the data from an upper secondary aviation academy begun in the previous chapter.

In this chapter I will also address the learning of what in previous research has been conceptualized as a cognitive skill lodged within the individual, as something that instead could be understood as accomplished in interaction. I will focus a cognitive concept – situation awareness – that is used within aviation, and explore how the student develops this awareness as an intrinsic aspect of learning to fly.
Conceptualizations of change in previous CA research on learning

Common to studies of processes of learning within a CA perspective is a conceptualization of learning as changing participation in situated activities. This may be formulated in slightly different ways. For example, Hellermann (2008) writes that learning can be understood as “members’ change in participation in activities within a community of practice over time” (p. 13). Young and Miller (2004) in a similar vein view learning as “changes in participation in these [discursive, my comment] practices (p. 519), whereas Cekaite (2007) suggests that “learning is evident in novices’ changing participant status” (p. 46). But how has change been conceptualized in previous longitudinal CA research on learning and development? How has it been approached analytically? What kind of change constitutes learning?

Two different ways of approaching change and what constitutes relevant change can be discerned. Overall, the studies argue learning as changes in participation structures or interaction patterns. In some studies it is these changes in interaction patterns that are focused, whereas in another group of studies the conception of change is tied to the participants’ changing identities.

Highlighting how specific patterns of interaction change over time, Wootton (1997) analyzed a child’s different and changing ways of performing requests as development. He isolated an interactional pattern, tracking instances of requests during different periods of time. The changes in the way that the requests were formulated are what is analyzed as development.

The study of repair and corrections has proven to be a particularly useful way of studying changes over time, as demonstrated by for example Martin (2004, 2009; see also Hellermann, 2009). Repair and corrections are at the very heart of instructional activities (e.g. see McHoul, 1990; Macbeth, 2004). In Martin’s (2004) dissertation, change is conceptualized as changes in repair patterns, where the question of who is doing what is of crucial importance. The study of repair and corrections further make it possible to discuss what counts as relevant change, which is consequently equivalent to who is initiating the repair/correction and who does the actual repair/correction.

Relying on a conceptualization of learning as changes in participation some researchers tie change not only to changes in interaction patterns but to the participants’ changing identities. Here Lave and Wenger’s (1991; see also Lave, 1993) notion of a learning trajectory that the learning individual moves along, from legitimate peripheral participation to full participation, is used to describe the changes in participation. These terms are used to describe learners’ trajectories. For example, Hellermann (2006) studied the way that a L2 learner managed a book reading activity over time. Eduardo, the student, who was a novice to the book reading activity initially simply picked up just about any book and read it. Later, when new students had come to the group, Eduardo who had by that time participated in several book-reading activities, started demonstrating and
explaining to the newcomers how the activity was organized and what they were expected to do. Treating the notions of novice and expert as relational and constituted in a here-and-now, Hellermann (2006) labels Eduardo’s participant status as having become a “learner expert” (p. 384).

Cekaite (2007) interprets what she calls “the theory of legitimate peripheral participation” (p. 46) as a theory that argues “that learning is evident in novices’ changing participant status and their move from peripheral to increasingly active participation in a given activity.” (ibid.). She demonstrates that learning and participation cannot be seen as a unilinear development toward full participation, nor as a unidirectional development of one unified learner identity. Over time, one and the same L2 learner can position himself or herself very differently within the classroom community, depending in part on his or her interactional skills. Rather than studying the learner identity of L2 novices as fixed entities, dissociated from their participation in classroom activities, we need to conduct more longitudinal work on the social dimension of participation. (Cekaite, 2007, p. 59)

Through examining a student’s self-selections over a year’s time, Cekaite investigated the emergent nature of interactional skills. The child was shown to move through three different phases. The first phase was characterized by dyadic exchanges, the second by interactionally inappropriate self-selections, whereas during the third phase, the child was able to participate in classroom activities as a competent community member.

In sum, change has mainly been conceptualized as changes in identified interaction patterns that are localized and analyzed in a chronological order (e.g. directives, repairs, and self-selections) and/or changes in participation in activities (e.g. openings of group work, participation in whole class activities). Thus, change has primarily been regarded as an outcome of analysis in which instances of repeated doings within which the participants have not necessarily been oriented to change or learning, have been analyzed for possible change in certain interaction patterns.

The approach pursued here builds on and adds to this prior CA research on learning, by a focus on change as an oriented to activity for the participants. In this chapter, and in Chapter 8, change will be analyzed as a doing here-and-now, as an oriented-to aspect of the ongoing interaction. To address change, one also has to address continuity: the two cannot be separated. How do participants make relevant relations between activities? How can we discern change from a members’ perspective? In order to provide a theoretical framework for the exploration of how participants’ orient to and make relevant a changing environment – interactional as well as material – I will next turn to the notion of context.
Contextualization, decontextualization, and transfer

Interaction and context are closely related and interaction always takes place within situated practices. However, context does not define interaction but rather aspects of context are made relevant in interaction. Hence, context is not only about the material environment, but can encompass other contextual factors, extending our sense of what context could mean. Rather than treating a particular situation as a framework in which interaction takes place, ethnomethodology and CA treat context as the product of the participants’ actions and activities. Participants constitute situations and circumstances, activities and events, ‘in and through’ their social actions and activities (Heath & Hindmarsh, 2002).

Central to the analysis of context is first, to take as point of departure the perspective of the participant(s) whose interaction is being analyzed. Second, what a participant treats as relevant context is shaped by the specific activities being performed at that moment. Participants’ articulation of their environment is shaped by the activities of the moment and the context that is relevant to what they are doing changes radically when they move from one activity to another (cf. Goodwin & Duranti, 1992). Language and context are treated as mutually constitutive:

context is not simply a set of features presupposed or invoked by a strip of talk, but is itself a dynamic, temporally unfolding process accomplished through the ongoing rearrangement of structures in the talk, participants’ bodies, relevant artifacts, spaces, and features of the material surround that are the focus of the participants’ scrutiny. (Goodwin, 2000a, p. 1519)

In their seminal paper on the turn-taking organization of interaction, Sacks, Schegloff and Jefferson (1974) write that they intend to describe methods for social action that are both context-sensitive and context-free. Context is thus an important and problematic issue for each inquiry. Actions are context-shaped in the sense that they cannot adequately be understood except by reference to the context in which they participate, especially the immediately preceding configuration of actions. The context-renewing character of actions has to do with the fact that every current action will itself form the immediate context for the next action in a sequence, and it will inevitably contribute to the framework in terms of how the next action will be understood. The context of a next action is repeatedly renewed with every current action (Heritage, 1984, p. 242).

In order to capture the dynamic interrelationship between talk, embodied action, and structure in the material environment, Goodwin (2007a, 2007b) has suggested the notion of environmentally coupled gestures. These are ways in which participants organize their actions in relation to a material environment, and how the material environment is invoked in talk and gestures. The concept captures how talk, embodied action, and oriented-to structure in the environment are relied upon for the intelligibility of the overall action (see also the analysis of Excerpt 5, Chapter 6).
Goodwin (2000a) has further introduced the notion of contextual configurations. This concept is used to provide an analytical framework for the exploration of actions in a dynamically changing environment. A particular, locally relevant array of semiotic fields that participants demonstrably orient to is what is called a contextual configuration.

As action unfolds, new semiotic fields can be added, while others are treated as no longer relevant, with the effect that the contextual configurations which frame, make visible, and constitute the actions of the moment undergo a continuous process of change. From a slightly different perspective, contextual configurations provide a systematic framework for investigating the public visibility of the body as a dynamically unfolding, interactively organized locus for the production and display of meaning and action. (Goodwin, 2000a, p. 1490)

Through the notion of contextual configurations, it is possible to highlight how participants orient to and change their actions in relation to each other and a material environment. As interaction unfolds, participants are making relevant orientations toward different aspects of the interactional and material surroundings. In such a way, change can be studied and analyzed in a systematic way through the participants’ orientations.

The above-mentioned questions of how people make relevant that, and in what ways, activities are related is an important question for learning theory. As was mentioned in the beginning of this chapter, this is what is referred to as transfer. Much learning research builds on the idea that people can learn things in one situation and use that (same) knowledge in later situations. In a traditional understanding of transfer, it refers to “the application of knowledge learned in one situation in a new situation” (Lobato, 2003, p. 20). It hence builds on the possibility of a decontextualized learning, that is, the learning of abstract (and decontextualized) principles that can later be applied to problems encountered in other situations.

The notion of transfer derives from an acquisitionist perspective on learning whereas for a participationist perspective it is one of the areas that are most difficult to handle theoretically (Sfard, 1998). The idea of situated and contextualized learning brings into question the very possibility of transferring knowledge from one situation to another. Lave (1988/1997) has questioned the relevance of the concept, as it is related to a view of knowledge as possible to define in specific ‘chunks’ of knowledge. However, in the detailed analyses of how situations and activities are related, and oriented to as such by the participants, it is possible to empirically discern how people practically handle that they do not meet the world as a completely new world each and every moment. So for example, Lave (1988/1997) writes that the interesting question is how situated activity is organized so as to be “the same” from occasion to occasion (p. 187).

In the actor-oriented perspective formulated by Lobato (2003, 2006), transfer is defined as “the influence of learner’s prior activities on their activity in novel situations” (p. 437). Lobato argues that evidence for transfer from an actor-oriented
perspective is found by “scrutinizing a given activity for any indication of influence from previous activities and by examining how people appear to construe situations as similar” (ibid., p. 436). The questions researchers should ask are what relations of similarity that are created, and how these are supported by the environment. The metaphor of transfer is thus conceived of as the production of sameness (Lobato, 2003).

Lobato (and Lave) thus emphasizes sameness, and how people construct similarities in different activities. In a slightly different vein, but still with a critical stance to the traditional view of transfer, Marton (2006) suggests that rather than looking for ways in which learners are doing the same in new situations, it is more fruitful to consider cases in which the learner is able to do something different in new situations. He claims that transfer research has focused on how people are able to do similar things in different situations because of similarities between those situations, a point of view that he criticizes (see p. 507). Instead, Marton proposes that for transfer to be possible not only sameness but also difference needs to be present. A crucial aspect of learning is the ability of discerning differences and variation.

In this dissertation, continuity and change, or similarity and difference, are understood as intrinsically related. The close relationship between change and continuity means that they are always simultaneously present: change is discerned in relation to something being the same. In the analyses in this chapter, I will build upon the notion of co-constructed contents of learning as established in Chapter 6. As was argued already there, change was an aspect of the interactive construction of contents of learning. What was primarily focused in the previous chapter was however sameness, whereas change will be highlighted here. The dynamic view of understanding context outlined above will be used in order to discern change (and continuity) in activity.

Socially distributed cognition in development

In Chapter 2, I commented on the necessity of addressing what the relationship between cognition and interaction looks like. In order for an interactionist perspective on learning to be dismissed neither as merely being about behavior changes, nor about signs of “real” learning that is occurring inside individual heads, the intertwinedness of cognition and interaction was argued drawing on a theory of socially distributed cognition as well as CA notions of intersubjectivity as accomplished in interaction. A perspective on cognition as situated and social was formulated, where cognition can be understood as participants’ collaborative actions in activities.

In order to be specific rather than general, I will, based on the analysis of the flight lessons, argue that the pilot student learns what is called situation awareness – in the literature as well as by the participants in the data – and which is something that in previous research has been conceptualized as a mental capacity.
The concept *situation awareness*

*Situation awareness* (SA) is a notion that is used to describe a person’s perception and understanding of complex environments. Overall, SA has mainly been approached as a mental phenomenon, residing within the individual mind. When it comes to defining the notion the meanings somewhat differ. Endsley (1995) suggests a definition of SA as “the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future” (p. 36). She closely links SA to notions of mental models and consequently focuses the individual person.

Another direction of research emphasizes the importance of the material environment within which the individual acts, drawing on the ecological theory of perception developed by Gibson (1979). Smith and Hancock (1995) thus argue that SA is a “dynamic concept that exists at the interface between the agent and its environment” (p. 139). Flach (1995) remarks that the human being is actively engaged in a search for meaning, rather than a passive information channel. It is required of the person that s/he understands the information that is gathered from the environment in relation to task demands and action constraints. A consequence of this understanding of SA is the emphasis of the importance of the design of instruments, warning systems, etc.

To a large extent missing in prior SA research is a focus on how SA is constituted in interaction between the participants. In the few studies so far where multiple participants have been studied, each pilot has been assumed to contribute with his/her SA in correspondence with roles and responsibilities, hence maintaining focus on the individual person as a “container” of SA (e.g. see Endsley, 1995; Prince, Ellis, Brannick & Salas, 2007), and viewing “team SA” as the sum of the individual understandings rather than as something situated and accomplished in interaction.

Nevile’s (2004) ethnomethodological study of everyday interaction in the airline cockpit situates SA in interaction rather than in the individual mind. Using CA, Nevile studied SA as a situated, social, and task-driven phenomenon, exploring how shared understanding is accomplished between crew members with a specific focus on how information that all crew members need to know about is distributed and how they monitor each other’s actions.

Hutchins and Klausen (1996) write, that in order to understand how the cockpit works as a system it is not enough to refer to the cognitive properties of the individual pilots, but a larger unit of analysis is required. The authors have instead taken the whole cockpit as a system as unit of analysis. They claim that it is the performance of the system rather than the skills of any individual pilot that is crucial for the management of a flight. The larger unit of analysis permits a description and explanation of the cognitive properties of the cockpit system that is composed of the pilots and their informational environment, that is, a system of distributed cognition. In order to explain the information processing properties of an individual the only choice we have is to attempt to infer what is inside the individual’s mind. Taking the cockpit system as unit of analysis it is instead pos-
sible to directly observe the phenomena of interest. What is done in the cockpit between the pilots is public and thus accessible for analysis (Hutchins & Klausen, 1996; Hutchins 1995b). Through analyzing interaction between two pilots that have never met before the recorded event, Hutchins and Klausen (1996) demonstrate how the pilots are able to manage and sustain intersubjectivity, and how this goes beyond each individual person, very much in line with Nevile’s (2004) study.

In the following, it will be argued that, as part of learning how to fly the airplane, the pilot student learns SA. This evolving cognitive “competence” is understood as constituted in the moment-to-moment interaction between the student and her teachers. As will be demonstrated, the learning of SA is an intrinsic part of learning how to perform the maneuver that the student practices in the analyzed data. Through the student repeating the same maneuver, it is possible to see how her ability to perform the recovery – which is intimately linked to her awareness of the situation and what it requires her to do – changes and improves.1

**Analyzed activities**

We will now follow the student through the three consecutive flight lessons, focusing on the maneuver *recoveries from unusual attitudes* and how the maneuver is constituted in interaction, on the ground and in the airplane, in talk and embodied action. For a description of the maneuver and the overall organization of the flight lessons, see Chapter 6. The analysis is done and presented following the chronological order in which the activity unfolds. This is important in order to capture and analyze how shared understanding develops, and how there is both continuity and change, thus establishing a trajectory of learning.

In the first and the third flight lesson the teacher is the same, whereas the teacher in the second lesson is a different one. The first and the second lessons are in fact the same, as the student does not pass the first time but has to do the same lesson over again. In the first (and second) lesson, the overall goal is to put the student under a heavy workload where she has to demonstrate that she can find and interpret the instruments. The third flight lesson is emergency training, and has to do with the loss of computer displays, something that will require the student to look at unusual places for information about the state of the airplane.

**First flight lesson**

The analysis will here continue from where the analysis of the first preflight briefing session ended in the previous chapter. The content of learning, as constituted in interaction between the student and the teacher, was that of the maneuver

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1 Melander & Sahlström (2009) is a condensed version of how the student learns *situation awareness* as an intrinsic aspect of learning to perform the recoveries from unusual attitudes.
Teacher e: (.) kort å gott kan man säga att de här passet: uh: (.) short and good can one say that this here lesson: uh: (.) for short you can say that this lesson:

å:r (.) mer eller mindre identiskt me: första passet i:s (.) more or less identical to: the first lesson som du gjorde.= that you did.=

Student =man skulle ha sån här va. =you’re supposed to have this one right. ((lifts hood and holds up for teacher to see))

Teacher precis. exactly.

Student a yeah

The student shows the hood to the teacher, who points at it until ♦ in line 7.

Teacher å du ska ha. (0.7) ♦ de e de som e den väsentlia and you will have. (0.7) that is what is the crucial skillnaden. så att de: .h manövermässit å så vidare difference. so that: .h maneuverwise and so on e/i stort sett likadant. (0.6) vi kommer kōra (. ) it’s to a large extent the same. (0.6) we will do (. ) branta svängar (. ) vi kommer kōra låg fart (. ) stall steep turns (. ) we will do slow speed (. ) stall (0.7) e: onormala lägen (0.5) och= (0.7) uh: unusual attitudes (0.5) and=

Student =allt de här me hood. kommer du göra. =all this with the hood. you will do.
When the teacher introduces the lesson, he does it through initially saying that it will be more or less identical to the first flight lesson that the student did (i.e., the first flight lesson in an airplane with a glass cockpit). Choosing to express the similarities between the lessons in terms of being identical, constitutes an expectation that the student should be familiar with what is going to happen. It is therefore interesting that the student immediately orients to one of the two things that will be formulated as differences. She picks up a hood from the table in front of her and holds it up for the teacher to see, as she says: man skulle ha sån här va. ‘you’re supposed to have this one right.’ (line 4). The teacher confirms, points at the hood and states that de e de som e den väsentlia skillnaden. ‘that is what is the crucial difference.’ In other words, the crucial difference between the lessons is that the student this time will wear a hood, something that will force her to focus on the instruments only when flying the airplane.

The teacher continues talking about what is going to be approximately the same, enumerating maneuvers that will be practiced. The list is brought to a close through again topicalizing the hood, which is in such a way once more highlighted as what constitutes a difference.

At this time, it turns out that the unusual attitudes are also going to be somewhat differently done. Last time was more of a demonstration, whereas this time it is the student who will do the recovery (lines 14-18). Again, what is going to be done in the future, is tied to what has been done, thereby formulating expectations about what should be experienced as new and what should be known. In this case, what the unusual attitudes are is treated as shared knowledge, whereas the fact that the student will be responsible for doing the recovery is introduced as something new.

It is the first time that the student does the recovery in a glass cockpit with a hood, but she has done the maneuver before. The expectation that she should recognize what the maneuver is about can be seen in various ways in the first preflight briefing session. The teacher initially interprets the openly formulated question that the student asks in Excerpt 9 (Chapter 6) – va e de till exempel. ‘what is that for example.’ (line 12) – as being about how the exercise will happen, something that can be understood as implying the expectation that the student does know what the maneuver is. When the teacher starts asking the student what she would do if they had a very low nose (lines 1-3, Excerpt 10, Chapter 6), it is presupposing that she knows not only what the unusual attitudes are but
that she does know something about how to recover from them. The student displays that she has prior experience of the maneuver and some knowledge of what is required of her, as she can actively participate in the question-answer sequence about required actions in order to recover the airplane.

In such a way, relations are built between activities occurring on different occasions, something that in this educational context, is tied to expectations about the student’s knowledge. The present activity is actively constructed as one of many more lessons, both preceding this moment in time and that will occur in the future.

The analysis will now continue through following the student to the airplane, where she will do the recoveries live in the air.

Parsing the recovery into separate actions
A while into the flight lesson it is time to practice recovering from unusual attitudes. The teacher announces that this is what they are going to do next, and the exercise is introduced with a demonstration. The teacher flies the airplane into an unusual attitude and describes the actions he is taking as he is performing the maneuver. What an unusual attitude can look like on the computer display in front of the pilots, can be seen in the stylized display in Figure 1.

Next it is the student’s turn to do the recovery. The teacher asks her to close her eyes and tilt her head down towards her lap as he flies them into an attitude with a low nose and a left bank angle.

![Figure (1): Key to stylized display](image-url)
The teacher initiates the recovery through saying **dina roder** ‘your controls’, a formally prescribed way of transferring the responsibility of flying the airplane between the pilots. The student is sitting face down and with her eyes closed. Upon hearing the **dina roder** ‘your controls,’ the student immediately moves her head up from facing down towards her lap to a position where she can see the flight displays in front of her. The movement is quick, and she immediately focuses the display in front of her. As soon as her face is facing forward, her right hand moves to the power lever and her left hand takes the yoke.

The implication of the directive **dina roder** ‘your controls’ is that the teacher is no longer primarily responsible for flying the airplane and consequently he, in his turn, lets go of the power lever and the other controls. In a general way, directives can be defined as actions that are designed to get someone else to do something, to get someone else to see the world in a specific way, and that are used to influence how the activity should proceed (cf. M. Goodwin, 2001). Implicated in this specific directive are two things. First, it is now the student who flies the airplane. She takes the appropriate position for flying the airplane, gazing at the display.
and with hands and feet on the controls and power lever. Second, there has been a transfer of responsibility from the teacher to the student so that it is now the student who not only does the flying but who is also held accountable for doing so. This is an educational setting and hence the teacher is in some respect always ultimately responsible for the student's actions, or at least for monitoring the student's actions, whether he is in control of the controls or not. However, the question of responsibility in this situation bears resemblance to the situation in the commercial flight industry. There the captain is ultimately responsible for the flight but there is still a transfer of responsibilities between captain and the second pilot during the flights and a division of labor where they have different tasks to fulfil (cf. Nevile, 2004). In the sequence there is however a noticeable silence, in that the dina roder 'your controls' is normally a first pair part of an adjacency pair (Schegloff & Sacks, 1973), followed by the second pair part mina roder 'my controls', something that might be indicating that this is a stressful situation.

Having taken control of the airplane, the student begins the recovery by first of all attending to the bank angle of the wings. Her first – and at this time only – action is thus to attempt to level the wings in relation to the horizon. First attending to the wing position is in full agreement with what the teacher and student co-constructed as an appropriate first action when they were talking about the recovery in the classroom on the ground.

Three seconds later, the teacher says farten hög eller låg ‘the speed high or low’. His turn has a slight upwards intonation at the end and is grammatically formulated as a question with two (in theory) possible answers – high or low. However, in this context, it is doing the action of a directive with several layers. The farten hög eller låg ‘the speed high or low’ tells the student that she needs to pay attention to the speed of the airplane and to act in accordance with what she finds. If we parse how the directive is doing this, we can initially state that it is a question, asking the student whether the speed of the airplane is high or low. The formulation of the directive is important and part of what constitutes this as an educational setting. Alternative formulations would have been to say for example “lower the speed” or the more specific “reduce power” (which of course also can figure in an educational context). Formulating it as a question of whether the speed is high or low creates a space within which the student is both given room to act and in which she is expected to act, and it is a space that is rather open. The question presupposes and requires the student to know where to find the instrument indicating speed. Moreover, it both presupposes and requires that she be able to read and interpret the instrument. The student must also be able to make the judgment whether the speed is high or low, or in other words what counts as a high and a low speed. Based upon the gathered information, the student is expected to act upon the situation with appropriate actions. In this case, the action that the student performs in response to the directive is to orient to it as a matter of reducing power. Altogether, these presuppositions constitute what is captured in the notion of situation awareness. We can here see how the percep-
tion of the whole situation is what the student lacks, as she orients to single, iso-
lated aspects of the unusual attitude: in line with the verbal parsing of the activity.

The student responds that the speed is hö- th väldith hh (.) hög. ‘hi th veryh hh (.) high.’ in line 5. In the first part of the turn, she starts up what can be pro-
jected to be on its way to hög ‘high’, but then cuts off and instead restarts with
the adverbial intensifier väldith ‘veryh’, which is reinforcing that the speed is not
high but indeed very high. When producing väldith ‘veryh’, the student further
reduces power. There is a quite dramatic decrease in the level of sound.

Following this, a series of directives that are all related to the position of the
nose of the airplane follow. In response to the prior directive, the student reduced
the speed of the airplane, but it is still following a trajectory heading towards
the ground. The teacher proceeds through saying å så upptagning va¿ ‘and then
bring the nose up right¿’. This turn requests an action: that the student brings up
the nose of the airplane. However, the student is not immediately responding to
the directive with an appropriate action, and the teacher continues in line 8 with
the descriptive turn nu dyker du¿ ‘now you’re diving¿’.

The utterance is first of all describing the state in which the airplane is – it is
heading towards the ground in a diving position. Being produced as an add-on to
the first directive – å så upptagning va¿ ‘and then bring the nose up right¿’ – it
is also providing an explanation of or an account to why it is important to do
the recovery. Describing the current state in terms of diving is in the context of
flying of particular significance. A diving airplane is heading toward the ground,
which in other words means that if appropriate actions are not taken the airplane
will eventually crash. This utterance is consequently alerting the student to an
imminent danger and in doing so it is directing the student to pay attention to
the position of the nose of the airplane and the speed, and to act so as to change
the position and recover the airplane from diving.

Nevile (2007) focused the construction of ‘and’-prefaced talk in the cock-
pit, arguing that this is used by pilots in order to ensure timeliness of actions.
The ‘and’-preface brings an action to attention where that action is timely, “due
around now, but has not yet been initiated by the pilot responsible for doing so”
(p. 239). In a similar way, the action is here being presented as relevant and ap-
propriate now, and is prompting the student to initiate a next action.

The student now starts bringing up the nose of the airplane. The teacher fur-
ther continues måste upp¿ måste stiga¿ stiga¿ stiga¿ ‘must go up¿ must climb¿
climb¿ climb¿’. At the beginning of the turn, the airplane is still heading down.
When the teacher pronounces the last stiga¿ ‘climb¿’ they cross the horizon. For
a little while the airplane continues to climb and the nose is heading up toward
the sky.

The repetition and variation of the directives are to be understood in relation
to the student’s actions, and the time that these actions demand in order to be
carried out. In comparison to the question of high or low speed that was quickly
remedied by reducing the speed, in this case it takes a longer time to bring up the
nose of the airplane and recover from the diving position in which the airplane
initially is. The student has begun to bring up the nose already in response to the teacher's descriptive directive nu dyker du; ‘now you're diving’. However, besides the action taking time to accomplish, the repetitions further emphasize and highlight the importance of the action (see further the discussion in relation to Excerpt 5 in which there is another three-part repetition).

Excerpt (3): And then we pass the horizon
F3-060509-2.flightlesson1; 11.40-11.59

12 Teacher å så passerar vi horisonten va vilv- vill vi
and then we pass the horizon what dowew- do we want
13 göra då,
to do then,
14 Student stiga¿
climb¿
15 (0.6)
16 Teacher marken e ju där nere va.
the ground is [PRT] down there right.
17 (1.3)
18 å hur mycke stiger vi¿
and how much are we climbing¿
19 (1.3)
20 Student >va sa du<¿
>what did you say¿
21 Teacher hur mycke stiger vi da¿
how much are we climbing then¿
22 (1.3)
23 Student nu?= now?=  
24 Teacher =full gas (va).
=full power (right).
25 Student °fu ll (a)°
°fu ll (a)°
°°(adds power))°
26 (1.2)
27 Teacher när vi passerar horisonten full gas.
when we pass the horizon full power.
28 (2.5)

The last part of the first recovery, is initiated by the teacher producing the question å så passerar vi horisonten va vilv- vill vi göra då, ‘and then we pass the horizon what dowew- do we want do then’; invoking the generic rule that they had earlier formulated in the classroom: when we pass the horizon, then you add full power (Excerpt 14, Chapter 6). The student treats this turn as a question, and answers with the verbal turn stiga¿ ‘climb¿; however without any further action, treating the question as “theoretical” rather than requiring her to act upon it. In response to her answer, the teacher says marken e ju där nere va. ‘the ground is [PRT]
down there right.’ (line 16). Before pursuing analysis further, it is important to
determine what is going on in the airplane as these turns are produced. When the
teacher is producing the first utterance, the nose of the airplane is already above
the horizon as indicated by the yellow marker on the display. When the student
responds to his question she is thus already in what she (probably) understands to
be a climbing position and she acts as if the action was already accomplished. This
is visible in that she levels the airplane to the horizon, an action that co-occurs
with the teacher’s evaluation of her answer to the question.

The teacher however, treats the student’s answer and her actions as insufficient.
This is corroborated by what comes next, when he pursues in asking the student
questions. The teacher initially picks up on the student’s answer stiga 2 ‘climb’,
and asks how much they are climbing. As this question is produced, the airplane
is in a horizontal position, where the yellow marker is on the line of the horizon.
The student initiates a repair asking what the teacher said. He repeats his earlier
turn, slightly reformulating it. This is again followed by a noticeable gap and
then the student asks nu 2 ‘now?’ . She has by now held a horizontal nose position
for approximately four (4) seconds, and it is clear, by the troubled interaction
with repairs and the student’s somewhat questioning stance toward the relevance
of the teacher’s question, that the student considers the activity of climbing ac-
complished.

This is not the position of the teacher. In order to climb, it is not enough to
hold a high nose position, but you have to add power too. When the student in
answer to the teacher’s question about how much they are climbing has asked nu:
‘now?’ , the teacher in a turn latched to the student’s produces the directive full
gas (va). ‘full power (right).’. The student repeats “full (a)” “full (a)” ”. The utterance full gas (va). ‘full power (right.)’ is a specific request to add
power. In this way, this directive differs from the other directives in the sequence.
The earlier teacher turns were telling the student to pay attention to different
aspects where the first thing required was to notice something on the instruments
and the next to do some (specific) action. That this last directive is more straight-
forward in indicating precisely what the required action is, is probably a conse-
quence of the prior troubles in the establishment of shared understanding. At the
same time, the final va ‘right’ indicates that this is something that the teacher
claims should be known by the student. It has the flair of a reminder.

In response to the student’s actions, the teacher repeats the contents of the
question initiating this whole sequence, this time in the shape of an instructional,
declarative statement: när vi passerar horisonten full gas. ‘when we pass the
horizon full power.’. The turn is formulated so as not to be valid for this specific
situation only, but in more general terms, just as in the classroom on the ground
where it was formulated as a generic rule. We could also notice that in this utter-
ance there is no explicit reference to the necessity of climbing, the issue that was
the object of confusion earlier on. However, as we have seen, climbing is not only

2 The student’s turn in Swedish is full (a). The a within parentheses can both be part of “gas”
(power) or “ja” (yes). In other words, it is not entirely possible to say that it is a repetition of the
teacher’s whole phrasal TCU.
about nose position. Instead, in order for the airplane to climb and not just hold a high nose position, power needs to be added. The climbing and the adding of speed are closely connected, whereas it seems that the student orients to climbing as being solely a matter of nose position. All through the sequence, the student is orienting to nose position, wing position, and speed and to the actions required to recover the airplane from the unusual attitude as separate actions.

**Excerpt (4):** I could have brought the nose up earlier
F3-060509-2.flightlesson1; 11.57-12.10

29 Teacher **bra. va** ([ ]
   good. what ([ ]
30 Student **nu kunde ja ha** dratt upp
   now I could have brought it up
31 **den lite tidiare å** dratt av gasen.
   a little earlier and reduced the power.

32 Teacher exakt.
   exactly.
   ((nods))
33 (1.8)
34 Teacher >såattde< gäller att man reagerar snabbt
   >so it’s< important that you react quickly
35 där så att du inte ligger kvar i
   there so you don’t stay in
36 dy:kning.=f"r de tjänar ingen.
   a diving position.=because that serves no one.
37 Student nå.
   no.
38 Teacher då (.) kommer du bara <närmare marken.
   then (.) you will just <come closer to the ground.
Concluding the recovery, the teacher initiates an evaluation through the lexical TCU *bra*., ‘good.’ and continues, however in overlap with the student who herself analyzes what she could have done differently, upon which the teacher surrenders the turn to the student. She proposes that she could have brought up the nose earlier, and reduced power (lines 30–31). This refers back to the first part of the recovery, when they were heading toward the ground and the student was too late in her reactions. The teacher corroborates her analysis with an *exakt*. ‘exactly.’, which is followed by an elaboration that emphasizes the importance of reacting quickly and not staying for too long in a diving position (lines 34–36). The student is able to analyze her actions in relation to the situation, orienting to an order in which the actions should be carried out. The order that is established is to bring the nose up first and then reduce power. According to the generic rule that was established in the briefing session, however, the first action was to reduce speed, then level the wings, and last bring the nose up.

In relation to *situation awareness* and what is required to be done the first moments after having taken over the controls, it is interesting how the teacher says that it is important to react faster. The problem with the student’s performance has been identified as being about lack of or tardiness in actions. However, this could also be understood as an effect of the parsing of the recovery into seemingly isolated parts where you attend to different aspects of the unusual attitude in a sequential order. In this specific context, the required awareness of the situation is instead an integrated issue.

**Embodied cognition: The body as resource**

Immediately following upon the first recovery the teacher flies the airplane into another unusual attitude with a low nose position and a right bank angle. As in the first exercise, the speed is rather high.

**Excerpt (5):** That’s how it’s supposed to feel
F3-060509-2.flightlesson1; 12.11-12.43

1. Teacher *<vi kör en till.*
   *<let’s do another one.*
2. Student *okej dina roder,*
   *okay yo ur controls,*
3. Teacher *mina roder,*
   *my contr-*
4. Student *dina roder,*
   *my controls,*
5. (14.5)
6. Teacher *your controls*
Initiating the student’s actions is the formally prescribed directive *dina roder:* ‘your controls.’ The student takes over the controls, putting her right hand on the power lever, and the left on the yoke.

Her first action is to level the wings, and no more. After 3.3 seconds, the teacher intervenes, saying *av me gasen va:* ‘reduce power right;’ and as the student is not taking immediate action he then continues *av, (. ) av, = av, ‘reduce, (. ) reduce, = reduce,’* (line 9). In a similar way as in the first recovery (Excerpt 2), when there was also a critical situation that needed action to be taken, the teacher repeats the same lexical unit, thus highlighting one specific aspect of what it is that the student needs to do. The repetition further underlines the urgency of the situation. In both cases it occurs just after the student has failed to recognize the proper action and the exact opposite of the desired situation has developed. In the first case, the repetition of the lexical unit is oriented toward upholding current actions, that is, that the student should continue, in that case, climbing. Here, the repetition is more oriented toward halting the unfolding development. The student is required to reduce power immediately (*cf.* Stivers, 2004).

As the student has reduced power the teacher tells the student to bring up the nose and transition to climb through the verbal turn *å så upp: ‘and then climb;’* in line 11. At this stage the direction is down toward the ground in a similar way as in the first recovery. In response to the directive, the student brings up the nose and the airplane starts climbing. When the marker on the display reaches the
horizon, the teacher says appreciatively *där ska de kännas.*\(^3\) ‘that’s how it’s supposed to feel.’ With this turn the teacher highlights one aspect of the recovery, an aspect that has not yet been made relevant by the participants, which is how you should feel the impact of the recoveries on your body. In such a way a new aspect has been introduced, a new way of experiencing and evaluating the recovery. We could notice that this commentary is being done in the airplane, as they are experiencing the feeling, rather than on the ground. Gibbs (2005/2007) argues that embodiment is an “essential part of the perceptual and cognitive processes by which we make sense of our experiences in the world” (p. 3), something that to a large extent has been overlooked in cognitive theory. In this case, awareness of the situation is distributed across the body, and not something that merely resides inside the head. Bodily perception is not possible without a world in which the body moves. Any change in the environment brings about some, even very slight, change in our experience of the body (*ibid.*, pp. 31-32).

By now the yellow marker on the display has passed the horizon, indicating that the student has brought up the nose. However, she has not added power this time either, and the teacher explicitly tells her to do so: å: så full gas. ‘and then full power.’ (line 15). The student acts upon the directive and adds power.

**Excerpt (6): You should feel that you are doing a recovery**

F3-060509-2.flightlesson1; 12.43-13.11

18 Teacher >a såattdu< ↑måste reagera (0.3) snabbare
>yeah you< ↑must react (0.3) faster

19 på de där. me: (.) gasen och upptagningen.
to that. wi:th (.) the power and the recovery.

20 Student a:,
ye:s,

21 Teacher såatt (0.8) du- e vi va aldri uppe i mer
so that (0.8) you- uh we were never up in more

22 ån kanske en komma åtta g i de där låget,
than maybe one point eight g in that situation,

23 Student okej.
okay.

24 Teacher hur många g tål flygplanet?
how many g can the airplane take?

25 (0.9)

26 Student e: många hehe .hh
uh: many hehe .hh

27 Teacher tre komma sjuttiåtta.
three point seventy eight.

28 Student okej.
okay.

\(^3\) I have interpreted the teacher’s turn as involving an initial så in the Swedish turn and thus the utterance has been translated into the English ‘that’s how it’s supposed to feel’. I understand the teacher’s turn *där ska de kännas*, as referring to a larger part of the recovery rather than a feeling in that specific moment, which is how it could be interpreted given the indexical där ‘there’. The recovery as a whole involves a rather intense feeling in the body, where the transition to climb pushes the body down into the seat.
What now follows is an evaluative phase, when the teacher in conclusion says that
the student must react quicker with both power and the bringing up of the nose
(lines 18-19). This is the same kind of the critique that was formulated after the
first recovery, where the teacher underlined the importance of reacting quickly so
as not to stay in a diving position for too long.

This time, however, the teacher continues beyond the question of quick reac-
tions, and returns to the question of feeling. He says in lines 21-22
så att (0.8) du-e vi va aldri uppe i mer än kanske en komma åtta g i de där läget,
‘so that (0.8) you- uh we were never up in more than maybe one point eight g in that
situation,’. First of all, the repair from you to we is interesting. As Lerner and
Kitzinger (2007) write, the correction from ‘you’ to ‘we’ is not doing simply error
correction. As in the Lerner and Kitzinger cases, in this case it would not have
been erroneous to say that it is the you, that is the student, that was doing the 1.8
g as she was in fact responsible for flying the aircraft. In other words, one can ask
what in addition to referring is being done and is treated as so important so as to
halt the progressive realization of the turn, when obvious error is not involved.
It seems that the correction from ‘you’ to ‘we’ is related to the fact that it is the
whole “equipage” – the airplane and two pilots – that has not been experiencing
more than one point eight g. As a consequence of the changed pronoun, the ex-
perience is constructed as a shared one rather than something a particular person
or object is responsible of (cf. Nevile, 2004).

Second, the feeling is translated into technical terms, into a question about
g-forces. The ability to say that they were doing specifically 1.8 g in that situation
is derived from prior experience, that is, a combination of the feeling in the body
and knowing how to interpret the instruments. Bodily sensation is tied to techni-
cal knowledge and actions. It is tied to the ability of reading and interpreting the instruments and being able to understand its implications. It is also tied to the understanding of consequences of actions. This is something that will be pursued by the teacher, who in line 24 continues by asking the student *Hur många g tål flygplanet?* ‘how many g can the airplane take?’ The student clearly does not know, as she answers *e: många hehe .hh* ‘uh: many hehe .hh’, an answer that is through the student’s “laughing” displaying awareness of this being an incorrect answer. It is a potentially face-threatening situation for the student, as her incompetence is explicitly revealed (cf. Sandlund, 2004; Vehviläinen, 2009). The answer is obviously wrong, although it does orient to the teacher having said that they were not “doing more than,” something which indicates that the airplane can take much more.

As Heath (1986) remarks, embarrassment is not necessarily a phenomenon that participants wish to conceal. It is worth noticing here that *not* displaying embarrassment when being unable to produce a correct answer could also have been a potentially problematic action (cf. *ibid.*, p. 126). Through attempting to answer the question, (seriously or not) the student is showing an alignment toward the relevant participation framework (cf. Goodwin, 2007a, p. 63).

The teacher immediately provides the correct *tre komma sjuttiåtta.* ‘three point seventy eight.’, an utterance that stands in stark contrast to the student’s imprecise *många* ‘many’. It is not mitigated by a pause between the student’s answer and the teacher’s correction. Later on, in the debriefing session, the overall critique that the teacher will formulate is that the student has not studied enough and is not satisfyingly prepared. The student acknowledges the correction through saying *okej.* ‘okay.’, this time without any laughter particles, thus orienting to the teacher’s correction. And the teacher continues by underlining that there is no risk that the student is going to overload the airplane under the circumstances, saying that *de e ingen risk att du överbelastar flygplanet i de dår läge.* ‘there’s no risk that you overload the airplane in that situation.’. However, the *ingen risk* ‘no risk’ turns out to be a somewhat problematic statement. The teacher, in overlap with the student’s acknowledging *okej.* ‘okay.’, takes back there being no risk as it is conditioned – *om du’nte drar (0.8) <preciss> hela vägen bak da.* ‘if you’re not pulling (0.8) <exactly> all the way back then.’ (lines 31-34). This is further developed *men då >drar du väldit mycket<* ‘but then >you’re pulling very much<’, something that would be an extreme action. As an extreme action it is something out of the ordinary, and something that in other words would be a remarkable event and hardly something that the student would do without noticing herself or the teacher noticing that something extraordinary was under way.

Bodily perception, and the talking about these same perceptions, is closely linked to the physical experience of flying the airplane. When analyzing how a student learns to recognize the correct blackness of a fiber, Goodwin (1997) remarks that by talking to her professor about what she has experienced, the student transforms what might otherwise remain private sensations into public
Understanding the implications of a low nose

In preparation for the final recovery, the teacher flies the airplane into an unusual attitude with a low nose and left bank angle.

Excerpt (7): When the speed went red
F3-060509-2.flightlesson1; 13.47-14.21
The teacher says *dina roder* ‘your controls’, and the student takes over. She levels the wings and starts bringing up the nose. She is rather late in adjusting the speed, and it is not until the yellow marker is approaching the horizon that she reduces the speed. She then continues past the horizon, bringing up the nose. With a delay she adds power.

The teacher starts his evaluation with the lexical TCU *bra*. ‘*good*.‘ He further elaborates on what it is that was good: *då har du helt rätt med roder när du gjorde upptagning* ‘then you did completely right with the controls when you did the recovery.’ Following upon this more positive evaluation of the student’s performance, the teacher adds *de som du måste tänka på* ‘what you have to think about’, a turn that he cuts off as he finds himself in overlap with the student. Orienting to the turn as possibly complete, the student has started up a turn in overlap with the teacher’s turn in line 7. She comes in with an *a::* ‘Ye::s’, and continues with what is going to be an anticipation of a possible critique and an evaluation of her own actions.

The problem that the student identifies is that she was tardy in reacting to the high speed – it wasn’t until *farten blev röd* ‘the speed went red’ (i.e., the digits on the display indicating speed changing from white to red indicating that the speed is very high) that she started reacting. As was noticed in the description of the recovery, the student is indeed tardy in her adjustments of the speed. However, the question is what it is that should make you adjust the speed – is it the airspeed indicator displaying red digits or is it something else? The teacher confirms the student’s description of her actions with a *precis* ‘exactly’ that is continued with a *så att* ‘so that’. The teacher’s turn is however this time interrupted by the student who elaborates on her evaluation of her performance in line 13, further indicating what it is that she needs to do differently: *de e farten ja måste kolla lite mer på* ‘it’s the speed I have to check a bit more.’. In doing so, she elegantly builds upon the teacher’s turn in line 12, something that could have turned out to be
Excerpt (8): A low nose position means reduce power
F3-060509-2.flightlesson1; 14.19-14.32

However, the teacher initiates a new turn in overlap with the student, cuts off and then continues in the clear saying that what she should react to is not the speed but the position of the nose (lines 15-16). In other words, the teacher confirms that the description that the student did not react until the speed went red was correct, but he dismisses the conclusion drawn by the student that it is speed in isolation that is critical. Instead, she has to be able to project that when the nose position is low, this potentially means that the speed is high or will increase, and thus it is important to pay attention to speed immediately even if the speed isn’t too high during the initial part of the recovery. The ability to project how the situation will develop given the facts that are at hand, is an important part of what constitutes situation awareness. However, in this situation it is not formulated in
that a reflexive way. In the preflight briefing session, the teacher first formulated a generic rule of what to do when the nose position is low, but toward the end he modified the generality of the rule and qualified it by saying that it does depend on the situation, that is, the position of the nose in combination with the speed. Here this is not problematized, but instead once again a generic rule is formulated, albeit somewhat different: e re lågt nosläge då betyder de av me gasen. ‘if it’s a low nose position then it means reduce power.’. The difference lies in the fact, that when producing the generic rule in the classroom on the ground, it was about what the required actions were. The utterance that a low nose position means reduce power, is about how you should perceive of the situation, what conclusions that should be drawn.

The student answers by describing what she was doing, which was paying to attention to the nose position only: ja tänkte bara på (.) e upp med nosen då¿ ‘I was just thinking (.) uh up with the nose then¿’ (lines 22-23) as she demonstrates the manipulation of the yoke through actually touching it and indicating a movement bringing up the nose.

This concludes the actual practicing of the maneuver in the airplane. The analysis will now continue through looking closer at how the unusual attitudes are topicalized and talked about in the debriefing session.

Constructing an activity as something that has already been done
In the debriefing session, the teacher identifies the student’s tardy reactions in a more general sense as constituting a problem.

Excerpt (9): You have to act already when you have a low nose
F3-060509-3.debriefing; 04.03-04.17

1 Teacher jobba mer me gasen anpassa den å reagera snabbare
work more with the power adjust it and react faster

2 me gasen.=samma sak me gasen när de gäller
with the power.=same thing with the power when it comes to

3 onormala lågen. - du måste va snabbare på den.
unusual attitudes. you must be faster on that.

4 Student [((nods))]

5 Teacher å då (.) titta inte bara på- vänta tills att
and then (.) don’t just look at- wait till

6 farten kommer upp. utan (.) du måste=
the speed increases. but (.) you have to=

7 Student [((nods))]

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The teacher says that the student needs to react more quickly when it comes to adjusting power, and not wait until the speed is too high. He tells her *titta inte bara på- vänta tills att farten kommer upp*, ‘don’t just look at- wait till the speed increases.’, which orients to how the student in the airplane explicitly said that she did not react to the high speed until she visually experienced that the speed was red (Excerpt 7, lines 8-11). The self-repair from *titta inte bara på-* ‘don’t just look at-’ to *vänta* ‘wait’, where the issue of “looking” is replaced by “waiting,” captures that the crucial problem is not the looking at the instruments in themselves, but rather the tardiness in action, which is captured in the choice of the lexical item “waiting.” Further, it is about the important ability to project how the situation is going to develop, an important part of what constitutes situation awareness (cf. Endsley, 1995, p. 36). What does a low nose imply? The teacher says that the student needs to act already when the nose position is low: *du måste agera redan när du har ett lågt nosläge* ‘you have to act already when you have a low nose position’. Co-occurring with the teacher’s verbal turn are gestures demonstrating how a low nose position requires reduced speed. These gestures are very swift and condensed. During *har* ‘have’ the teacher demonstrates an airplane with a low nose, and as he produces *lågt nos* ‘low nose’ he imitates the manipulation of the power lever reducing speed. In other words, the student should be able to project that if the nose position is low one of the possible consequences is that the speed will increase.
Excerpt (10): Same principle: reduce power, level the wings, bring up the nose
F3-060509-3.debriefing; 04.17-04.37

The teacher explicitly states that it is the same principle that the student has practiced before, and that she in other words has earlier experience of doing the same thing. The turn is produced within an evaluative context, and it is doing specific interactional work with epistemic implications, as it not only claims that the student has earlier experience, but moreover that it is something that she is expected to remember and know. Moreover, the reference to the one hundred phase (line 11), refers back to the very first part of her training, in other words something that she did some time ago. This is further corroborated in line 12, when the teacher says du vet ‘you know’ as he then continues into an enumera-
tion of maneuvers that the student is in other words expected to be acquainted with. The student, who has as yet not responded in any way to what the teacher says, now responds with a rather moderately produced acknowledging m:, upon which the teacher continues by reproducing the generic rule: av me gasen. skevning. upptagning. passera horisonten full gas.=övergå till stigning. ‘reduce power. level the wings. bring up the nose. pass the horizon full power.=transition to climb.’. Co-occurring with the verbal reproduction of the rule are gestures depicting movements of the airplane and demonstrating required actions.

Upon completion of the generic rule, the student nods and the teacher repeats that the procedure is exactly the same (line 19). However, this time he adds that the only difference is that she is now looking at the computer display. This is to be understood in relation to her earlier experience of flying and being able to look out the windows for reference points. The difference is construed as a rather small difference: skillnaden är bara att (.) nu tittar du (. ) på (. ) skärmen helt enkelt. ‘the difference is only that (.) now you’re looking (.) at (.) the display quite simply.’. That the difference is slight is made relevant through the description of the difference as ‘only’ being about ‘quite simply’ looking at the display. In other words, not a big difference in relation to what the student is expected to be able to do. The student confirms with another minimal m, as the teacher looks down at his papers and concludes this part of the activity with a repetition of the principle as being the same.

The emphasis of the existence of principles and procedures that are exactly the same, implies that the participants are relating to the possibility of decontextualized knowledge, that is, that the same principle can be applied to different situations. The analysis shows that the relation between the construction of abstracted (albeit contextualized) generic rules and the performance of the recoveries is not in any way straightforward. However, rather than failing their attempts of creating relations between these different ways of “doing” the recoveries, we can instead understand them as different versions of the same thing. This is something that will be further discussed in the end of this chapter.

As was mentioned in the beginning of the analysis, the student does not pass this lesson. The teacher claims that the student was not sufficiently prepared and he says that she has not studied enough. That she does not pass is not explicitly related to the way that she performs the recoveries, but has to do with her difficulties in finding her way around the new cockpit with computer displays instead of mechanical instruments. The consequence is that the student has to do the very same flight lesson again, and I will now turn to an analysis of the recoveries from a low nose position in that lesson.
Second flight lesson

Problematizing the relation between different aspects of the attitudes

In this second flight lesson the student meets another teacher. In similarity with the prior flight lesson, the teacher introduces the briefing session by presenting what it is that they are going to do. He initially focuses on the fact that they are flying in an airplane with a glass cockpit, and that the instrumentation looks somewhat different, something that he says that they will talk about in the airplane. He then enumerates maneuvers that they will practice, and mentions the recoveries from unusual attitudes. The student first checks whether she is going to wear a hood, something that the teacher acknowledges, and she then (re)initiates talk about the unusual attitudes through checking her understanding of what is required when they have a low position of the nose.

Excerpt (11): Like if you were below the horizon
F3-060515-1.briefing; 03.02-03.13

1 Student på=rom=hår (.) onormala lå:gen? on=these (.) unusual attitude?
2 Teacher m¿
3 Student e: visst var=e så typ (.) när de uh: wasn’t=it like (.) when it
4 va:- (.) asså om man: va under horisonten= wa:s- (.) that’s to say if you: were below the horizon=

Demonstrating a low nose position. The gesture is restarted.

5 Teacher ((nods from ♦ to ♦ in the student’s turn))
6 Student =då skulle man♦ dra av gasen, =then you should reduce power,
7 (1.6)
8 Teacher a, (. ) >de beror på:< vicken fart du har. yes, ( .) >that depends on:< which speed you have.
9 Student Åkej. okay.
She says *visst var=e så typ (.) när de va:- (.) asså om man: va under horisonten då skulle man dra av gasen*, ‘wasn’t=it like (.) when it wa:s- (.) that’s to say if you: were below the horizon then you should reduce power,’. The state of being *under horisonten* ‘below the horizon’ is said with reference to how the airplane shows up in the shape of a yellow triangle on the display in the airplane. The student also visually represents the airplane with a gesture: her arm and hand demonstrating how the airplane would be positioned with a low nose. The gesture demonstrating an airplane with a low nose position is first done and then restarted as the student says *asså* ‘that’s to say’. When the student again holds her hand depicting a low nose position, she looks up at the teacher who nods. The utterance is not grammatically formulated as a question but more like a statement that is – albeit somewhat hedged through the initial *visst var=e så typ* ‘wasn’t=it like’ – requesting confirmation. In other words, the way that the request for confirmation is formulated it has a preferred positive answer (Raymond, 2003). It is also formulated implying the existence of a generic rule. Moreover, *visst var=e så typ* ‘wasn’t=it like’ refers to an earlier understanding, to something that has been talked about before.

That a dispreferred answer is under way can first of all be seen by the 1.6 second silence (Raymond, 2003). The teacher then in line 8 says *a, ‘yes,’* which is followed by (.) >de beror på:< vicken fart du har. ‘>that depends on:< which speed you have.’. The issue of speed is thus not linked to nose position in a clear-cut way. In the preflight briefing session preceding the first flight lesson that teacher said that it is not possible to formulate a rule that is applicable in all cases where the nose position is low (see Excerpt 14 in Chapter 6). Still, a rule was established and confirmed at several instances. That it depends on the speed is hence not an entirely new answer to the student. However, during the prior debriefing session, it was said that when the nose position is low you can project that the speed will increase, which is what you are to act to prevent. As is made clearer in this second preflight briefing session, to be able to make the projection that the increase in speed will be problematic, you have to consider not only the position of the nose but also the speed at the moment when the recovery is initiated, that is, during the initial moments of taking over the controls.
The teacher continues by saying that *så att du måste kolla så att säga men de* (förr att) (.) *i:n fallet av tie ja.* (because) (.) ‘so you have to check so to say but in nine cases out of ten yes.’ First of all, this utterance emphasizes the importance of always checking and not only acting upon a generic rule – even if it is mostly the case that the speed will be high if you have a low nose position. The teacher further continues by demonstrating how the airplane is on its way downward and how the logical solution is to reduce power in order to prevent the airplane from coming too close to the ground.

The choice to invoke logical reasoning is interesting. As the airplane is descending *å: vi vill ju inte (.) komma ännu fortare till backen.* ‘and we don’t want to (. ) go even faster towards the ground.’ (lines 15-16), it is logical to reduce power. In other words, a low nose position logically requires you to reduce speed in order to not end up on the ground. In a sense it does run contrary to what the teacher has just said about the importance of checking what the specific conditions are before actually reducing speed. That was saying that sometimes the correct first action could be even adding power.
The student continues in her search of a generic rule, continuing her recital of required actions. She says *å sen upp till horisonten å sen dra på gas.* ‘and then up to the horizon and then add power.’ The teacher confirms this with an initial *ja.* ‘yes.’ Again, however, he displays a reluctance to the establishment of a generic rule and instead emphasizes that depending on the situation, the priority of actions differ. He says *de handlar ju om situational awareness (S:m)* de handlar ju om att (.) *du ska me hjälp av instrumenten se (.) vicket läge är vi i nu liksom.* ‘it’s [PRT] about situational awareness (S: m) it’s [PRT] about that (.) you will with the help of the instruments see (.) like which situation are we in now.’ This utterance formulates the maneuver in a different way than it has earlier been talked about. Focus was then rather on the performance of the maneuver *perse,* whereas it is now about correctly understanding and judging the situation at hand, something which will in turn provide ground for decisions about required actions. Demonstrating the displays and how the student should look at them in a pragmatic way highlights the correct scanning patterns.
Further, the *du ska me hjälp av instrumenten se* ‘you will with the help of the instruments see’ is providing a frame for the demonstration of how the student will look at the displays, something which the teacher enacts when producing the utterance *vicket läge är vi i nu liksom*. ‘like which situation are we in now’. His hands are held high during the production of several turns, but at this instance they slightly change shape to depict the display that will be looked at, something that he also enacts as he looks down at the imagined screen during the initial part of *vicket läge är vi i nu liksom*. ‘like which situation are we in now.’ to then shift gaze and look at the student. Looking at the displays for information further underlines that the resources that are relevant to understand the specificities of the situation are the instruments.

It is worth noticing that the teacher emphasizes that it is ‘you’, the student, who with the ‘help’ of the instruments is responsible for ‘seeing’ what kind of situation it is. This quite clearly holds accountable the person responsible for flying the airplane, for being not only able to use logical reasoning (as was invoked in the prior excerpt) but to be able to use the instruments to decide what kind of situation it is. It brings into play a hierarchical relationship between the pilot and the instruments, where the instruments are indeed a ‘help’ – but not more than a help.

**Excerpt (14): That’s like fast. And downward**
F3-060515-1.briefing; 03.33-04.00

26 Teacher  =a okej vi är på väg mot backen me: (.)
=yeah okay we’re on our way toward the ground with:

27 hundra::förti knopqi
a hundred::forty knots

28 Student  m,

29 Teacher a de e ju fort liksom. å neråt. a då: e de
a that’s [PRT] fast like. and downward. a then: it is

30 läge å dra av gasen.
time to reduce the power.

Simultaneously demonstrating, with the left hand, the airplane moving through the air and with the right the reduction of speed done by the pilot.

31 Student  m,

32 Teacher vi är på väg (.) ner mot backen
we’re on our way (.) down toward the ground

33 (.) med (.) trettåti knop.
(with (.) thirty knots.

34 Student  m,
The teacher elaborates by describing two starkly contrasting cases, both with a low nose but with different speed. The first case is described as being on the way toward the ground in one hundred forty knots. The contrasting case is set up in a similar way, introducing it by saying that they find themselves in this position: 

vi är på väg mot backen me: (.) hundra:förtio knop; 'we’re on our way toward the ground with (. ) a hundredforty knots.'
of the airplane flying into the unusual attitude resulting in such a low speed. The conclusion is that in such a case reducing power is not the most important action. In the initial part of this utterance stating that there is no rush in reducing power, the student repeats with a smiley voice and face "tretti" hh ‘thirty’ hh’, and in overlap with the teacher confirms the lack of urgency with regards to the reduction of power. The way that ‘thirty’ is produced indicates that the student picks up on the question of speed, contributing to the shared understanding that it is really low.

When talking about the recoveries, the teacher frequently uses the modal particle *ju*, indicated by [PRT] in the English translation. The particle *ju* is overall very frequently used in Swedish. It is an epistemic marker, indicating that speaker and hearer have some knowledge in common. Aijmer (1996) writes, that an utterance with *ju* is proffered without any expectation that the hearer will disagree, since the particle presupposes that the hearer already knows what is claimed. The interpersonal function, Aijmer continues, “is to demand the hearer’s approbation and to establish rapport and harmony” (p. 421). It seems that it is of particular significance that it is the teacher who so frequently uses the particle, as this is an educational setting. The teacher invokes that what he is about to tell the student, is already known by her. In such a way he treats her as someone who is knowledgeable and with whom he shares experiences that are relevant to the community of pilots. Further, in light of the interest in how participants build relations between activities, the particle *ju* ties back to earlier experiences, making relevant in the present, something that happened in the past.

**Excerpt (15):** There’s no standard answer  
F3-060515-1.briefing; 04.00-04.15

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49 Teacher men: >som du säger< grundregeln är väl ändå den  
   but: >as you’re saying< the basic rule is still that
50 >om man ska göra det lätt för sej liksom att< (.).
   >if you want to make it easy for yourself like that< (.)
51 Student °m°,
52 Teacher a. (.) e nosen under horisonten då  
   yeah. (.) if the nose is below the horizon then
53 (1.1)
54 °.hh kan man dra av gasen då.< ° °mene:°°  
   °.hh you can reduce power then.< ° °butuh:°°
55 (1.1)
56 Teacher de beror på liksom (.).  
   it like depends on (.).
57 Student ((shifts gaze to look  
   (vicken fart man e (som sagt)
58 Student down at her papers  
   which speed you are (as said)
59 (1.3)
60 Teacher ((shifts gaze to look down at his papers))
61 Teacher de finns inget standardsvar då.  
   there’s no standard answer like that.
```
The co-construction of unusual attitudes is concluded by the teacher who, in lines 49-54, refers to what the student has said, saying that the basic rule is that if the nose is below the horizon then you can reduce power. In line 50 the teacher inserts the *om man ska göra de lätt för sej liksom att* ‘if you want to make it easy for yourself like that’, which implies that he still treats the basic rule as insufficient, and the turn moreover implies that there are other, more competent, ways of dealing with these issues.

While talking about the unusual attitudes, the teacher has with his left hand depicted the airplane flying through the air (with the exception of when he talks about situational awareness). In the beginning of this last sequence, the teacher has just brought his hand down. This is done as the participants are opening up the closing of talk about unusual attitudes. The sustained positioning of the hand held up in front of his body, in other words marks the beginning and end of the activity.

This orientation toward an ending of the activity can further be seen in line 57, when the student, upon hearing the teacher again saying *de beror på liksom* ‘it like depends on’, turns her gaze, that has up until now all the time been directed at the teacher, down towards her papers. Slightly thereafter the teacher too shifts gaze direction and looks down into his papers. They thus disengage from the ongoing activity, having it come to a close.

Referring to a generic rule vs. analyzing the specific situation

In this second flight lesson only two recoveries are practiced in the airplane. The first one is an unusual attitude with a high nose and the second with a low nose. The recovery from a low nose position is uneventful and there are no comments on the performance of the student and it will thus not be analyzed. However, in connection with the first recovery from a high nose position, the student raises a general question that is important to the analysis.

Excerpt (16): Most important was to level the wings
F3-060515-2.flightlesson2; 19.11-19.32

1 Teacher de som va vi:ktiast där. what was most impo:rtant there.
2 (.)
3 Student a. yes.
4 Teacher de=va=att .h få ner nosen va. that=was=to .h bring the nose down right.
5 Student a. yes.
6 (2.2)
7 Teacher så att e: (..) börja me att få ner nosen
so that uh: (..) begin by bringing down the nose

8 å sen räta upp da.
and then level the wings.

9 Student okej.=ja fick för mej förra gången att de
okay.=I got the impression last time that

10 viktiaste va rätt på vingarna först
most important was to level the wings first

11 men de kanske e när man ligger ne:råt.
but that’s perhaps when you’re in a down ward position.

12 eller;
or;

13 Teacher j-j- ja precis. de e riktit.
y-y- yes exactly. that’s right.

14 (..)

15 Teacher de e när man ligger neråt.
it is when you are in a downward position.

16 de beror ju på lite grann på situationen.
it depends [PRT] a bit on the situation.

17 (..)

18 Teacher liksom vrä som e viktia-
like what’s most importa-

19 Student okej.
okay.

20 Teacher pr a a ta om de på marken sen.
ta about that on the ground later on.

21 Student a,
yes,

When recovering from the unusual attitude the student first attempted to level the wings, something that the teacher told her not to do to instead lower the nose first. This is something that he returns to in the evaluation of and commentary on the recovery. He says that what was most important in the situation was to first lower the nose (lines 1 and 4). The first part of the utterance börja me att få ner nosen ‘begin by bringing down the nose’ is demonstrated by the teacher holding
his hands up and then moving them down, a demonstration that captures the movement of the airplane in the shape of the hands (they are not holding on to the yoke). During the second part of the utterance – å sen räta upp da. ‘and then level the wings.’ – the teacher demonstrates the required actions through holding on to an imagined yoke, leveling the wings.

The student first acknowledges this with an initial okej. ‘okay.’ but quickly continues by telling what she understood to be the proper order of actions. This teacher has been reluctant to name a specific order in which the actions should be carried out, and as we have seen during the briefing session emphasized that it depends on the situation what you should attend to. Further, his turn in lines 1-4 – de som va viktiastr där. de=va=att .h få ner nosen va. ‘what was most important there. that=was=to .h bring the nose down right. – are through the indexical där ‘there’ indicating that in that specific situation most important was to bring the nose down. Still, the way that the teacher continues, saying that the student should first lower the nose and then level the wings implies, that there is a decided order in which actions should be carried out. The last concluding utterance, as it is formulated in a more general way and not specifically pinned down to this particular occasion, invites the interpretation of it as being a generic rule (lines 7-8), which is further the way that the student orients to it.

The student continues ja fick för mej förra gången att de viktiaste va rätt på vingarna först men de kanske e när man ligger nerrät. eller: ‘I got the impression last time that most important was to level the wings first but that’s perhaps when you’re in a downward position. or¿’. The Swedish ja fick för mej is an epistemic stance indicating that what is “known” is an impression, and thus not claiming to be the “truth” or known for sure. It is not a claim of knowing the correct state of things, but rather that “something was said, and my impression of it was …”. The reference to what was earlier talked about in another participation framework also puts the responsibility of this something that was said somewhere else than with the student, without saying so explicitly. The reference “last time” refers to the prior flight lesson, that is, the lesson that the student did not pass. In other words, the person responsible for giving the student the impression that the most important action is to level the wings is a person who is known by both participants but not present at this time.

The issue is whether to level the wings or lower the nose first. As the student herself addresses in her question, this however might have to do with the particular unusual attitude. The “rule” to first level the wings is thus already by the student tied to an unusual attitude with a low nose position. That this is so is confirmed by the teacher. However he is still reluctant to formulate a generic rule, and says de beror ju på lite grann på situationen. (.) liksom va som e viktiastr ‘it depends [PRT] a bit on the situation. (.) like what’s most important’. Situation awareness is again evoked, where this teacher emphasizes that the specificities of the situation are decisive for which action that is most important.

It is further in line with what the participants in the first briefing session agreed upon as being a correct first action when bringing in the model airplane (see Ex-
It was then stated that first you level the wings. However, in the same briefing session, a generic rule was formulated in which the first action is to reduce speed, then level the wings and last bring up the nose (Excerpt 14). What is different here is that speed is not mentioned, most probably because it simply did not come up as an issue either in the set-up of the unusual attitude or in the student’s recovery from it.

Regardless of the teacher saying that they will discuss what is most important on the ground later, they do not do so and the unusual attitudes are not mentioned in the debriefing session. We will thus continue the analysis with the third flight lesson instead.

**Third flight lesson**

As was mentioned in the introductory section, the two first flight lessons are formally the same, whereas the third is different. The goal is still to practice flying in a glass cockpit, to a large extent focusing on the instruments. What is new is that they will do emergency training, which in this case means that the displays will be shut down: first the primary flight display (PFD) in front of the student, in which case she can look at the multi flight display (MFD) in front of the teacher, and then both displays in which case the student will have to rely upon standby instruments located below the MFD. In other words, nothing will be wrong with the airplane *per se*.

**Excerpt (17):** We will shut down a few things

F3-060515-4 briefing; 00.52-01.16

1 Teacher då e re som sagt sis:ta här. emergency. nöd.
   then it’s as said the läs:tt here. ‘emergency.’ emergency.
   ((looking for a paper in a pile))
2
3 (0.6)
4 Student °m°=
5 Teacher =återigen (.) ett liknande
   =again (.) a similar
6 [protokoll (.). som tidiare.
   protocol (.). as before.
   ((looks up at student))]
7 Student ((nods.................................))
8 Teacher e: (1.0) >de man kan nämna om de här< de: (.)
   uh: (1.0) >what you can mention about this< that (.)
9 egentlien (.). de e i stort sett samma manö:vrar
   really (.). it’s by and large the same maneuvers
10 som vi har gjort tidiare. de e stall låg fart
    that we have done before. it’s stall slow speed
11 flyga me klaff, .hh e::: och onormala
   fly with flaps, .hh uh::: and unusual
12 lägen.=skillnaden e att nu så kommer vi (.)
   attitudes.=the difference is that now we will (.)

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As in the first preflight briefing session, the teacher presents the flight lesson as being by and large the same as what they have done before. In this case the maneuvers are the same. Through describing them as the same, the teacher formulates an expectation that the student should recognize the maneuvers and that she knows what they are about. The teacher explicitly mentions that they will be doing recoveries from unusual attitudes. In the first briefing session the student immediately responded to the mentioning with a sound *mhm* and slightly later a question about what the unusual attitudes were, and the participants were soon engaged in a rather long discussion about the recoveries, an activity that was analyzed in Chapter 6. In contrast to the first preflight briefing session the mentioning of the maneuver passes by unnoticed in this third briefing. Having analyzed what went on in previous encounters, we can here see how the participants through not doing anything in particular about the mentioning of the recoveries are treating them as common knowledge and something uneventful.

Instead, the student responds with a *m* as she nods upon hearing what is going to be different: that the maneuvers will be performed under different conditions, and that they will *stänga ner en hel del grejer*. ‘shut down quite a few things.’ (lines 11-12). As the teacher later explains, this will amount to shutting down displays in which case the student has to look at unusual displays. When they are doing the recoveries from unusual attitudes, the PFD in front of the student is shut down, and she has to look at the MFD in front of the teacher. The displays are however identical, so the main difference is that the student has to look at a different display which is more to the right.

**Remembering the correct order of actions**

The unusual attitudes were, as we have seen, not talked about beyond a mentioning in the briefing session. In the air, the teacher first announces that they will be doing unusual attitudes and the maneuver is introduced by a review of what to do in different situations, or in other words, the actual exercise is preceded by talking about it.
Excerpt (18): We begin by leveling the wings
F3-060515-5.flightlesson3; 04.20-04.54

1 Teacher ↑dā: r. dā kommer ja göra såatt ja lägger oss
↑there. then I will do such that I’ll put us
2 i lite onormala lägen som du s- du ska få ta dej
in some unusual attitudes that you w- you will have to
3 ur sen dā.
recover from then.
4 Student ↑a.
↑yeah.
5 Teacher och om vi har låg nos istället.
and if we have low nose instead.
((gestures a low nose position))
6 Student då börjar vi me å skeva upp.
then we begin by leveling the wings.
7 (0.8)
6 Student av gas.
reduce power.
8 Student av me gasen. >precis.< skeva upp.
reduce power. >exactly.< level the wings.
9 Teacher =å så upptagning.
=and then recover.
10 =å så upptagning.
=and then recover.
11 Student a.
yes.
12 Teacher ↑bra.
↑good.

The teacher asks the student what the required actions are if you have a low nose. As in the classroom, the teacher demonstrates the low nose position with his hand and arm, where the fingertips correspond to the nose of the airplane. The student without hesitation answers då börjar vi å skeva upp. ‘then we begin by leveling the wings’ as she enacts the leveling action, moving a set of imagined controls (line 6). In contrast to the other answers that the student has been producing through the lessons, and that have been rather closely fitted to the exact wording of the teacher’s question, she in this answer orients to the complexity of the attitudes. An attitude with a low nose requires more than just bringing up the nose, which is how she has been orienting to the question earlier. In other words, through volunteering that the first required action is to level the wings,
she here displays an awareness of the complexity of the situation and what the other consequences of a low nose position might be. Further, this answer is what in the first flight lesson was first constructed as the correct answer (see Excerpts 1-3, Chapter 6).

There is no immediate uptake from the teacher, and the student, orienting to this as a matter of not having produced a correct answer, produces the rather minimal av gas, ‘reduce power’. To this the teacher responds, initially repeating the last thing said confirming that it is right, av me gasen. >precis.< ‘reduce power. >exactly.<’, which is then continued by skeva upp.å så upptagning, ‘level the wings. and then recover.’. The teacher establishes a sequential order in which the actions should be performed, where the first action is not as the student has initially suggested to level the wings, but rather to reduce power. This can be seen in relation to what happened during the first flight lesson, when a crucial error that the student was doing, was to either not reduce power at all until the teacher had said so, or to be very late in adjusting the speed.

In his response in lines 9-10, the teacher further adds something that was not mentioned by the student. Following the reduction of power and the leveling of the wings you should recover the airplane. The Swedish upptagning involves not only the bringing up of the nose, but also flying the airplane into a climbing position, something which requires both added power and a bringing up of the nose. The student confirms, and the teacher says bra ‘good’, which concludes the reviewing part.

The teacher flies the airplane into an unusual attitude with a low nose and a left bank angle. When he says dina roder, ‘your controls,’ the yellow marker on the display is just slightly under the horizon, but the nose is quickly dropping.
Excerpt (19): You have to incorporate this reflex
F3-060515-5.flightlesson3; 05.56-06.22

1 Teacher dina roder¿
your controls¿

2 (9.6)

3 Teacher va gör du när vi
what do you do when we

4 (. ) passerar horisonten,
(. ) pass the horizon,
((gestures passing horizon))

5 Student (full) gas.
(full) power.

6 Teacher full gas övergå till stigning ja.
full power transition to climb yes.

7 (2.5)

8 Teacher (för) även om du vet att vi va
(because) even if you know that we were

9 på tretusen      innan¿
at three thousand  before¿

10 Student a,
yes,

11 Teacher så- (0.5) måste du öva in den här reflexen
so- (0.5) you have to incorporate this reflex

12 att du övergår till stigning.
that you transfer to climb.

13 Student okej.
okay.

Recovering from the unusual attitude, the student follows the controls and then levels the wings. She reduces power, and starts bringing up the nose – however without adding power. Further, she stops at the horizon, that is, when the yellow marker reaches the horizon on the display no further action is taken. At this point in time, the teacher asks her the question va gör du när vi (. ) passerar horisonten, ‘what do you do when we (. ) pass the horizon,’. As he produces the last part of the turn, after the micro pause, he gestures with his right hand an
airplane climbing over the horizon. The student treats his question as a directive, and answers with (full) gas. ‘(full) power.’ as she simultaneously adds power. The teacher confirms that her answer is correct through the initial repetition of full gas ‘full power’ which is followed by övergå till stigning ja. ‘transition to climb yes.’, which is adding the transition to climb to the student’s answer. The turn ‘full power transition to climb’ has been repeated over and over again, reinforcing its character of a generic rule.

After a 2.5 second silence the teacher expands and elaborates the question of what to do during the last part of the recovery. He says that även om du vet att vi va på tretusen innan; ‘even if you know that we were at three thousand before,’ which is confirmed by the student and continued by the teacher så- (0.5) måste du öva in den här reflexen att du övergår till stigning. ‘so- (0.5) you have to incorporate this reflex that you transfer to climb.’. When producing three thousand, he highlights the relevant place to look at the computer display, that is the altimeter on the right hand side of the screen, through moving his pointing finger in a circle marking the place where altitude can be seen. In this context it is emphasized that in certain situations there are certain actions that are always correct, and that should be incorporated as reflexes. This teacher is thus not primarily attempting to problematize the specificities of the situations, but rather finding ways of incorporating what will be automatic actions. If you have recovered from an unusual attitude with a low nose, then at a certain point of time the correct thing will be to climb through keeping the nose over the line of the horizon as indicated on the computer display and adding power. The student responds to the formulation of the generic rule with the accepting receipt token okej. ‘okay.’, upon which the teacher initiates another recovery through announcing that they will do another one.

Excerpt (20): You don’t have to stop there at the horizon
F3-060515-5.flightlesson3; 06.46-07.10
The teacher flies the airplane into an unusual attitude with a low nose and a left bank angle. He says *dina röder* ‘your controls’ and the student takes over. She immediately reduces power and levels the wings. She recovers the airplane, however still not adding power. The yellow marker is on the horizon, and she stops there. The teacher says *horisonten där ja,* ‘the horizon there yes,’. Upon hearing ‘the horizon,’ the student adds power, and brings up the nose, so that the yellow marker is slightly above the horizon on the display. In response to the student’s actions, the teacher says an appreciative *bra:* ‘good’.

An instructional part follows. The teacher says that *sen får du gärna (0.7) så att säga (.) ha <mer (0.3) tryck> så att e- ja=kan=demonstrera en. om du tittar nu bara. hur ja gör.* ‘then you may (0.7) so to say (.) have <more (0.3) pressure> so that uh- I=can=demonstrate one. if you lo- if you just look now. how I’m doing it’. As the *<mer (0.3) tryck>* ‘<more (0.3) pressures>’ is produced, the teacher moves his hand, palm up, slowly towards him. The issue of more pressure is clearly difficult to talk about, and embodied gestures are not helpful. However, as they are in the airplane there is the possibility to instead demonstrate, which is what the teacher chooses to do. It should also be noticed that this is the kind of activity that would very likely not be made relevant in the classroom, or in fact anywhere else than when performing the maneuver in an airplane (or hypothetically a simulator), but is instead specifically tied to the situation and setting of this moment.
Excerpt (21): Here somewhere you got the controls
F3-060515-5.flightlesson3; 07.11-07.25

13 Teacher så att (då hade vi) (.). lite halv gas.
   so that (the we had) (.). somewhat half power.
14
15 <o:ch>
   <a:nd>
16
17 här nånting fick du rödren då va.
   here somewhere you got the controls then right.
18 Student a.
   yes.
19 Teacher >märker vi < okej låg nos. av me gasen.
   >we notice< okay low nose. reduce power.
20 uppskevning. (.) upptagning. (.) i lagom takt.
   level the wings. (.) recovery. (.) at a reasonable pace.
21 (1.0)
22 å sen håller du bara kvar den här upptagningen.
   and then you just maintain this recovery.
23 (0.4)
24 å ger gas¿
   and add power¿
25 Student ↑okej.
   ↑okay.
26 (1.3)

The teacher flies the airplane into a similar unusual attitude, attempting to copy
the situation they just had, which is an attitude with a low nose and a left bank
angle. As he recovers the airplane, he talks them through it, starting with a notic-
ing, followed by the required actions in lines 19-24: >märker vi< okej låg nos.
av me gasen. uppskevning. (.) upptagning. (.) i lagom takt. (1.0) å sen så
håller du bara kvar den här upptagningen. (0.4) å ger gas¿ ‘we notice< okay
low nose. reduce power. level the wings. (.) recovery. (.) at a reasonable pace. (1.0)
and then you just maintain this recovery. (0.4) and add power¿’. What he does
different from the student is that, when doing the recovery and bringing up the
nose, he does it at a regular pace and then he adds power when the yellow marker
passes the horizon, keeping the nose position as it is. The student has confirmed
with an overlapping ↑okej. ‘↑okay.’.
Excerpt (22): Did you notice a difference from what you did
F3-060515-5.flightlesson3; 07.26-07.51

27 Teacher e du me på hur ja menar.
    are you with me on how I mean.

28 Student a.
    yes.

29 Teacher du behöver inte
    you don't have
    stanna där just vid (0.8) horisonten egentliën.
    to stop right there at (0.8) the horizon really.

30 Student (°°kej°°)

31 utan [du]
    but [you]

32 Student (°°kay°°)

33 (0.7)

34 Teacher utnyttjar bara (.) energin å fortsätter.
    Just use (.) the energy and continue.

35 (0.8)

36 Teacher du såg hur ja gjorde där va.
    you saw how I did it there didn’t you.

37 (0.9)

38 Teacher märkt- märkte du skillnad mot vad du gjorde.
    *notic- did you notice a difference from what you did.

39 Student a: ja stanna till (lite).
    yes: I stopped (for a bit).

40 Teacher stanna till å vânta lite.
    stopped and waited for a while.

41 [ å sen så fortsatte du
    and then you continued
    so that
    (((demonstrates a climbing airplane)))

42 (0.3)

43 de behöver du inte göra utan de e bara å fortsätta
    you don't need to do that instead just continue and

44 [ passera horisonten.
    pass the horizon.
    (((demonstrates the airplane passing the horizon)))

45 (0.5)
The teacher pursues by asking *e du me på hur ja menar.* ‘are you with me on how I mean.’, which is again confirmed with a minimal *a* ‘yes.’ by the student. Notice that the question has a preferred answer, which is precisely “yes” (cf. Raymond, 2003), thus making the student’s response relevant, but in an educational setting – in addition to the response being very minimal – also possibly unsatisfactory. What is particular to the educational context is that it is not just shared understanding in general that needs to be established. Rather, both the student and the teacher can later be held accountable for who has understood what. Consequently, some special work might be involved in assuring a shared understanding.

A question that could be raised to research on learning from an interactionist perspective is what it is that the learner understands, when conceptualizing understanding as what is made relevant in interaction. It is important not to deny individual experience and the existence of personal, silent, thoughts and understandings in a more philosophical sense. However, as long as those are not made public they are not accessible to the analyst, and what is more important, they are not accessible to the co-participant. In line with what was stated above, this can be expected to be of particular significance in an educational setting where whether the student does understand or not is important to the teacher to be able to establish. And this is something that the participants orient to, as in this excerpt when the teacher several times insists on asking the student whether she gets what he means (lines 27, 36, 38), and does not treat her answer as enough until she has said something more than just ‘yes’ or ‘mhm’: *a: ja stanna till (lite).* ‘yes; I stopped (for a bit).’ in line 39.

In the excerpt above, it is possible to see how the teacher treats the student’s minimal response as unsatisfactory (even a minimal response could for all practical purposes have been judged as sufficient), as he continues by highlighting the part of the recovery that she should pay attention to: *du behöver inte stanna där just vid (0.8) horisonten egentligen. utan du (0.7) utnyttjar bara (.) energin å fortsätter.* ‘you don’t have to stop right there at (0.8) the horizon really. but you (0.7) just use (.) the energy and continue.’. Stopping at the horizon is comprehensible in relation to the instruments and displays of the airplane. Crossing the
horizon primarily refers to the yellow marker passing the line of the horizon on the computer display. However, continuing with a nose that is below the horizon would eventually lead them to the ground, which thus renders the question of passing the horizon a marked sense of reality (see also Excerpts 3–4).

As the teacher in line 30 says stanna där just vid (0.8) horisonten egentligen. ‘to stop right there at (0.8) the horizon really.’ he holds his hand in a way that depicts and highlights the line of the horizon. He ties the imagined horizon demonstrated by his hand to the one that can be seen on the display through holding his hand in front of the display, lined up (more or less) with that line. When heformulates the correct action – utnyttjar bara (.) energin å fortsätter. ‘just use (.) the energy and continue’ – his hand is transformed into the airplane, moving through the air in a climbing trajectory (line 34). Capturing the dynamics involved in the using of energy, he redoes the climbing movement, twice pushing the hand slightly down and then up. The push that he gives the hand could be understood as an enactment of the energy that the student should make use of. Something intangible is turned into a tangible gesture.

There is no uptake from the student, and the teacher continues du såg hur ja gjorde där va. ‘you saw how I did it there didn’t you.’ The choice of the verb ‘saw’ is interesting as it is oriented to what can be seen on the display rather than for example felt. With still no uptake from the student, the teacher reframes and directly asks the student whether she has noticed a difference:

du behöver inte höja riktit så mycke som ja gjorde. ‘you don’t have to bring it up quite as much as I did.’ is accompanied by a slightly flipping movement with his hand, which follows an imagined climbing trajectory of an airplane, albeit with an exaggerated angle. The å så bara ge full gas istället. ‘and then just add full power instead.’ is enacted by actually putting the hand on the power lever and moving the hand as if adding power. This was the way that
adding power was demonstrated in the classroom as well, however then without access to the actual controls. The gestures are all placed in front of and in relation to the computer display, thus placed so that the student can see both the gestures and what the gestures are indicating on the instruments. In all these different ways, the teacher thus attempts to make sure that the student does understand the difference between what she did and what the teacher did, that is, how passing the horizon should be done.

The student responds with an okej. ‘okay.’, which marks the end of this part of the activity.

Excerpt (23): That’s how it’s supposed to look
F3-060515-5.flightlesson3; 08.04-08.17

The teacher announces that they will do one more similar recovery, something that is further going to be the last recovery of the three flight lessons. He flies the airplane into an unusual attitude with a low nose and a left bank angle. Responsibility of flying the airplane is transferred through the dina roder; ‘your controls;’, upon which the student looks up and takes over the controls. She reduces power, levels the wings and brings up the nose, then holding the position of the nose. When the yellow marker is slightly above the horizon on the display she adds power. The teacher says bra; strålande. så där ska de se ut. ‘good; brilliant. that’s how it’s supposed to look.’. We could here notice, in relation to the earlier use of bodily perception, the use of se ‘look’, referring to what the recovery looks like on the computer displays rather than how it can be felt.

Providing ground for the claim that the student has indeed developed her way of performing the recoveries and learned is the teacher’s positive evaluation of the students’ performance. That the student has progressively learned can moreover be interpreted in terms of an increased vocal silence. Earlier, the teacher intervened with directives, alerting the student to different aspects of the unusual attitudes to which she was not paying attention.
Reformulating the rule with reference to what the student did
In the third, and for us last, debriefing session the teacher comments on the recoveries from unusual attitudes highlighting what was mainly focused during the flight lesson: the importance of not stopping at the horizon but to instead continue climbing and adding full power. Something that was initially difficult to express in words but where the setting in the airplane afforded the possibility of demonstration can now be drawn upon in the classroom. Keeping the back pressure (in Swedish spaktryck) orients to their by now shared experience of what that is (although it was not referred to with that specific notion in the part of the flight lesson analyzed here).

**Excerpt (24): Don’t stop at the horizon**
F3-060515-6.debriefing; 06.20-06.46

1. Teacher e: hhh va gjorde vi mer¿ onormala lågen?
   uh: hhh what did we do more¿ unusual attitudes?

2. 

3. Teacher e: dâ r kan du tänka på (.)
   uh: the re you can think about (.)

4. Student °m°

5. Teacher när du passerar horisonten.
   when you pass the horizon.

6. fortsätt bara å ha kvar (0.8)
   just continue and maintain (0.8)
   ((gestures moving controls))

7. e: spak trycket som du hade bakåt
   uh: the back pressure that you had
   ((gestures the trajectory of the airplane and the manipulation of controls))

8. Student

9. Teacher så att du inte stannar på horisonten å sen
   so that you don’t stop at the horizon and then

10. fortsätter ru, =sen bara (0.7) fortsätter uppåt
    you continue <, =then just (0.7) continue upwards

11. sen när du passerar horisonten så
    then when you pass the horizon then

12. 

    (0.7)

---

Holding hand in relation to an imagined line of the horizon seen on the computer display in the airplane.

Pushes hand forward in a gesture that captures both the trajectory of the airplane crossing the line of the horizon and the adding of power.
Highlighted as what the student now needs to think about in relation to the unusual attitudes, is to maintain the back pressure when passing the horizon. The teacher refers to what was the main focus of attention in the airplane, that is, what to do when passing the horizon. When talking about the importance of not stopping at the horizon, the teacher holds his hand in relation to an imagined computer display in an exact replication of what he did in the airplane. Stopping is thus illustrated by a pointing gesture with the whole hand at the line of the horizon, indicating an airplane that has stopped when the yellow marker depicting the position of the airplane has reached the horizon on the display. The teacher then continues elaborating that when passing the horizon, the relevant action is to immediately continue beyond the horizon. In the airplane the teacher chose to demonstrate how the student should use the energy and continue climbing through doing a recovery himself. Here, in the classroom on the ground, he illustrates the movement of the airplane pushing forward over the line of the horizon through a layered gesture that simultaneously enacts the manipulation of the power lever and the trajectory of the airplane.

Other than that the teacher states that the student did everything right: annars gjorde du helt rätt. följde me rodren. (.) uppskevning. (.) upptagning. ‘otherwise you did everything right. followed the controls. (.) level the wings. (.) recover.’ (lines 14-15) which is simultaneously produced with minimal gestures demonstrating the moving airplane and the required actions. This is in many ways yet another reproduction of the generic rule formulated already in the first preflight briefing session. What is different is that the rule is formulated with explicit reference to what the student has done rather than what everyone should do. Rather than simply projecting a future, it works as a praising evaluation of what the student did.

I would here like to draw special attention to the formulation följde me rodren. ‘followed the controls.’ in lines 14-15 as describing the student’s sensitivity when judging what to do and in what order. Formulating the required behavior in terms of following the controls highlights a more mature and a less mechanistic attitude toward the perception of the unusual attitude. To follow the controls
captures the integratedness of the performance, but is unclear on what specific actions that have been done. However, the participants now have a shared understanding of what is involved in following the controls that they can draw upon.

In this last debriefing session, talking about the recoveries still involves gesturing. The gestures co-occurring with the verbal formulations of what to do when you have a low nose position are an example of continuity as they create relations between the situations. They occur in the classroom as well as in the airplane, they are used as resources to make visible aspects of the unusual attitudes and they are sometimes minimal – but they are there, perhaps as some kind of embodied remembering.

Trajectories of learning extending over several activities

The student demonstrates an increasing proficiency in the performance of the maneuver and the ability of subsequently evaluating her own performance as well as in her capability to describe it in talk. In other words, there are micro-longitudinal changes in the student’s understanding and performance of the recoveries from the unusual attitudes, both within the same flight lesson and over the course of the three lessons. The changes are socially established and upheld, in interaction between the student, the teacher and the airplane controls and instruments. These changes, empirically substantiated in the analysis, should be considered as learning. That the student has learned is further corroborated by the participants in the last recovery, where her performance is evaluated by the teacher, as we have seen, with a braå strålande. så där ska de se ut. ‘good; brilliant. that’s how it’s supposed to look.’ (Excerpt 24).

What the analysis of the flight lessons suggests is that recoveries from unusual attitudes are socially, culturally, materially, and sequentially structured, and that the different ways of structuring afford different understandings (see Goodwin, 2000a). Self-evident as it may seem, talking about recoveries from unusual attitudes is systematically different from flying them, in particular because of the contrast between the sequentiality of talk and the integratedness of the maneuver.

In the studied contexts, learning is not straightforward (cf. Cekaite, 2007; Martin, 2009). One reason for this is that accountably knowing how to deal with unusual attitudes, both as a teacher and as a student, requires the ability both to carry out the correct actions in the airplane, and to discursively construct the same actions, both in the airplane and in the classroom.

Obviously, both of these ways of knowing are closely related. But there are also ways in which there are tensions between the two. Of particular importance is that talk parses actions that when flying and maneuvering the airplane are integrated, into sequentially ordered separate units of action. The teachers and the student rely on resources within this sequentially organized talk for further constructing the expected actions in the airplane explicitly as a list, rather than as an integrated set of simultaneously occurring actions. This proves to be a challenging
task in itself, as an intrinsic difficulty with the maneuver is that it is not really possible to formulate a generic rule that holds for every situation about what to do and in what order. It is however also important to recognize that the organization of actions in the airline cockpit to a large extent is sequential and dependent upon there being a correct order of actions as for example expressed in manuals and regulations, etc. As Nevile (2007) remarks, “[a]ctions for tasks in the airline cockpit are mostly performed in strict sequential order where the appropriateness of some action is dependent on when it is done” (p. 251).

When doing the recovery in the airplane the different aspects of the unusual attitude need to be taken into account simultaneously, explicitly not in the way they feature in the very talk about the same thing. Parsing them in the way that it is done in talk, will when flying mean that you will be late with for example adjustments of power, as the student is in the initial recoveries (Excerpts 2-8).

Learning is in this setting also a matter of silence, or more accurately an increasing absence of speech: that the teacher does not intervene, but that the student can do the recoveries by herself. In this sense, there is a resemblance to the findings in Martin’s (2004) study, in which she demonstrated how the physiotherapy patients’ learning can be described as changes in repair patterns, where in the beginning it is the physiotherapist that both identifies and repairs the problems, whereas later on the patient him/herself can both identify that something is wrong and be able to repair the problem. Knowing how to do something is in other words to be able to do it yourself and in the case of problems, be able to identify and correct them.

The participants’ orientations to the student having learned can thus be analyzed in terms of an increased vocal silence, where the teacher does not intervene in the student’s actions to the same extent toward the end as in the beginning. To this can be added that when co-constructing the content of learning, the participants can to a larger extent rely on earlier experience and shared understanding which does not require as lengthy discussions.

Moreover, the way that the student asks her questions changes over time. In the first preflight briefing session, she asks a very open question about what the unusual attitudes are (va e de till exempel. ‘what is that for example.’ in Excerpt 9, Chapter 6), a question that the teacher orients to in different ways. Toward the end of the first preflight briefing session, the student’s formulated understanding was also about what the unusual attitudes would be like – that they would be about positions of the airplane: de e bara typ asså om vi ligger s- eller liksom står väldit lågt. ‘it’s only like if we are s- or like standing very low.’ (Excerpt 16, Chapter 6).

Already in the second flight lesson the student asks a question displaying that she does know something about unusual attitudes, requesting confirmation about what to do when the nose position is low (Excerpt 11). In the second flight lesson, as we have seen, the co-construction of the content of unusual attitudes with a low nose position is done in a different way from the first lesson. The activity is not focused as much on asking the student what she would do, but – in line with
the initial question – rather reasoning about appropriate actions in a way that actively constructs the student as having previous knowledge.

In the third flight lesson the teacher in a similar way as before enumerates a number of maneuvers that will be practiced, to which the student does not react, something that thus in comparison to the two previous flight lessons, displays her orientation toward the unusual attitudes as known. In the air, the unusual attitudes are preceded by a considerably shorter, compressed question-answer sequence, the possibility of which relies on the participants having done this before.

Other changes that can be noticed, is how what is problematic in the student’s performance of the recoveries from the unusual attitudes gradually shifts, from the earlier stages of the recoveries to the later stages. In the beginning, problems are identified in relation to her (lack of) actions with regards to speed. Initially, that she is not reducing the speed at all. Later, it is more a matter of timing and how she is late in her reactions. Toward the end of the flight lessons, the identification of problems have moved from the former part of the recovery, to instead have to do with the latter parts and the issue of how to pass the horizon (as indicated on the computer display). Simultaneously this hence has to do with how the situations are related, and how we can see that the student brings experiences from one situation into another.

Gestures building relations between material contexts

In the airplane, radically different sources of information than talking about and seeing the airplane from the outside are available to the participants and made relevant in interaction. For example, in the airplane, the instruments are of crucial importance, where seeing the bank angle of the wings requires an ability to see things that are drastically different from seeing it from the outside (i.e. the perspective taken up when demonstrating the unusual attitude with gestures and the model airplane). Along the same line of reasoning, bodily perception seems to be tied primarily to the experiences in the airplane.

Not least through the frequent use of gestures, different material contexts are brought into play and into relation with each other. Three different types of gestures have been discerned. A first type of gestures demonstrate the movements of the airplane. We have seen several examples in different contexts of when the participants use gestures to illustrate positions of the nose as well as a way of depicting the trajectory of the airplane moving through the air.

A second type of gestures seem to be invoking a material setting in the sense that for example displays that are looked at in the airplane are enacted in the classroom on the ground. For example, when talking about scanning the instruments, we have seen how the teachers have held their hands in the shape of a display that they have then looked at.

A third class of gestures is enactments of appropriate actions. The student quite frequently enacts the manipulation of the yoke, bringing up the nose or leveling the wings. The question of power and speed is demonstrated through enacting
a manipulation of the power lever. When it comes to speed and feeling these are not as easily demonstrated as, for example, nose positions. In the third flight lesson there are examples of how the teacher attempts to, through moving the hand through the air with a push, display how the student should make use of the energy and continue climbing over the line of the horizon. In that sense it might be argued that gestures can in some cases invoke a feeling, in this case a surge of energy.

Common to all these gestures are that they invoke a materiality related to the airplane. They do seem to be more than “merely” demonstrations though, as they are not becoming less frequent in use over time. They are seldom highlighted through looking at them or in other ways making them into an explicit focus of attention, and the gestures are not explicitly used as possible resources for understanding or seeing what is being talked about. In that way it seems that they, as has been mentioned, work as embodied remembering, as a way of incorporating correct actions and movements of the airplane. Moreover, the repetition of gestures can be understood as providing cohesion to the activities, and work as a mechanism for establishing links across spates of talk and discussions (Koschmann & LeBaron, 2002).

**Learning situation awareness**

Analyzing the data we can see that through the theoretical framework of situated and socially distributed cognition, *situation awareness* is dealt with in a practical way and intrinsically related to the practical doings of the participants. SA is embedded in the way that the participants talk about and perform the maneuver. As Mondada and Pekarek Doehler (2004) remark, cognitive skills are embedded in actual activities of members. Cognitive skills cannot be extracted from the activities nor taken for granted in a general, decontextualized way.

In order to fly the airplane, the pilots’ analysis of the unusual attitude has to be done instantaneously, and the required actions clearly depend on the specific situations. In the classroom the participants parse the activity of doing the recovery and they thus create a situation where chronological and sequential order is relevant. However, when doing the recovery in the airplane all these things need to be taken into account simultaneously. Parsing them in the way that it is done in the classroom, will in the airplane mean that you are too late, for example with adjustments of power.

An intrinsic difficulty with the recoveries from the unusual attitudes is that it is not really possible to formulate a generic rule that holds for every situation about what to do and in what order. Consequently, the teacher in the first and third flight lesson has to retract from the formulation of the generic rule when he is, for example, making relevant in what ways to attend to speed first (Excerpt 15, Chapter 6).
The teacher in the second flight lesson explicitly brings in the notion of SA referring to the problem of deciding what the appropriate actions are (Excerpt 13). As was stated in the beginning of this chapter, SA can put simply be defined as knowing what is going on around you. Inherent in the definition is to know what is important, in terms of the goals and decision tasks for the job at hand (Endsley, 2000). SA is a concept that derives from psychology and is primarily associated with individual mental minds that either have or don’t have this awareness. However, rather than being about private perceptual structures lodged within the individual brain, SA is socially and culturally established and sustained. It is socially organized by the tasks set by activities and it is something that members of the communities responsible for doing these activities, hold each other accountable for in order to be recognized as competent practitioners.

In the moment-to-moment constitution of SA the participants rely not only upon information provided from the instruments, but also upon how it should “feel” when recovering from the attitudes as well as the importance of “following” the movements of the airplane with the controls. Consequently, to learn how to appropriately recognize the implications of the situation, the student needs to develop both an ability to interpret the technologically complex environment, and an embodied “feeling” for the situation. In the briefing sessions, both of these aspects present a challenge to the participants, as they are difficult to put words to. When it comes to the technological environment it is something that the participants orient to, and in different ways reconstruct, for example through enacting the computer display and looking at it. When it comes to the “feeling” for the situation, this seems to be tied primarily to the experiences in the airplane. Talking in the abstract about the maneuver in the classroom at the briefing sessions proves to be something different than talking about it in the airplane. However, it should also be noticed, that it is the “talking about” rather than the specific material environment that proves to be challenging, as talking about the maneuver in the airplane is not per se less complicated than on the ground. However, the resources for demonstration, for example, are considerably different in the airplane and in the classroom on the ground.

Orientations to trajectories of learning

In the flight lessons, the participants work to establish relations between the different parts of the flight lessons and each flight lesson as part of a larger set of lessons. Practicing the maneuver again and again is part of the training to become a professional pilot. In such an overarching way the recoveries are oriented to as part of routine activities and in all three preflight briefing sessions they are mentioned as one of a number of maneuvers to be done. There is an expectation that the student should go through this process and once through it, she will be expected to have learned something.
As was discussed in the previous chapter, the participants in the flight lessons are clearly oriented to a trajectory of learning that is tied to a content of learning that they will return to, and where the student is expected to change her ways of participating in the activity. These orientations are visible in a number of ways. First, the participants are orienting to some things as being the same and other as being different (Excerpts 1, 10, and 17). Through using formulations such as that the lesson “is more or less identical” to a previous lesson, that it is “the same principle that you have practiced earlier,” and that the maneuvers that will be practiced are “by and large the same,” expectations about what the student should recognize and what she should experience as new are made relevant.

Second, the distribution of roles that is being made relevant where some things will be done by the teacher and others by the student, also imply what the student will be held accountable for doing and thus knowing. The distribution of roles is for example visible in the way that personal pronouns are used: you will have a hood, and you will have to recover from the unusual attitudes (Excerpt 1).

Third, in relation to evaluations of how the student has performed the recoveries, there are formulations about what the student must think about or do (Excerpts 6-9, and 19). Through saying that the student must “react faster,” that she should “react” to the position of the nose in terms of adjusting the speed, and that she should “incorporate reflexes” things that need improvement in the student’s performance are identified.

Fourth, the student herself orients toward checking and displaying her understanding of the required actions in various ways (Excerpts 4, 7-8, and 16). She evaluates her own performance, saying that she should have done things differently, such as bringing up the nose earlier and reduce power, that she needs to check the speed more or that she was just thinking about bringing up the nose. Consequently, she herself finds things that need to be corrected and done differently in the future. The student moreover refers to understandings that might be wrong, such as that she “got the impression last time,” something that might however be wrong and thus in need of revision.

Last, but not least, the participants also orient toward the student having learned (Excerpts 7, 20, 23, and 24). The first time the teacher picks out one aspect of the recovery, saying that the student “did completely right with the controls” when doing the recovery but that more things need to be attended to. In the third flight lesson, where the majority of these instances occur, the teacher first praises what the student does when passing the horizon, but then engages in elaborate instructions on how she can do it even better. In the last recovery of the third flight lesson the teacher evaluates the recovery in its entirety as being “brilliant” and “how it’s supposed to look.” In the last debriefing session he further says that she did “everything right.”

In sum, the participants are in all these ways making relevant that it is the student who is expected to know some things and that she will learn others. Moreover, through following the participants over time, we can see how these
orientations and formulations change, as the student is learning how to perform the maneuver.

The careful and detailed analyses of how participants make relevant that activities are related, both within and between them, opens up for discussions about practices of *contextualization*, *decontextualization*, and the possibility of *transfer*. A challenging of the notion of decontextualized knowledge lies at the very heart of situated perspectives on learning, claiming that there is no decontextualized social practice and hence no decontextualized learning (Lave, 1988/1997, 1993).

Within *actor-oriented perspectives* on transfer, transfer is defined as the influence of learner’s prior activities on their activity in novel situations. Evidence for transfer can be found by scrutinizing a given activity for indications of influence from previous activities and by examining how participants appear to construe situations as similar (Lobato, 2003, 2006). As has been shown, talking about the recoveries in the first preflight briefing session, parsed the activity into different segments where one action followed another in a sequential order. This parsing influences the way that the student performs the recovery in the airplane through attending to aspects of the unusual attitude as separate. During the first flight lesson, the student begins to experience the relations between the different aspects of the attitudes, and the participant slightly change their ways of talking about the recoveries. Bringing up the nose and reducing speed (Excerpts 4 and 6) are tightly connected actions that need to be done quickly. The teacher in Excerpt 8 also closely connects a low nose position with the necessity of reducing power. This is explicitly referred to by the student in the second preflight briefing session, who makes relevant made experiences in the previous flight lesson when constructing a question at this later occasion (Excerpt 11). In such a way, we can see how participating in one activity influences participation in a different one.

To the participants, it seems that the relation between talking about and doing is hierarchically related. Rather than seeing the discursive constructions and the actual performance of the recoveries as related but in important ways different, being able to talk about the recoveries is expected to precede and facilitate the actual performance. For example, this can be seen in the third flight lesson, when before practicing the maneuver the participants engage in a brief question-answer sequence establishing what to do and in what order (Excerpt 18).

I have argued that becoming a competent pilot involves being able to both talk about and to perform the maneuver, as separate but related competencies. But what the participants are dealing with can also be interpreted through considering contextualized learning and the learning of abstract principles. In the flight lessons, the participants are dealing with the matter of decontextualizing something that is simultaneously always contextualized. In this respect, the second preflight briefing session is particularly interesting, as the teacher there resists the formulation of a generic rule through contextualizing the recoveries, describing different possible situations. When concluding talk about the recoveries it is nevertheless done with reference to the possible existence of a basic rule (Excerpt 15). The participants could be understood as primarily focused on the ‘doing’ rather
than the ‘talking about.’ They are contextualizing abstract principles and generic rules, and through so doing they are working to decontextualize the specific attitude and situation.

Goodwin (1997) argued that scientists who were engaged in deciding when a fiber had attained the right black color, were “actively inventing particularistic, restricted codes when they already have access to far more universal, less context-bound categories” (p. 124). He thus questions other research on the work of scientists that has focused the way that conceptual abstraction is done from the concrete, and instead demonstrates how this works the other way around. The pilots are not scientists, but in dealing with the generic rule of what to do when recovering from a low nose position and the actual doing of the recovery, they could be understood as going between decontextualization and contextualization. They begin with the abstracted principle that is then put to work in practice. But the activity does not end there. Rather, the student is still required to be able to do the abstraction, after having learned how to perform the recovery. In other words, there is a continuous and recursive interplay between abstracted principles and practical doings where being a competent pilot is precisely about being able to both contextualize and decontextualize the recoveries.

In this chapter, I have demonstrated and discussed how the participants are making relevant relations within and between activities, and how they in so doing are construing the activities in some respects as same and in other as different. I have also shown how a trajectory of learning is established and sustained in interaction, and how the participants are orienting toward this trajectory, or in other words, that they are orienting towards change. CA analyses of learning, including this dissertation, can be understood as approaching learning in a process-oriented way rather than as a matter of learning in one context and generalizing that knowledge to other contexts (for an explicit argument with reference to Lave (1988/1997), see Hellermann, 2008). In this chapter, I have attempted to further the process-oriented understanding by focusing not only change as an outcome of analyses of longitudinal data sets, but as an aspect of activity itself.

In the next chapter, I will problematize the notion of change through exploring how participants have ways of taking a resistant stance toward changing their ways of participating in situated activities.
In the two previous chapters a way of describing and analyzing the co-construction of contents of learning has been developed, and continuity and change have been discussed. Both continuity and change have been argued as constitutive of learning, and I have shown empirically how participants have ways of dealing with how activities and material settings are related to each other, over time. It has further been claimed that processes of learning have been described and analyzed. Through the detailed and careful analysis of participation in situated activities, it has been possible to pin down learning to people's practical doings. It has been claimed that the participants are oriented toward change, and toward changing participation.

The subject for this chapter is also change, but now focusing how participants have ways of “negotiating” what counts as relevant change. How participants can actively relate to the progressing activity in a way that demonstrates that they are oriented toward not changing their ways of participating, and as a consequence that they could be understood as resisting change.

For CA research on learning it is vital to be able to pin down what kinds of changes that are relevant for learning, as interaction in a sense always changes. In her dissertation, Martin (2004) discusses matters of what the issue of not learning something would look like. Through the patterning of repairs and corrections, tying those to who is doing what (i.e., who is initiating repair and who is doing the repair), it is possible to claim that someone has not learned when s/he does not develop the ability of identifying and repairing problems on their own.

In this dissertation, I have argued a participants’ perspective on learning. In the following, I will through the participants’ orientations explore how it could be understood that they are resisting change. A way of anchoring relevant change in the participants’ actions is to carefully analyze their ways of resisting participation in an activity, in relation to interactively constructed contents of learning.

Research on human sociality has demonstrated the fundamental importance of the human disposition of engaging in coordinated activities and of working together toward shared goals (e.g. Enfield & Levinson, 2006; Tomasello, 2006, 2008; see also Chapter 2). Joint activities require that people engage in joint commitments. As an individual you can commit privately to doing things, Clark (2006) remarks, but for people to do something together, they have to act on joint commitments that are negotiated in interaction between the participants. To engage in joint commitments is not without risk, as once you engage in something you are also required to uphold your commitment, and not walk out without a
reason. Each joint action involves making yet another commitment to upholding the activity: the commitments emerge bit by bit, action by action. Thus they accumulate, or stack up, which is how Clark describes the phenomenon. To enter a joint commitment is hence to give up a bit of one’s autonomy. When participants have committed themselves to a joint activity, it turns out that it is very difficult for them to interrupt the activity and refuse to cooperate any further, even if it involves exposing others to danger. The negotiation required to engage in collaborative actions is what is in focus in this chapter.

Lave (1993) urges us to analyze the activities in which people engage, arguing that a focus on how several participants come together in activities, emphasizes the heterogeneity of actors, goals, motives, and activity itself. She comments that analysis focused on conflictual practices of changing understanding in activity is not so likely to concentrate on the truth or error of some knowledge claim, but that

\[ \text{[i]t is more likely to explore disagreements over what is relevant; whether, and how much, something is worth knowing and doing; what to make of ambiguous circumstances; what is convenient for whom, what to do next when one does not know what to expect, and who cares most about what (Lave, 1993, p. 15).} \]

In this chapter, three activities will be focused. First, an instructional activity where it is possible to say that there are opportunities for learning, but where participation is resisted, is analyzed. Second, another activity will be analyzed focusing how one of the participants is being refused participation and how an aggravated conflict eventually leads to the collapse of the activity. Third, I will return to a part of the flight lessons that has been analyzed earlier in the dissertation, arguing that a resistant stance toward the ongoing activity can, at times, be discerned.

**Participation, stance, and (mis)alignment**

In his seminal paper *Footing*, Goffman (1981) argues that over the course of their actions, participants constantly change their footing, that is, that they change their alignment or stance toward themselves and others, as well as toward the unfolding progressivity of the activity. In the paper, he develops ways of categorizing participants and their participant roles in interaction, especially focusing the notion of speaker and demonstrating how complex and laminated this participant role is.

\[ ^{1} \text{Clark (2006) has analyzed how the Milgram experiments were done. In these experiments, it was found that people were prepared to expose others to danger in order to follow orders, which resulted in them being described as “obedient to authority” (Milgram, 1974; see Clark, 2006, p. 141). However, Clark shows that an alternative explanation is that the fact that the majority of the participants did not opt out from the experiments, was a result of negotiations between the organizers of and the participants in the experiment. These negotiations led to a stacking of commitments from which it was very difficult to opt out.} \]
Goodwin and M. Goodwin (2004) have criticized how this puts too much focus on the speaker, leaving the hearer in an anonymous role. Instead, they propose that a study of participation requires an analytic framework that includes not only the speaker and her talk, but also “the forms of embodiment and social organization through which multiple parties build the actions implicated in a strip of talk in concert with each other” (ibid., p. 223; see also Chapter 2).

As has been remarked upon, there are different ways of participating in activities. For example, M. Goodwin (1997) has explored how recipients, during the telling of a story, can attend to it in different ways, thus displaying alignment or not toward the story. Participants continuously take up a public and accountable stance toward the evolving activity. Recipients of a story can thus during the telling actively select how to attend: for example through alignment, providing side comments or distancing themselves from the story, and even heckling. These footings (Goffman, 1981) can moreover affect the development of the story. Goodwin and M. Goodwin (2004) write:

In order for human beings to coordinate their behavior with that of their co-participants, in the midst of talk participants must display to one another what they are doing and how they expect others to align themselves toward the activity of the moment. Language and embodied action provide crucial resources for the achievement of such social order. The term participation refers to actions demonstrating forms of involvement performed by parties within evolving structures of talk. (Goodwin & M. Goodwin, 2004, p. 222)

In other words, it is not only a matter of having the possibility of displaying a stance toward the unfolding activity, but rather that stance is an intrinsic aspect of participation.

Through the detailed analysis of the interaction between a father and daughter who are engaged in working on the daughter’s homework, Goodwin (2007a) described the interactive organization of stance. Participation frameworks are thus shown to be consequential for a range of phenomena central to the organization of human interaction, cognition, and affect. In the beginning of the homework activity the daughter was not aligning to the participation framework proposed by father, and in which she should actively participate in the required math calculations rather than writing down answers provided by her father (which is how she initially wanted the activity to progress). The dispute eventually led to the father walking out. He returned a while later, and at this time the joint activity was successfully accomplished. Through this analysis, Goodwin demonstrates the importance of the framework for the interactive organization of action, and the work involved in sustaining it. In several ways, the daughter refuses to take up a cooperative stance. She is not positioning her body in a way so as to see what father is pointing at, she is responding minimally to his questions, etc. Through these actions, the very possibility of joint social action is undermined.

In an article on subteaching, Tholander and Aronsson (2003) show how students who are working in small groups, engage in teacher-like activities. This
sometimes leads to the participants resisting subteaching, that is, that they are not aligning to the activities proposed by the subteacher. Resistance is understood as an attempt of redefining the situation at hand, about for example not accepting instruction or protesting against the subteacher’s demands with respect to task requirements.

Vehviläinen (2009) discussed how resistance was interactionally managed in academic supervision of thesis writing, where fundamentally critical feedback was delivered and the students were asked to reconsider their work. Vehviläinen shows how the students deal with the criticism through evading it as it was formulated by the teacher. One strategy was to shift focus to specific parts of the written text, thus attempting to avoid talking about the overarching problem with the research question. Another strategy was to distance oneself from the text arguing that it was just a draft or through asking the teacher questions in which a disagreement and counter-criticism was formulated. Vehviläinen makes the observation that in these cases no shared understanding of what the problem is was overtly established between the participants.

The concept of resistance has a specific meaning in this chapter, which is closely linked to the notion of participation. What will follow is a way of problematizing the notions of participation and change through exploring how participants can take a resistant stance toward the trajectorial development of the activity. In the analyzed trajectories, the participants are engaged in collaborative activities, but they take a resistant stance toward changing their participation in relation to contents of learning.

**Analyzed activities**

The greater part of this chapter is dedicated to the analysis of a recording of three girls jumping rope. The girls are between 7 and 8 years old and the activity takes place during recess on the schoolyard of an elementary school. In this activity the participants are establishing two separate contents of learning: where to stand when jumping and how to turn the rope. Focusing the activity and how it progresses makes it possible to see that the ways that the girls are turning or the question of where to stand when jumping in are not being resolved in the sense that the participants are not changing their actions. The same issues are oriented to again and again, and in the end the activity collapses.

We can thus look closely at what is happening at the different instances when the girls are talking about turning the rope or jumping, and scrutinize them in order to discern relevant features in relation to why the activity does not progress in the above-mentioned way. And it is now that we begin to see how the participants have ways of resisting change, of taking a resistant stance toward the unfolding activity.

The argument will be supplemented by the analyses of relevant parts of the recordings of the flight lessons in order to problematize yet another aspect: how
the participants are jointly committed to sustaining the activity (i.e. the flight lesson), but where the student, at some instances that will be discussed, can be understood as resisting aspects of that same activity.

**Description of the jump rope activity**

Jumping rope is a complex activity requiring a high degree of coordination between the participants. As Evaldsson and Corsaro (1998) remark, cooperation is in fact a prerequisite for the game. However, it is simultaneously a competitive activity. Skilled jumpers are highly estimated. To become a skilled jumper you not only need to be good at jumping, but you are also dependent on skilled turners.

The routine is that two participants hold one end each of a long rope, and turn it for a third participant that jumps. Many children can participate in the activity, as there can be many jumpers, although in the activity analyzed here there are only three participants. It is customary that the participants rotate the roles of turner and jumper.

The rope has to be turned following a regular beat, where the turners are synchronized. The slightest the turners are off beat the bow of the rope is ruined thus making it difficult to jump. The speed must be well balanced and the rope turned in a way that is neither too slow nor too fast. Further, the rope has to create a regular bow shape that hits the ground and is at the same time large enough so as not to get stuck on the head or shoulders of the jumper.

To jump you should feel the rhythm of the beat so that you jump at the right moment. One of the difficulties of jumping concerns how to begin jumping – from standing in between the turners that start turning the rope from that position, or to jump in into the already turning rope. The latter is harder, as you then have to find the rhythm, the right time to jump in, and run far enough to reach the right jumping position, which is where the rope hits the ground in between the two turners.

M. Goodwin (1985) remarks that many decisions are involved in the game (e.g. who is to jump and who are to turn the rope), decisions that may engender disagreement. In contrast to many other disputes that can terminate without having reached a resolution, M. Goodwin writes that “argument relating to the playing of jump rope is treated as requiring some form of settlement so that players may proceed to a next stage of the activity” (p. 319). M. Goodwin (2006a) has moreover pointed out that

In jump rope, what can be seen at any one moment is the position of the rope on the ground, and where the jumper’s feet are located with respect to it. The ‘field’ in terms of which the movements of another are evaluated include (1) the turning rope, (2) the players and (3) their interaction. The rope can be argued to be turned too fast, too slow, or too high. In jump rope, in comparison to hopscotch, blame for mistakes can be attributed to the turners or bystanders as well as the player, leading, at points, to multiple disputes simultaneously.
This makes scrutiny of moves even more involved and consequential for judges of the plays in jump rope. (M. Goodwin, 2006a, p. 122-123.)

In the activity that is analyzed here, all these things are a matter of concern for the participants. Where is the correct jumping position? How do you turn the jump rope in a way that enables the jumpers to jump successfully? What should the distribution of roles look like?

The way of following topical orientations and thus a content and trajectory of learning that has been developed in Chapters 6 and 7, provides ground for arguing the two different contents in this activity: how to turn the rope and where to stand when jumping.

I. Finding the right jumping position

Identifying the problem

Slightly more than a minute into the activity, the first mentioning of where to stand when jumping in is topicalized. Maria has just jumped and immediately got stuck in the rope.

Excerpt (1): Should I stand here
BS-020415-2.jumprope1; 01.27-01.45

1 Maria ((the rope stops))
2 Maria °måh° °buh°
3 Yasmin men du e så <himla långt ↑ditåt.> but you’re so <awfully far out ↑that direction.>
4 Nora ((moves away from the direction in which Yasmin is pointing))
5 Nora så där¿ like ↑that¿
6 Yasmin men ja sa inte till dej. but I wasn’t talking to you.
7 =°ja [sa till Maria°.]
   =°I [was talking to Maria°.]
   ((points with head to Maria))
While initiating the jump, Maria faced Nora but turns around stepping over the rope towards Yasmin as Yasmin says *men du e så *<himla långt ↑dität.* ‘but you’re so <awfully far out in ↑that direction. ’. Co-occurring with this utterance, Yasmin points with her whole arm, thus shifting her body positioning slightly as she looks to the right of Maria. The pointing arm is coordinated with Maria’s turning around, where Yasmin’s arm goes up and out when Maria has turned around facing Yasmin. The pointing gesture, even if it is not very precise, is thus carefully designed to be seen by Maria.

However, the one who initially responds to Yasmin’s turn is Nora. Nora takes a step to the right, thus moving a step away from the direction that has been indicated by Yasmin. Having reached her new position, she says *så där ¿* ‘like that¿’, through gaze and body positioning addressing Yasmin. Yasmin answers that she was not talking to Nora, but to Maria. Maria has by now stepped out of the jump rope and is preparing (outside of the camera view) to jump in again. Yasmin and Nora start turning the rope, and Maria says in line 9 *åkej.-nu ska ja stå här¿* ‘okay.=now should I stand here¿’. As Maria is not visible on the video we cannot see whether she is selecting a next speaker through her body positioning and/or gaze, however her turn is responsive to Yasmin’s noticing in line 3. Yasmin, who has been looking at Nora when they started turning the rope, turns her head toward Maria during the production of the utterance. Nora is looking at Yasmin. Yasmin is the one who answers Maria’s question. She treats the turn as requesting confirmation, and does confirm the correctness of Maria’s proposition through building her own turn upon it: *å sen ska ru åka fram.* ‘and then you should go forward.’. Maria jumps in and successfully jumps several jumps.

There is a misunderstanding on Nora’s part about whom Yasmin is addressing in line 3. However, that being resolved, the interaction between the girls at this time runs smoothly. Maria accepts Yasmin’s noticing, and she acts in accordance with its implications. She checks (with Yasmin) whether she is standing in the right place, and Yasmin builds on her turn when telling her what to do next. Yasmin is in other words in these few turns positioned as someone who knows answers to questions, and who has the right to judge other participants’ actions. Maria jumps with success, and thus the activity continues with no further discussions at this time.
Redoing the same critique in the same way

Yasmin jumps for approximately two minutes and then Maria gets ready to jump in to the rope while it is being turned. She jumps in but immediately gets stuck in the rope. She has stopped to jump too early, and has thus never reached the correct jumping position. In contrast to the previously analyzed sequence, where the participants seemed to handle the two different jumping positions without problems (i.e., where to stand when preparing to jump in, and which place to aim for to be able to successfully jump once inside the rope) this turns out to be an object of misunderstandings. There is quite some confusion about which jumping position that they are talking about, where Maria orients to where she is supposed to stand when preparing to jump into the turning rope, whereas Yasmin and Nora are orienting to where the correct place for actually jumping is, or in other words where you should stop and jump after having run into the turning rope.

Excerpt (2): You’re so far out in that direction
BS-020415-2.jumprope1; 03.42-03.52

1 Maria ((jumps in and the rope stops))

Yasmin points “far out.”

2 Yasmin men du e så himla långt ↑ditåt. but you’re so awfully far out in ↑that direction.

Jumping up and down in one place, Maria proposes a place from where to jump in.

3 Maria ja: hår dår:, ye:s hår e the:n,

4 (2.1)

5 Maria hår? ((has stepped back outside the camera view))

6 Yasmin Å sen så ska du- r=

7 Maria (((jumps in and the rope stops))
Yasmin points with her whole arm, holding the arm straight out, pointing at a place “distant,” far out, as she exclaims, using the exact same words as the previous time: **men du e så himla långt ↑ dität.** ‘but you’re so awfully far out in ↑ that direction.’ The utterance is identifying a problem, and additionally providing a reason to why the rope has got stuck and Maria has failed in jumping. However, it could also be interpreted as an accusation, putting the blame for the failure on the jumper rather than on the turners.

When Yasmin formulates her criticism, Maria is initially looking down toward the ground. Yasmin’s pointing arm reaches it’s farthest as she says **himla** ‘awfully’. When producing ↑**dität** ‘in ↑that direction’, her arm is already back in its home position, that is, in her pocket. Maria, who has been looking down through the greater part of Yasmin’s turn, is facing her when she says ↑**dität** ‘in ↑that direction’, which is when Yasmin is no longer pointing. It is unclear how much of the pointing that she has seen, what is clear though, in terms of participation frameworks, is that she is not clearly orienting to what Yasmin is saying and doing, in that she is not making herself available in a publicly visible way through for example looking at Yasmin. Instead, she is moving around. When Yasmin started speaking Maria was standing with her back toward Yasmin. When producing the **himla** ‘awfully’ with her arm stretched out, Maria has turned around so that she is now standing with her right side toward Yasmin, but her face is still tilted down toward the ground, and moreover she is busy stepping over the rope. As Yasmin withdraws her arm, Maria turns her face toward Yasmin, to be looking directly at Yasmin as Yasmin’s pointing hand is in the pocket, and the utterance has reached its final ↑**dität** ‘in ↑that direction.’ However, Maria then turns around in a full circle, finally stepping backwards to get ready to jump in again.

If Maria is not visibly attending to Yasmin’s pointing arm, Yasmin is not in this instance working to establish a joint focus of attention (cf. the book reading activity, Excerpts 1 and 3, Chapter 6; cf. the use of the model in the first pre-flight briefing session, Excerpt 12, Chapter 7; and e.g. Goodwin, 2000a). The pointing gesture is not very specific, compared to for example the pilots pointing out a specific place on the display in front of them in the airplane (e.g. Excerpt 19, Chapter 7), or archaeologists, whose activities Goodwin (2003a) has analyzed, pointing at a specific feature on the ground of which they are going to trace the outlines. Yasmin’s pointing arm is indicating a direction rather than an exact position. Moreover, and in comparison with the earlier analyzed sequence, Yasmin raises her arm before having secured Maria’s gaze.

This is not to say that Maria hasn’t heard (or seen) Yasmin’s actions. In the next turn, she orientes to the instruction, saying **ja: h↑ är dāś, ye:s h↑gre then:** (line 3) which is then a way of explicitly saying that she has heard that Yasmin has said something, and through the **h↑ är dāś,** ‘h↑ere the:n,’ orienting to it as a question of where she is to stand, where she is to be positioned. It is a request for

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2 See Sacks & Schegloff (2002): ‘A very large number of moves and sequences of moves in interaction end where they begin. That is, they end in the same place and regularly in the same position, which we are calling ‘home position.’ The moves depart from home and return to home.” (p. 137, italics in original).
confirmation as it proposes a possible new place to stand, and asks whether it is a good place. Through this action, Yasmin is treated as an authority, as someone who knows.

However, there is no immediate uptake on her turn. Yasmin and Nora are turning the rope again. Maria repeats the här? ‘here?’ in line 5, and starts running toward the turning rope to jump in. Yasmin answers through building on Maria’s turn with a å sen så ska du- ‘and then you shall-‘, which is however never completed as Maria has already jumped in and got stuck in the rope. The turn is abandoned as, in relation to the ongoing activity, the appropriate moment for producing it has passed by. Through the initial å ‘and’ the turn is constructed in a way that builds on Maria’s turn. Further, the utterance simultaneously points to future actions, and Yasmin initiates what could be projected to be an instruction about what Maria should do next. However, as the moment when it is appropriate to talk about future actions is past (when Maria jumps in and gets stuck), Yasmin cuts off, and starts up something new, something that is instead commenting on what Maria did wrong (and thus pointing back in time).

Changing strategies

Immediately following upon the last sequence, Yasmin starts explaining what it is that Maria has done wrongly. She walks up to where Maria was when initiating her unsuccessful jumping.

Excerpt (3): You should jump in
BS-020415-2.jumprope1; 03.53-04.09

8 Yasmin =meh du hh (0.8) du är hÅR når du ska
=buh you hh (0.8) you’re HERE when you’re going to
hoppa. då måste vi göra så. (.)
=jump. then we have to do like this. (.)
((turns the rope around her back))

9 jump. ([so that it becomes ]
((walks back))

10 [å sen så ska du-
=å and then you shall-

11 Maria ja men vtar nånstans då,
yes but where then,
Maria takes a step forward, proposing a jumping place closer to the bow. Yasmin, however, indicates another place, in between the turners.

12 Yasmin du ska stå där, you should stand there,
13 Maria här, here
14 Yasmin <ne:j.> (...) du ska (...) hoppa in. you should (...) jump in.
15 Maria ↑E:TT? ↑O:NE?
16 ((Yasmin and Nora turn the rope and Maria jumps in, the rope immediately gets stuck))

The turn in lines 8-9 can be interpreted as a complaint: meh du hh (.) du är här när du ska hoppa. då måste vi göra så. ‘buh you hh (.) you’re here when you’re going to jump. then we have to do like this.’. A “we” is constituted between the two turners, where they as a consequence of the jumper’s faulty actions need to take special actions. The way that the first part of the utterance is produced, stuttering and with breathings, indicates irritation and brings an accusing tone to the utterance.

M. Goodwin, Goodwin and Yaeger-Dror (2002) analyze a similar example, where an account is added to the protests from the other players in a game of hopscotch. The account describes what the move should have been and what the violation consisted of. Through the intersection of multiple semiotic resources, the player is instructed in the appropriate way to move her feet through the grid (M. Goodwin, Goodwin & Yaeger-Dror, 2002, p. 1629).

As Yasmin produces här ‘here’, she has walked to the place where Maria has just jumped, this time clearly indicating the position where Maria was jumping through standing at that same spot. This in contrast to the earlier pointing gesture that did not indicate a specific place but rather a direction. Further, Yasmin demonstrates how the turners must work to get the rope around Maria’s back.

All through Yasmin’s instruction, Maria has been orienting to what Yasmin was doing through looking at her; jumping in a circle around Yasmin, but with her gaze directed at Yasmin all the time. In response to Yasmin’s actions, Maria asks in line 11 ja men vär nånstans då, ‘yes but where then.’. When saying this, she is almost outside of the video frame, but it is possible to see that she is standing still thus proposing a position, and she seems to be orienting her body towards Yasmin, thus addressing the question to her.
Yasmin responds to her question, saying **du ska stå där**, ‘you should stand there’, as she points to the jumping position in front of her, and in between her and Nora (see the second drawing indicating the different positions with an ‘x’). However, Maria in overlap with Yasmin has moved and proposes another possible position – still orienting to where she should stand when jumping *in* rather than where she will later jump.

Yasmin now negatively confirms Maria’s turn, and says that Maria has to jump in: **<nej.> (<) du ska (.) hoppa in.** ‘<no:.> (<) you should (<) jump in.’. She emphasizes “in” and Maria takes a few steps back as she cries **↑E:TT? ↑O:NE?** in overlap with the final parts of Yasmin’s turn, something that closes the instructional activity, and continues the jumping activity. This is the first explicit reference to there being two different positions that are talked about. However, the turns are partly overlapping each other, and it is still unclear whether Maria is taking into account that Yasmin is talking about where to actually jump rather than where to stand when preparing to jump in.

**Explanations and demonstrations – elaboration of the instructions**

Maria does another try and jumps in again – unsuccessfully as the rope gets stuck on her back.

**Excerpt (4):** You’re standing here  
BS-020415-2.jumprope1; 04.09-04.15
Maria makes the same mistake as last time and gets stuck in the rope, as she has not reached the correct jumping position, but stopped too early. Yasmin walks toward the jumping place to show Maria what she means, as she simultaneously says *meh hh (1.2) du e så hä:r.* ‘buh hh (1.2) you’re like thï:s.’ (lines 17-19). Nora, who has run toward the jumping place too, starts up a turn in overlap with Yasmin. Nora demonstrates where Maria is jumping and she says that *(du står hår- du) står här när ru kommer in.* ‘(you’re standing here- you’re) standing here when you’re coming in.’ This is clarifying that it is where Maria is standing when she is *coming in* – that is, entering the bow to start to jump – that is the issue. It is more specific than Yasmin’s rather general description of how Maria “is.”

Yasmin continues with an early confirmation of Nora’s description and then adds *så gör du så där.* ‘then you’re doing like that.’ in line 23, as she shows that the rope gets stuck when you jump in that position. This is confirmed by Nora with a latched *ja:* ‘yes.’ Through Nora actively participating in the instructional
activity, and the fact that Yasmin and Nora support each other, a brief alliance between the two girls is created where they are co-constructed as experts, as the ones who know what the problem is.

There are several deictics in the verbal turn, such as ‘here’ and ‘there’. In line 19, the deictic ‘here’ refers to how Maria “is,” and what that means is demonstrated by Yasmin who walks toward the place where Maria got stuck in the rope. ‘here’ in line 20 refers to where Maria is reportedly standing, and is demonstrated by Nora (and Yasmin, as the girls are standing close together). These are examples of environmentally coupled gestures (Goodwin, 2007a & b), where talk, embodied action, and material environment are brought together and elaborate upon each other.

Overt resistance

In the last part of orientations toward where to stand when jumping in, Maria is through the positioning of her body actively resisting the instructions that the others are giving her.

**Excerpt (5): But I’m standing here**

BS-020415-2.jumpropel; 04.16-04.33

25 Maria ja men var ska ja stå ra.
   yes but where should I stand then.

26 Yasmin du ska strå-
      you should st å-

27 Nora men asså nå- nå- nå hopp+repet
      but like wh- wh- when the +jumprope

28 kommer så: like this.

29 Yasmin då +gör du-
      then you’re +doing-

      då g- then y-
In response to the instructions, Maria asks where she should stand: *ja men vara*  *ska ja stå ra.* 'yes but where should I stand then.' We could notice that this question is very similar to the one in Excerpt 3: *ja men vär nånstans då,* 'yes but where then,' (line 11). In other words, it could be understood as putting within parentheses the preceding instructional activity. It is treating it as not having helped resolve the problem. However, through this utterance, Maria accepts that she is doing something wrong, and she requests the others to tell her what to
do instead, thus accepting the other two as authorities and the ones that “know how things should be done.” Yasmin starts up an answer to Maria’s question that seems to be on its way of indicating a specific position: du ska stå- ‘you should sta-‘. Having come this far, she is more or less interrupted by Nora, who initiates a turn in which she will develop both how Maria has been doing up until now and how she should do it instead. Nora does this through talk and embodied action. Yasmin has already explained to Maria where she should stand, explanations that have not helped Maria. Nora tells and demonstrates in a slightly different way how and where Maria should jump. Nora shows that she must enter the rope in a different way and that she, as Yasmin has tried to show her, must jump into the position between Nora and Yasmin. Yasmin supports Nora’s instruction and confirms what Nora has said with a weak “a” “yes”. Maria does not jump in again, but decides to start from the jumping position – men ja står här. ‘but I’m standing here.’ (line 34). Co-occurring with the verbal turn, she moves her arms up and down in a gesture that could be interpreted as giving up, as of being resigned. But it does also have a discarding aspect, in that it – just as the verbal turn – dismisses both Nora’s and Yasmin’s attempts at describing what she needs to do in order to be a successful jumper.

When Nora, in line 27, starts up her description of what Maria has done, Maria quickly looks at her, to then turn around and look down toward the ground with her back more or less turned toward Nora. Nora, in turn, continues her explanation without taking into account that the one who could be interpreted as her primary recipient (indicated by the use of the personal pronoun “you” and the description of Maria’s prior activities) is not orienting to her. However, she does have one hearer – Yasmin. Yasmin looks at her, and Nora seems to orient primarily to her, through body orientation and gaze direction. Nora’s demonstrations are further placed in such a way that Maria’s lack of orientation should be noticeable. Goffman (1981) writes that “[f]or the effective conduct of talk, speaker and hearer had best be in a position to watch each other” (p. 130, italics in original; see also Kendon, 1985). In this case, this could be said to be exploited by the participants in the sense that Maria explicitly avoids being in a position to watch the others.

Through the orientation of her body, explicitly not taking into account what Nora is saying, Maria is resisting the instruction. She continues to participate in the overarching activity, but simultaneously resists aspects of it, as she refuses to listen to the instructions and change the way in which she participates in the activity.

II. The art of turning a rope

Another recurring topic is that of how to turn the rope. It is mainly oriented to in relation to Nora’s said incapability of turning the rope in a way that satisfies the other participants. This is a different way of understanding resistance that is not
tied to a sustained focus of attention. Rather, here Maria and Yasmin are making it impossible for Nora to participate in the activity, as she does not change her way of turning the rope. Nora is eventually pushed away and leaves the activity. The question of where to jump can be characterized as an example of how one of the participants resists changing participation, whereas in this second example Nora is refused participation. However, it is important to point out, that the refusal is done in relation to the unfolding events and thus not a matter of characterizing one of the participants as a victim.

Oppositional move
This happens early on in the activity, when they have just begun jumping. It is the first time that the topic of how to turn the rope – or perhaps more correctly how not to – is evoked. Already this first time it is done with a complaint, and a counter. Nora rejects the accusation that she can’t turn the rope.

Excerpt (6): You can’t turn
BS-020415-2.jumprope1; 01.00-01.12

1 Maria ((facing Yasmin, she jumps and the rope gets stuck))
2 Maria men NO::ra::.
   but NO::ra::.
   (turns toward Nora)
3 Nora vad↑å::.
   wh↑a:t.
4 Yasmin du kan inte sno: ju.
   you cannot tu:rn [PRT].
5 Nora de kan ja <viss:t> de.
   it can I <su:re> it.
   <for su:re> I can.
6 Maria a: men nu provar ja ig↑ten å ↑ja kollar på
   yea:h but now I’m going to try at↑gain and ↑I’m looking at
7 Nora: den här gången.
   de:n hår gången.

When the excerpt begins, Maria has just jumped in, facing Yasmin, and the rope gets stuck on her legs. Upon getting stuck, she immediately, in an accusing tone of voice, says men NO::ra::: ‘but NO::ra::’ as she in a jerky movement turns around toward Nora. It is unclear precisely what is wrong, but Nora is the one at fault, that much we know. Nora answers through saying vad↑å:: ‘wh↑a:t’, which could be understood as requesting clarification as to what the problem is. The way that it is said, it is responsive to the accusing tone in Maria’s voice, and thus simultaneously challenges Maria’s objection.

Yasmin now comes in, specifying that the problem is that Nora cannot turn the rope: du kan inte sno: ju. ‘you cannot tu:rn [PRT]’. It is a matter-of-fact statement, that prosodically, is produced in a rhythmic way, highlighting the crucial aspects of the turn: you, not, and turn. Taken together, this states the fact that
Nora is incapable of turning the rope. The use of the epistemic particle *ju* underlines that this is something that the speaker argues is known by everyone that is present. Aijmer (1996) writes that an utterance with *ju* is “proffered without any expectation that the hearer will disagree since the particle presupposes that the hearer already knows what is claimed” (p. 421). In this context, it seems to imply that the fact that Nora cannot turn the rope is obvious to all present participants. However, it is also said within a somewhat antagonistic context and is thus different from the frequently used *ju* that were analyzed in the flight lessons (see Excerpts 12-14, Chapter 7). There, it worked interactionally in a way that put the teacher and the student on more or less the same level in terms of knowledge as it was doing the interactional work of referring to something known by both participants, and thus contributed to treating the student as having relevant experience. In this context it works somewhat differently, as it is accompanied by a negation that is moreover emphasized. Rather than putting *all* the participants on the same level, Nora is identified as someone they all know is an incompetent turner.

Even before Yasmin’s pronunciation of *ju*, Nora has objected, saying that she for sure can turn (line 5). Maria is the one who responds to this, saying that she will try jumping again – this time looking at Nora. In this way she is attempting to put an end to the conflict and instead continue the activity. In these few turns, Yasmin and Maria are positioned as “those who know” how to turn the rope, and as importantly, they position themselves as the ones who can and have the right to judge other participants’ performances. Nora is positioned as the one who does not know and that moreover has to be controlled. The Swedish word *kolla* has been translated into ‘look’, but it does also have a connotation of “control” or of “checking out.”

**Objecting to the accusation**

The girls continue jumping during approximately four minutes, and then the issue of how to turn the rope is again topicalized. Yasmin initially demonstrates how Nora is holding her hand too high up when she turns the rope. Nora’s actions are further contrasted with Maria’s. Maria, who is at the other end of the rope, shows how she turns the rope, with small movements in front of her body co-occurring with the verbal turn *ja gör ju så här*: ‘I’m doing [PRT] like this:’.
Excerpt (7): I didn’t do it like that
BS-020415-3.jumprope2; 00.00-00.11

1 Yasmin (   ) igen så hä:r. ((demonstrates))
   (   ) again like thi:s.

2 Maria ja gör ju så hä:r. ((demonstrates))
   I’m doing [PRT] like thi:s.

3 (1.1) Maria and Yasmin are both turning
   the imagined rope in an ideal way.

4 Yasmin a man ska göra så där som hon gör inte-
   yeah you should do it the way that she’s doing it not-
   (0.8)

5 Maria inte så hä:r.
   not like thi:s.
   (1.2)

6 Maria inte så hä:r.
   not like thi:s.

7 Nora ja gjord:e inte så dår.
   I didn’t do: it like that.

Yasmin, who upon hearing Maria’s utterance turned around toward Maria, turns
back facing Nora and corroborates that: a man ska göra så där som hon gör
inte- ‘yeah you should do it the way that she’s doing it not-‘. As she produces the
major part of the verbal turn, she first demonstrates how Maria is doing it the
right way, turning an imaginary rope in front of her body. Then, as Yasmin says
inte ‘not’, she moves her arm up in the air, again depicting Nora’s movement. In
talk and gesture, she thus builds a contrast between right and wrong, between
Maria and Nora.
Further building on this contrast, Maria completes Yasmin’s verbal turn a man ska göra så där som hon gör inte- ‘yeah you should do it the way that she’s doing it not-‘ in line 6 with a inte så här. ‘not like this,’ clearly tying to Yasmin’s turn through the initial repetition of ‘not’. Yasmin’s verbal turn has been prematurely abandoned, before it has come to possible verbal completion. She does however demonstrate how Nora turns the rope with her hand high up in the air and the turn is in that sense brought to completion through an embodied demonstration. Through the grammatical construction of the turn – a turn-constructional unit that has a compound format – it projects that a comparison (what to do vs. what not to do) is under way. Lerner (1991) claims that the organization of turn taking “requires an orientation to projected unit completion by recipients. This requirement then provides the resources for the production of a recognizable completion by a recipient” (p. 453). Maria looks at the demonstration, and then she builds upon the abandoned turn when speaking: inte så här. ‘not like this.’ The import of the collaborative completion in this specific situation is that it emphasizes the creation of a two-against-one situation, where there are two participants that position themselves as “knowing” versus one that stands rather alone.

Maria’s verbal completion, and more importantly the co-occurring gestures and demonstrations, the way that she moves her body demonstrating how the rope should not be turned, represent an escalation of the conflict. She thrusts her arm, which is held straight, around in big circles and her whole body is involved in the movement. To the outsider looking at the activity, there are hardly any similarities between how Nora is turning the rope and Maria’s demonstration, and the gestures are exaggerated. This can be compared to how Yasmin – in an imitating yet more restrained way – has demonstrated how Nora was holding her hand high up as she turned the rope.

When Maria and Yasmin demonstrate how to turn the rope, they refer to an ideal where the arm is to be held rather still with the hand rotating the rope in small movements. In this way they are relating to an ideal manner of turning the rope, an ideal that does not necessarily have very much to do with the performed actions. Further, in depicting Nora’s problem in turning as a question of holding the rope too high up, one aspect of the way she is doing it is highlighted, and neither of the demonstrations directly correspond to how the reported actions were performed.

Up until now Nora has not responded to the accusations that the other girls’ demonstrations represent. Upon Maria’s exaggerated critique, however, Nora responds with denial, a preferred action in this context of dispute (cf. Dersley & Wootton, 2000) – she protests emphatically to the demonstration through denying the correctness of it, and she says ja gjorde inte så där. ‘I didn’t do it like that’ (line 7). She thus claims that her actions are exaggerated in the demonstrations, and challenges the description of her way of turning the rope, indexing the action as an unmitigated oppositional stance, through taking up a position of opposition with respect to the entire action put forward by prior speakers in a way that immediately and openly indicates a counter-position in an aggravated fashion (M. Goodwin, 1983).
Threatening with exclusion

Upon Nora's denial of the other girls' critique, Maria initially orients to continuing the activity in somewhat unexpected ways in relation to how the activity up until now has evolved, where Maria and Yasmin have taken turns at jumping whilst Nora has turned the rope.

Excerpt (8): You have one chance left

Excerpt (8): You have one chance left
BS-020415-3.jumprope2; 00.11-00.32

8 Maria JA=JA=JA MEN NU ÅR DR .hh HONS tur
YEAH=YEAH=YEAH BUT NOW IT’S .hh SHE’S turn

9 å hoppa för hon kan inte.
to jump because she can’t.
(Walks up to Nora and snatches the rope from her hand)

10 Yasmin nej jo ja kan visst.
no yes I certainly can.

11 Maria men hon kan inte göra re här.
but she can’t do this.

12 Yasmin men: (.) du f år bara (.). du har en=
but: (.) you can only (.) you have one=
((pointing at Nora))

13 Maria (Nora) här
(Nora) here
((throws rope at Nora’s feet))

14 Yasmin =chans kvar å sen (.). så kan=
=chance left and then (.) you can’t=

15 Maria ja å sen får du (gå)
yeah and then you can (go)

16 Yasmin =du inte sno: mer.
=tu:rn any more.

17 Maria en två å tre
one two and three

18 Yasmin så får du (”sätta dig”)
then you can (”sit down”)

19 ((Maria and Nora turn the rope))
Nora's denial leads to an escalation of the conflict. The demonstrations proper are over for this time. Maria discards Nora's denial, and with a considerably higher pitch turn-initially says JA=JA=JA ‘YEAH=YEAH=YEAH’. It is produced under a single intonation contour, each item latched to a next. The repetition of the lexical item is oriented to the sequence as a whole rather than the just preceding turn. It is both sequence closing and sequence initiating, displaying “impatience” with what has gone on up until now, a feeling of “that’s enough of that.” Stivers (2004) discusses examples in which the speaker of a multiple can be seen to be folding or giving in to the other person. In this case Maria is not folding to any of the other participants, but rather she is oriented towards a continuation of the activity, as they have reached a dead-end. It is not probable that they will come to a resolution as to who is turning how, etc. It could be said to work to halt an in-progress action attempting to put it on a different trajectory. As Stivers (2004) remarks, the repetition functions as a display of the speaker’s stance against prior speakers’ perseverating courses of action. The repetition of the lexical ja ‘yeah’ marks a refusal to take up the challenge Maria has been presented with by Nora's denial of her demonstration.

As a consequence of Nora’s claimed inability to turn the rope, she continues: MEN NU ÄR DE .hh HONS tur å hoppa för hon kan inte, ‘BUT NOW IT’S .hh SHE’S turn to jump because she can’t.’. Simultaneously as she produces the kan inte ‘can’t’, she snatches the rope from Nora’s hands. It is of significance that the snatching of the rope co-occurs with this part of the utterance, as it underlines that Nora is incompetent, that she is “not knowing.” Nora has up until now never been allowed to jump, and Maria’s proposal that Nora take the position as jumper is an unexpected turn to the development of the situation. Yasmin seems unclear as to how to interpret Maria’s action, and answers nej jo ja kan visst. ‘no yes I certainly can.’. The initial mej ‘no’ could be interpreted as marking a misalignment with Maria’s proposal, but then she seems to orient to the utterance as in some way claiming that she is the one who is incapable of some kind of action, and instead she defends herself.

When this happens, Maria has walked up to Nora, taken the rope from her and handed it out to be taken by Yasmin. When Yasmin protests, Maria, who during the initial parts of Yasmin’s turn is facing her, changes her body position and instead faces Nora, as Yasmin comes to completion of her turn. Maria insists on her earlier claim of Nora’s incompetence and objects men hon kan inte göra re här. ‘but she can’t do this’. As she produces the emphasized hon ‘she’, addressing Nora in third person, she makes a “throwing” movement with her arm towards Nora. As she does this she quickly looks at Nora, but it is else remarkable how Yasmin and Maria are clearly oriented toward each other, with Nora standing as a passive onlooker to what the others are doing. In other words it is not

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3 Notice the difference between these repetitions and the ones occurring in the flight lessons (Excerpts 2 and 5, Chapter 7) that were rather three repeated lexical TCU:s working to highlight an aspect of the student’s performance and the importance of in one case upholding the current action (Excerpt 2) and in another case reinforcing the urgency in doing a specific action (Excerpt 5).
only the references to Nora in third person, but also how Yasmin and Maria are positioning their bodies toward each other, that excludes Nora.

What could also be noticed is that Maria is orienting towards a continuation of the activity. Through the repeated lexical item and the (somewhat surprising) proposal that Nora should jump, she is presenting a practical solution to the problems that they are facing. Perhaps of minor importance at this time, it is nevertheless part of the rules of the game that you should take turns jumping and turning, rules that have constantly been broken. Yasmin proposes a different solution. Instead of backing up Maria in her proposition that Nora could jump, she further reinforces the critique of Nora through threatening her. When starting up her utterance in line 12 men: (.) ‘but: (.)’, she is initially looking at Maria. Then, as she continues du får bara (.) ‘you can only (.)’ she changes her body position, turning towards Nora. Simultaneously Maria turns toward Nora and in overlap with Yasmin throws the end of the rope at Nora’s feet as she says (Nora) här ‘(Nora) here’. Yasmin walks up close to Nora, shaking her finger in Nora’s face in a disciplining movement stating that Nora now has one more chance to participate in the activity and to show that she can turn the rope – or she’s out.

The demonstrations are an important part of how the situation develops where the issue of how the actions were performed and how they should be performed display stances taken toward the person whose actions are reported. And as we will see in the next example, it is very much a question of whose interpretation is the right one – not right in an absolute sense, but whose interpretation that gets built upon and corroborated by someone else.

The first point to be made is how crucial it is, in order to understand what the girls are doing, to take into account not only verbal language but also their embodied actions in a material environment. In the examples analyzed here, the girls are for example constantly using deictics to refer to different embodied actions; actions that would be opaque were we not to consider how they are being done.

Clark and Gerrig (1990) argue that people have different ways of referring to actions: by indications, descriptions, and demonstrations. Indications are done through pointing or else indicating the phenomena of interest. Descriptions consist in verbal descriptions of the actions, whereas demonstrations are (re)enactments, thus making available to the recipient what the action looked like. In the activity analyzed here, the turning of the rope is described through talking about the way it is done. In talk, the participants rely on deictics that are directly referring to – indicating – the simultaneous embodied actions that are demonstrating the turning of the rope. The reported actions gain their power through these different layers of talked and embodied action, where none of them are neutral ways of reporting what someone else has done.

Several layers can moreover be discerned in the demonstrations. The reported actions claim to be reporting what the other person has done. In so doing they are relating to an ideal way of turning or jumping. They are sometimes depicting the worst possible way of performing the action, picking out one aspect of how it had been performed, and sometimes the ideal in itself. How much of the origi-
nal action that is in fact reported, varies. In other words, the demonstrations are oriented toward both the other person’s action and simultaneously they display an ideal. Thus, the demonstration is not necessarily tied to the actual performance of a jump or a turn, but it also displays knowledge of an ideal way of performing the action. As we have seen, the girls are through the nonverbal actions able to clearly demonstrate to each other what the right way of doing this might look like. In this way they can contrast the wrong way to the right. However, this display of wrong and right is not neutral. When reporting one another’s speech or actions the girls are not just reporting, but the voice of the reporter can also clearly be heard (cf. Goffman, 1981; Goodwin & M. Goodwin, 2004). The reporting demonstration is strongly taking up a stance either aligning or misaligning with the action. The girls exploit the possibility of reinforcing the contrast between what is right and what is wrong through exaggerating both ways. And in this sequence, the demonstrations are intricate tools in the exclusion of one girl from the others and from the activity. The “agreed-upon” wrong always coincides with something that Nora has been reported doing.

In this example of reported action then, whether the report is indeed a correct report or not, is an issue. However, as the original action is no longer accessible to the participants they have no way of controlling the report, or corroborating their interpretations. The “truthfulness” of the versions is disputed but cannot be settled by any other means than the participants agreeing upon which one is the correct one. And the correctness, turns out to have very little to do with the original action per se, but instead with the alliances formed between the girls.

**Attempting a change of focus of attention**

When the rope gets stuck on Yasmin she immediately turns toward Nora to criticize her way of holding the rope too high. But this time Nora counters and challenges Yasmin.

**Excerpt (9):** It’s you that are jumping like this

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BS-020415-3.jumprope2; 00.33-00.44
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1 Yasmin me kh- du håler så himla lå-but kh- you’re holding so awfully hi-
2 Nora de e du som hoppar så här. this.
3 Yasmin n:e:j. n o:. it’s you that are jumping like this.
4 Maria ((starts jumping))
Maria demonstrerar hur hon påminner om hur Yasmin påminner om hur hon hoppade hon uppskattade hon och paradunder hon. Byggar på hur Maria haft hon hoppade hon påminner om hur Yasmin påminner om hur hon hoppade hon. mening.

In overlap with Yasmin, projecting that the same critique as before is about to come, she accuses Yasmin of jumping the wrong way: de e du som hoppas så här. ‘It's you that are jumping like this.’ Upon producing the last deictic ‘this’, Nora demonstrates how Yasmin has jumped with her feet wide apart. By countering the accusation, Nora succeeds in shifting the focus of attention from herself, to Yasmin. First of all Yasmin abandons her utterance before completion: me kh du håller så himla lå- ‘bu kh you're holding so awfully hi-’. Second, her hand that she has been holding high up in the air demonstrating how Nora holds the rope, drops down and she puts it back into her pocket. Third, as Yasmin has protested to Nora’s reporting of her action by rejecting it with a nej. ‘no.’, Maria initiates a demonstration of how Yasmin according to her jumped with her feet together, jumping lightly up and down.

Nora counters Yasmin’s protesting nej. ‘no.’ by saying jo: ‘yes.’, argumentative moves prefaced by polarity markers, described by M. Goodwin (2001) as being among the most aggravated types of dispute turn initiators. Up until now Yasmin has been facing Nora all the time, and she has not seen what Maria is doing. Maria now says så. hoppade hon. ‘like this. she jumped like this’ (line 6), as she continues jumping and Yasmin turns her face towards her and can see what she is doing. Just as when she demonstrated how she herself turns the rope displaying an ideal way of performing the action, she is here demonstrating how to
ideally jump. This ideal is in stark contrast to the jump Nora reported, where she
heavily jumped into a position where her feet were wide apart with bent knees.

As in the first example, Yasmin now ties to Maria’s actions, and she imitates
her way of lightly jumping with her feet together, verbally confirming a så här.
‘yeah like this.’ In contrast to the first example the matter is here settled. In this
second example, Nora instead of denying the correctness of the accusations has
tried another strategy – she counters with a report of the incorrectness of Yasmin’s
way of jumping. She does succeed in shifting the focus from herself to in this case
Yasmin, and she forces Maria and Yasmin into a defensive rather than offensive
position. However, against the two girls who are collaboratively working to estab-
lish what version of the reported actions that is the correct one, Nora is powerless.
Maria starts counting in a loud voice, Yasmin prepares to jump, and the activity
is once more taken up.

Topicalizing the violation of rules
During the time that has passed since the last topicalization, Yasmin first jumped
eight jumps, and then Maria. Yasmin states that they both jumped equally many
jumps, as she gives the rope to Maria and prepares to jump. In all, this positions
Nora as an outsider to the activity.

Excerpt (10): Can I never jump
BS-020415-3.jumprope2; 01.30-01.59

((Yasmin jumps one jump and the rope stops))

1  Yasmin  meh. (.) nemeh. (.)
     buh. (.) nobuh. (.)
     du håller så här. you ‘re holding ‘yeah like this.’

2  Nora     vadå ra.=får ja al.dri hoppa::.
            what then.=can I neveral jump.

3  Maria                        så
            like

4  ((throws her right arm around in big circles))

5  Yasmin     vadå ra:. (.) de e ju Mart inaq.
            what then:. (.) it’s [PRT] Mart inaq

6  Maria                     (  ) tappa
            (  ) drops
Yasmin quickly gets stuck in the rope, and she blurts out *meh (.) nemeh ‘buh (. ) nobu*'. As she is saying this, she moves her body in a jerky way, throwing her arm up above her head and kicking her leg. She moves closer to Nora and says *du håller så här. ‘you’re holding like this.’* an utterance that has an accusing tone, and which co-occurs with a demonstration. Yasmin moves her hand and arm in circles, holding an imagined rope high up in the air. Rather than responding to this repeated critique, Nora brings up the fact that she has up until now not been permitted to jump. This is the first time that the violation of rules is brought up, and that Nora explicitly addresses that it ought to be her turn to jump. The way that the turn is produced is “anguished.” Yasmin responds to the issue of whose turn it is to jump, and questioning the relevance of Nora’s question through an initial (recycled from Nora’s turn) *vadå ra:. ‘what then:‘*, she then proposes that it is Martina’s turn, a girl who is not participating in the activity but playing in the vicinity (outside the camera view). That it be Martina’s turn, is stated as a known fact, through the use of the epistemic particle *ju* indicating that this knowledge is shared by those present (Aijmer, 1996).
Upon completion of Yasmin’s turn in line 1, Maria initiates an exaggerated demonstration of how Nora turns the rope. She builds on Yasmin’s turn with the indexical så här ‘like this.’ She thrusts her arm in big circles, engaging her whole body in the demonstration. Yasmin is face-to-face with Nora, and Nora and Yasmin are engaged in talk about whose turn it is to jump. Maria is thus not paying attention to what it is that they are talking about. Maria eventually drops the rope, but she continues moving her arm in circles for a little while and then steps toward the place where the dropped rope end is. This brings her closer to Yasmin and Nora. Maria picks up the rope end as she initially says that Nora drops the jump rope (lines 6-7). Having walked to the same place where she stood before, she starts demonstrating again, in the same way, how Nora turns the rope. She then explains this way of turning the rope is the reason why Nora drops it (lines 7-8).

The rope is pulled out of Nora’s hand, and it falls down on Maria’s shoulder. Nora is standing still, not responding to what the others are doing and saying. Yasmin turns toward Maria, looking at her. After a silence she orients to a continuation of the activity kej men nu får ru sno ‘ka:y but now you have to turn.’. In overlap, Maria throws the rope end at Nora, saying (probably, as it is difficult to hear) Nora ta ren. Nora take it. This is a most aggravated form of directives: a bald imperative (cf. M. Goodwin, 2001). In concert with each other, Nora and Maria lean forward picking up one end each of the rope. As they are taking steps backwards, stretching the rope, Yasmin again accuses Nora of holding the rope too high when turning. This time she frames it with the characterization of it as being “a problem” in line 15. The production of the lexical unit problem. ‘problem.’ is further done in an emphasized manner. During the production of the turn in its entirety, Yasmin once more demonstrates how the rope is being turned high up in the air. It is done in a rhythmic way, and toward the end of the turn, co-occurring with /upp/ ‘up,’ she pulls her hand up in a distinct way (cf. beat gestures as described by McNeill, 1992). Nora still does not respond and they start turning the rope.

Leaving the activity
When the rope stops, Yasmin has jumped ten jumps. Upon getting stuck in the rope, she looks at Nora starting up a protesting a me ‘yeah bu’ which is then restarted, as she simultaneously turns around looking at Maria, and instead of accusing Nora of not being able to turn says that Maria has done nothing wrong: (nä) hon gjorde inge fel, ‘(no) she did nothing wrong.’. Nora does reply, although inaudible on the video. Yasmin protests to what Nora has said.
Excerpt (11): I don't want to any more

BS-020415-3.jumprope2; 02.42-03.05

1 ((Yasmin jumps ten jumps, then the rope stops))

2 Yasmin a (.) (nå) hon gjorde inge fel,
yeah bu (.) (no) she did nothing wrong,
(({looks at Nora)}

3 Nora ( )

4 Yasmin nå:å?
no:to?

5 Nora ( )

6 Maria JA=JA=JA NU Å RE DIN TUR.
YEAH=YEAH=YEAH NOW IT'S YOUR TURN.
(({walks upp to Yasmin, gives her the rope and pushes
her toward the place where Maria has been standing}))

7 Maria EN .hh TVÅ .hh Å .hh TRE.
ONE .hh TWO .hh AND .hh THREE.

8 en ((the rope stops))

9 Maria men Nora: a:a:.
but Nora: a:a:.

10 Nora (men ja vill inte-) ja vill inte längre.
(but I don't want to-) I don't want to any more.

11 Yasmin Åkej men Maria. MARTINA VILL DU GÖRA?
okay but Maria. MARTINA DO YOU WANT TO DO?
Maria orients to a continuation of the activity in a similar way as she has done before, through a repetition of the lexical item ja ‘yeah’ (line 6) and then saying that it is Yasmin’s turn as she gives the rope to Yasmin and then pushes her toward the turning position. She then starts counting, they turn the rope and Maria gets stuck in the rope. Maria now says men Nora:aa: ‘but Nora:aa:’ as she turns her arm in big circles – the same kind of movement, although somewhat bigger this time, that she has earlier used to demonstrate how Nora turns the rope (see Excerpts 7 and 10). The previous time that she gestured Nora’s turning of the rope, it was followed by an account. This time, the gesture alone is sufficient.

Nora responds to this, initially in overlap with Maria, saying that she does not want to participate in the activity any more. She throws the rope to the ground and walks away. Yasmin immediately, in a lighter voice, calls out Martina’s name, inviting her to participate in the activity instead.

Through not being allowed to participate fully (for example as she is not permitted to jump) Nora is pushed out of the activity. She throws the rope to the ground and walks away. Yasmin immediately, in a lighter voice, calls out Martina’s name, inviting her to participate in the activity instead.

Resisting change

Based on analyses of the jump rope activity, I have shown how the participants are taking a resistant stance toward the trajectorial development of the activity. In the first case, when the issue was where to stand when jumping in, it was the instructed participant who was resisting change. In that case, Maria – who was the one being instructed – was initially oriented toward accepting instructions but in the end she instead resisted it. This resistance was oriented toward who was formulating the instructions, where Maria seemed to accept Yasmin’s authority and was addressing questions to her but did not accept that Nora would instruct her. There was also a fragile and brief alliance between Nora and Yasmin about what Maria was doing wrong and what she should do instead, and this two-against-one situation clearly was unacceptable to Maria who through body positioning and gaze directions explicitly resisted instruction (Excerpts 4-5).

In the beginning, Maria could be said to be oriented toward, and taking part in, the constitution of a trajectory of change as outlined in this dissertation. Toward the end of the analyzed sequences she however on the contrary explicitly resists change in talk – (nehe:) men ja står här. ‘(noho:) but I’m standing here.’ (line 34, Excerpt 5) – and through positioning her body in a way so as to explicitly not take into account what the others are doing. In such a way she dem-
onstrates that she is not cooperating in the activity in progress. Analytically, her non-cooperation shows that embodied participation frameworks are accomplishments, and that these frameworks for the organization of cognition and action must be actively constructed and sustained through the ongoing interactional work of participants (Goodwin, 2007a).

Something else that is of consequence to how the activity progressed was that the instructions were accompanied by misunderstandings and obscurity with regards to what jumping position they were talking about. The interaction is lined with misunderstandings from the very first beginning. In Excerpt 1, Maria asks whether she should stand in a specific place. Yasmin implicitly confirms that this is a good place as she builds on Maria’s utterance and says that she should then “go forward,” and in other words orients to what she should do next. It is not a very precise way of expressing what Maria should do, although it is at this time sufficient as Maria is successful in jumping. A while later an almost identical scene evolves with a recycling of several of the very same turns that were produced a while ago. Maria jumps in, but as she this time gets stuck in the rope, the participants engage in more elaborate discussions. Now the different jumping positions (where to stand when jumping in and where to jump when inside the bow) are topicalized for the first time. Yasmin and Nora explain what Maria did wrong (Excerpt 4). To this Maria responds by repeating her question about where to stand. Yasmin starts up something that is on its way to indicating a specific place where Maria should stand: du ska stå- ‘you should stå-’ in line 26, Excerpt 5, but she is interrupted by Nora who starts a rather elaborate description of what Maria has done and how this should be changed. As we have seen, Maria’s answer to this is to decide not to jump into the turning rope, but to start jumping from a position between the turners.

In all, the participants here display difficulties in establishing a shared understanding of where Maria should jump. The analyses demonstrate that it is crucial to Maria, Yasmin, and Nora that they succeed in making themselves understood. In instructional activities, whether inside an educational setting for teaching or learning as the aviation academy, or in a jump rope activity during recess on a schoolyard, understanding is a practical problem that needs to be resolved in interaction. It can be argued that the CA understanding of the notion of understanding is restricted to the participants’ reciprocated displays of their understandings of each other’s contributions, that it is only about partial understandings, and that it does not capture what people understand in a more complete sense (Linell, 1993). However, as the analysis shows, understanding in a more philosophical sense is not immediately relevant to how the activity progresses.

In the second case, there was already from the beginning an antagonism between the participants, with accusations immediately directed at Nora for her alleged incapability of turning the rope. Already the first time that the turning of the rope is topicalized (Excerpt 6), it is done in a way that highlights Nora as incompetent (lines 2 and 4) and someone who needs to be controlled (lines 6-7) and further as the one to blame when Maria (in this first case) is not successful.
in jumping. Explicit contrasts between how the present participants are turning the rope are set up (Excerpt 7), where there are good ways of turning the rope (Maria’s) and bad ways (Nora’s). That Nora does not turn the right way puts her in a position where she is explicitly threatened and given one more chance to improve her ways (lines 12, 14, 16 in Excerpt 8). Up until this time in the activity, Nora has protested and refused to accept what the others are saying. At this time she instead challenges Yasmin (Excerpt 9). When the rope has gotten stuck on Yasmin, Yasmin turns to Nora initiating yet another accusation of Nora’s faulty actions. However, as we have seen Nora this time answers by criticizing Yasmin instead (line 2), saying that Yasmin is jumping wrongly. From here on the conflict escalates and in the end there is no way out but for Nora to leave the activity.

The participant roles were more fixed and static in relation to the turning of the rope than when it was a question about jumping positions, with accusations and counters formulated all through the analyzed sequences. Maria and Yasmin in different ways attempt to force Nora to change her way of turning the rope, but she refuses to accept their interpretations of her actions and instead either simply denies the accusations or accuses Yasmin and Maria for being at fault. In the way that the activity progresses, questions of what is right and wrong are subordinate to who is right and who has the right to tell others what to do. However, it should be noticed here, that Nora is turning the rope in a way that makes the bow very difficult to jump in, and that requires the other turner to compensate for her actions.

M. Goodwin (1983) writes that jump rope is an example of an activity in which it is necessary that disagreement and conflict be resolved in order for the activity to proceed, that the activity requires some kind of settlement. In the jump rope activity analyzed here, one of the participants does attempt to make the activity progress without resolving the ongoing dispute. Maria’s actions, attempting to force the activity to proceed through, for example, suggesting that Nora jump (Excerpt 8) or by simply starting to count – E:N, TVÅ:, Å tre? ‘ONE, TWO:, AND, three?’ in Excerpt 9 – preparing herself to jump (Excerpts 3, 8, 9 & 10), can be seen as responsive to the fact that the participants do not arrive at any resolutions to the dispute but where each topicalization instead aggravates the conflict. Through the repetitions of JA=JA=JA ‘YEAH=YEAH=YEAH’ (Excerpts 8 & 11) for example, Maria attempts to put the activity on a different trajectory, stopping the accusations and counter-accusations to instead continue jumping and turning. In such a way, the dispute is put within parentheses in order to continue the activity. In the end the activity collapses, something that could be understood as corroborating the argument that without resolution of the conflict, the activity cannot proceed at any length.

Through the analyses it is clear how taking a resistant stance is not a matter of individually aligning or not to the activity, but how stance and alignment is accomplished in interaction between the participants.
Contested constructions of contents of learning

As was stated in the introduction to this chapter, interaction in a general sense always involves taking a stance toward the actions and activities. Participants align themselves to the activity in which they are involved in different ways. The participants' actions in the jump rope activity are quite overt examples of resistance. I will now discuss an example of what could be understood as misalignment or a resistance stance in the flight lessons.

A first observation is that the participants are strongly committed to upholding the progressivity of the activity. As Goodwin (2007a) remarks, participants involved in work related activities tend to engage in relevant embodied stances toward the joint accomplishment of activities. This is true for the pilot student and her teachers as well. They are overwhelmingly attending to shared foci of attention, without the question of a more or less cooperative stance being explicitly topicalized. This said in contrast to the example that Goodwin analyzed, and which was briefly recapitulated in the beginning of this chapter, in which the father walks out on the daughter when she is not aligning to the activity in appropriate ways.

In the first preflight briefing session, the student at two different instances in similar ways reacts to what the teacher has said through displaying misalignment. The resistant stance is visible through the use of the grammatical construction vadå + X. vadå is a particle that translated into English is not only ‘what’, but also questions and challenges the person to whom it is directed: ‘what do you mean’ or ‘what are you saying’ are possible translations. vadå + X has in previous research been called a reactive construction (Lindström & Londen, 2008; Linell, 2003, 2005). Preceded by vadå, the speaker repeats some element X from a previous utterance by another speaker, and what the previous speaker has said is thus challenged or confronted. Prosodical features are also important, in that the repeated item is often produced with a questioning or indignant intonation (Linell, 2003, p. 22-24, 2005, p. 262-263).

In the first instance, the participants have just completed the question-answer sequence about what to do when the nose position is low. The teacher says that it is important to remember that the speed will increase very quickly when they have a low nose position. The following is a reproduction of a part of Excerpt 13 in Chapter 6, focusing talk only.
Excerpt (12): What do you mean, come quickly
F3-060509-1.briefing; 01.55-02.03

Immediately upon hearing the teacher talk about speed, the student in line 4 says vadå komma fort. ‘what (do you mean) come quickly.’ The repeated komma fort ‘come quickly’ is produced with a flat and somewhat questioning tone of voice. In Chapter 6, I analyzed this sequence in terms of repair, and what it implied with reference to what the teacher inferred that the student understands and what she should know. What can be added here, is that in the co-construction of the content of learning recoveries from unusual attitudes with a low nose position, it has in what precedes this sequence been emphasized that it is important to level the wings as a first appropriate action. In Excerpt 11 (in Chapter 6) the student was saying that it was important to check the speed first (line 12), something that the teacher confirmed, but at the same time by-passed as a correct first action in order to instead establish the leveling of the wings as important (this is not how the generic rule is later formulated, but up until this time in the interaction this is the state of the matter). When talking about speed in lines 1-2 above, the teacher ties back to what the student has said about speed through the use of som sagt ‘as said,’ now underlining the importance of speed and that it will increase very quickly. The teacher further uses a rather imprecise way of expressing that the speed will increase: fartene(.) kommer å komma ‘the speed(.) will come’, which is also what the student picks up on and repeats. The student’s resistant stance could thus be understood as directed toward the somewhat unclear description of what to do in order to recover the airplane from the low nose position.

The second instance occurs just a few turns later. As was shown in Chapter 6, a generic rule for what to do when you have an unusual attitude with a low nose position was formulated. This was done in a way that parsed the recovery into different segments: reduce power, level the wings, and transition to climb (see Excerpt 14, Chapter 6). The following is a version of Excerpts 14 and 15 focusing talk only.
Excerpt (13): What do you mean, reduce all power
F3-060509-1.briefing; 02.07-02.24

1 Teacher så så fo- så fort du ser att du har ett lågt as as so- as soon as you see that you have a low
2 nosläge. (.) av me gasen på en gång å nose position. (.) reduce power at once and
3 uppskevning. (0.8) å så (0.6) övriga till stigning. level the wings. (0.8) and then (0.6) transition to climb.
4 (.) .hh när vi passerar horisonten-= (.) .hh when we pass the horizon=-
5 Student =vadå av me all gas. =what (do you mean) reduce all power.
6 Teacher mm. all gas. mm. all power.
7 Student °åkej.°=
°okay.°=
8 Teacher =de e bara å dra av °på en gång då°. (.) =it’s just to reduce power °at once then°. (.)
9 där- (0.5) de är: (.) de går egentli there- (0.5) it is: (.) it is really
10 inte å säga generellt sett allti not possible to say in a general way always
11 av me gasen eller allti på reduce power or always add [me all ] gas.
full
12 nej. [no.
13 Student

The turn in focus is the student’s utterance in line 5: vadå av me all gas. ‘what do you mean reduce all power.’ Preceding this turn is talk by the teacher, as was mentioned above, formulating a generic rule. The teacher has already begun talking about what to do when passing the horizon, when the student breaks in requesting clarification.

In this context the turn questions that all power should be reduced. This interpretation is further corroborated by the emphasis on all ‘all’ and the way that the turn is produced with a questioning tone of voice. The teacher initially responds with an acknowledging token in line 6, and then repeats all gas. ‘all power.’. After the student in her turn having confirmed this, the teacher further establishes what should be done with power, stating that not only should it be reduced but that it should be done at once. Up until this time in the briefing session, the formulation of a generic rule has constituted a central part of the activity, emphasizing how high speed and the necessity of reducing power are crucial. However, something different happens now, and the teacher gets involved in an explanation of exceptions to the generic rule. In this case, the student’s contesting question leads to a problematization of the maneuver.

It could here be noticed, that in the jump rope activity, that has been argued as an explicit example of how the participants are taking a resistant stance, there are similar uses of vadå. In Excerpt 6, Nora says vadå: ‘what.’ (line 3). No repetition of a previously produced item follows, but the turn carries many of the
connotations described for the vadå + X-construction. In the prior turn there is moreover not much to repeat, as it consists of a blaming men NO::ra.: ‘but NO::ra.:’. In Excerpt 10, both Nora and Yasmin say vadå ra. ‘what then’. First it is Nora who counters Yasmin’s description of her turning the rope wrongly, and then Yasmin challenges Nora’s accusation that she never gets to jump through format-tying her utterance to Nora’s turn (M. Goodwin, 1990, 2007).

vadå ra. får ja aldri hoppa, in line 2
vadå ra. de e ju Martina, in line 5

In these instances, vadå is produced with a strongly questioning, almost indignant tone of voice.

Resistant stance and resisting change

In this chapter, resistance oriented toward change has been demonstrated in different activities. What has been explored is not stance in general, but a resistant stance and misalignment toward co-constructed contents of learning as established and sustained in interaction. As has been argued earlier, participation structures and contents of learning, how and what, are intrinsically related. Consequently, the resistant stance toward change also simultaneously affects and is affected by the interactively constructed contents of learning.

The participants take a stance toward the activities that they are engaged in, and they can align or misalign to the unfolding activities. As has been shown in the analyses, participants can display a resistant stance in various ways. Through body orientation, for example, displaying that they are not taking into account what the others are doing, as Maria did when being instructed upon where to stand when jumping. Resistance can also be displayed through not accepting critique, as when the other girls were criticizing Nora’s way of turning the rope and she did not change her ways of turning, but rather blatantly refused to accept the correctness of the critique and instead criticized Yasmin for not jumping well. There are here similarities to the students in Vehviläinen’s (2009) study, who maintained their resistant positions toward the teacher’s criticism all through the encounters. Moreover, the analysis highlights the relevance of Lave’s (1993) argument presented in the introduction to this chapter, that through studying conflictual practices we are not so likely to focus on the truth or error of some knowledge claim. As I have demonstrated in the analyses of the jump rope activity in which how to turn the rope was topicalized, to the participants in the activity, whether the way that one or the other turned the rope or jumped was right or wrong, was in a sense not what was at stake. Instead, who had the right to judge the others’ actions and to decide how the activity should be set up and proceed was decisive, and where authority and displays of knowing were contested in overt ways.
The analysis of the flight lesson shows that this is something that occurs within more formal settings for learning as well, where there is in a sense no real question of who is the more and who is the less knowledgeable, but where students have ways of challenging what the teacher says, just as well as teachers have ways of displaying that the student does not have access to the expected content.

It has been argued that a core aspect of human sociality is the ability to work together toward shared goals, to engage in joint commitments. Committing to a shared project also means that it is not possible to withdraw at any time, but that there is a strong inclination to uphold the activity. Once you have committed to a joint activity, as the activity progresses this is followed by more commitments that accumulate or *stack up* (Clark, 2006). This explains why it is so hard for participants to withdraw from joint activities. This is very valid for the flight lessons, in which the propensity to uphold the activity is strong and the participants have slight if any possibility of walking out on the activity, neither literally nor figuratively speaking. However, what they can do, and as has been shown in the analyses that they do do, is to take up a resistant stance toward the activity in progress, for example through challenging descriptions of contents of learning, something that has been demonstrated to moreover alter these same descriptions. This is visible in how the teacher retracts from the formulation of a generic rule and underlines how contents of learning are interactively accomplished.

The notion of stacked commitments is moreover relevant for the interpretation of what goes on in the jump rope activity, where Nora for a long time accepts not being allowed to jump – one of the core features of jump rope.

The framework for the analysis of continuity and change in embodied interaction developed in this dissertation, provides us with ways of problematizing – from a participants’ perspective – change, and what counts as for learning relevant change. At the same time, the analyses also shed light on the complexity of learning processes. As has been argued, the student pilot improves her way of talking about and performing the recoveries from unusual attitudes with low nose positions and has been described as learning how to do the recoveries. In this respect, the argument developed above further corroborates other research demonstrating that learning is not straight-forward (*e.g.* see Cekaite, 2007; Martin, 2009); and that expectations about what others should know or understand are the subject of constant negotiations.
CHAPTER IX

Learning as embodied interaction in change

In this dissertation, I have demonstrated how trajectories of learning are oriented to, established, and sustained in embodied interaction. Through the exploration of the interactive construction of contents of learning, and the ways in which participants make relevant prior experiences and project future actions in situated activities, a framework for the analysis of trajectories of learning has been developed. The notion of trajectory thus encompasses both learning as changing understanding in activity, and participants’ orientations to the past and the future in the present. The result is a reconceptualization of the notion of learning from an interactionist perspective.

Within such a perspective, we do not have to determine changes that are internal to the individual, but can map out learning processes as they occur in interaction (cf. Goodwin, 2000a; Hutchins, 1995a, 2006). Learning has thus been demonstrated as concrete and practical processes, that have been pinned down to interactional details. In this way, learning is conceptualized in a here-and-now, as it occurs. The design of the study and the way that the analyses have been presented are crucial in this respect. Through documenting and analyzing each topicalization of a content of learning, little room is left open for arguing that “real” learning has occurred somewhere in between or beyond the analyzed instances.

Goodwin (2000a) claims that a proper understanding of cognition and action requires the inclusion of the multiple resources – talk, embodied action, and orientations to a material environment – that participants use to build concerted action, into the analyses. This has been shown to be true for learning processes too: analyses of learning cannot be abstracted from the embodied and situated activities in which it occurs. Through the integrating analyses, it has been possible to arrive at a more complex understanding of learning. This dissertation contributes to the development of analytical frameworks for arguing continuity and change in embodied interaction. Learning has hence been shown to develop in “increments,” consisting in small steps and gradual changes, rather than being an outcome. It is not a question of “suddenly” having learned, but about gradually developing changing understanding in activity. This evolving shared understanding, is moreover distributed over the participants acting in a material environment.

The analyses and the developed argument demonstrate the importance and value of using naturally occurring interaction as the basis for explorations of learning. Moreover, the study underlines the fruitfulness of using naturally oc-
curring interaction as a basis not only for empirical analyses, but also as a ground for theorizing.

Viewing learning and cognition as situated and social has a number of consequences. In this concluding section of the dissertation, I will return to three main areas. First, the intertwinedness of content and participation. Second, how trajectories of learning are accomplished in interaction and how they are oriented to by the participants. Third and last, I will address learning as situated cognition in change, as conceptualized from an interactionist perspective.

The intertwinedness of content and participation

Through highlighting how contents of learning are established and sustained in interaction, the close relationship between content and the organization of participation has been demonstrated. The detailed analyses of the reading activity, the activity of recovering from unusual attitudes with low nose positions, and the jump rope activity, reveal how the content of learning is established as part and parcel of the sequential organization of interaction – both in an immediate sequential environment and as extending over larger amounts of time.

Through the developed analytical framework, it is possible to be more precise in what the participants are learning, as closely intertwined with how they are learning. The result is a way of analytically dealing with the intertwinedness of how and what, content and participation, both within instructional interaction and in peer activities. This adds to previous conversation analytic research on learning in interaction, where the main focus has been on changes in interaction patterns and participation structures (Cekaite, 2007; Hellermann, 2008, 2009; Martin, 2004, 2009; Wootton, 1997; Young & Miller, 2004).

The topicalizations of contents of learning have been demonstrated as constituted in embodied interaction. The theoretical framework provides for an understanding of the importance of embodied actions, but the analyses do not only corroborate something that could be deduced from theory. Instead, they shed light on how embodied actions and orientations to a material environment are constitutive of contents of learning.

The embodied actions were thus used in the interactive construction of a similar or same content at different points in time and were a crucial part of the co-construction of shared contents of learning. For example, in the reading activity topicalizations or references to content were done in both talk and in embodied action. Gestures were also used to enact differences in size between the animals primarily through drawing upon the design of the book page. When co-constructing the recoveries from unusual attitudes in the flight lessons, embodied demonstrations and gestures constituted an intrinsic part of the evolving formulation of the content of learning. Through the use of gestures, positions of the airplane as well as required actions were demonstrated. Through gesture use, the participants build relations between different material settings, thus enacting
for them relevant parts of the activities in a here-and-now. These gestures could moreover be understood as learner articulations (cf. Koschmann & LeBaron, 2002), whereby the student through gesture reuse was articulating her understanding and knowledge of the maneuver. In the jump rope activity, the children made frequent use of embodied demonstrations in order to argue how something had been done and how it should be done, for example how the rope had been turned and how it should be turned instead.

Through anchoring the analysis of the constitution of contents in the participants’ orientations in interaction, we get access to their ways of understanding and dealing with contents of learning. For example, that recoveries from unusual attitudes became a salient content of learning was a result of the local and situated interaction between the student and her teacher. The unusual attitudes were just one maneuver in a larger set of maneuvers to be practiced, but it was the unusual attitudes that were made into a heightened focus of attention, that moreover turned out to extend over several flight lessons, and with different teachers. In a similar way, the shared understanding of the size of blue whales was developed in relation to what the children there and then were orienting to, just as the topicalizations of where to jump and how to turn were constituted in interaction between the participants in close connection to the evolving activity.

This does not mean that participants’ contents cannot coincide with, for example, normative contents tied to curricula and other documents. Instead, it makes us analytically sensitive to how participants are dealing with issues that are closely related to what they perceive of as important aspects of the activity. These issues are not relevant for theoretical reasons only. Lerner (1995) remarks that by describing in detail what some aspects of instructional activity consist of as actual courses of action, these courses of action are made visible for instructional consideration. In a similar way, the interactionally established understandings of contents of learning, are made visible for reflection.

Approaching content as an empirical question and as a participants’ concern, rather than as a matter of exploring how participants are dealing with a pre-defined content of learning, has moreover opened up for the possibility of analyzing learning in activities that occur outside settings designed for teaching and learning, and activities in which the participants are not engaged in instructional activities. The analysis of the evolving understanding of the size of blue whales as constituted in interaction between the children in the reading activity, exemplifies this. In this situation, the learning does not occur as a consequence of a planned instruction. Nonetheless, the analysis shows that also in such a setting, systematic changes in understanding in activity occur.

Returning to the same content in changing ways requires interactional work, whether it is done within an activity or over several occasions of activities. The reading activity and the jump rope activity are examples of situations in which several topicalizations of the same content within an activity have been identified. In these situations, the participants need to make relevant that they are orienting to something more of the same – even if the activity on an overarching level could
be understood as being the same. In the flight lessons, this could be expected to be slightly different, primarily due to the fact that the interaction in the lessons is task-related, and practicing unusual attitudes was part of routine activities (cf. Drew and Heritage, 1992). However, also in this context, the participants were shown to explicitly orient to the establishment of their current activities as the same as something that had been done before, and as part of something with a projectable continuation.

The intimate relation between content and participation, how and what, can moreover be seen through how the way that the activities develop over time in interaction, is consequential for the construction of contents of learning. For example, the way that the student challenged the content as formulated by the teacher in the first preflight briefing session, led to a different formulation of the content. Another example, is the way that a shared understanding of what the low nose positions were was arrived at during the last part of the first preflight briefing session. It was stated that they were different strange nose positions. In a sense, the understanding was trivial, but it was closely linked to the way that the student had formulated her original question. In other words, interactional structures influence the constitution of content.

The analysis shows that contents of learning have to be established not only the first time that they are being talked about, but every time that the content is topicalized. This is the case whether analyzing evolving contents of learning within an activity or over several occasions. For example, each time that the size of the blue whale is mentioned, it is done in ways that build upon how the topic has been talked about earlier. The same content is oriented to in related but changing ways. In the flight lessons, where the analysis extends over considerably longer amounts of time, this is also the case. Just focusing the first time that the maneuver was mentioned, arguing that they had there and then come to a conclusion about what the content of learning would be, had not been a satisfying interpretation. Instead, the way that the participants return to the content, and in so doing are making relevant previous experiences, is best understood as continued negotiations over contents of learning, thus constituting trajectories of learning.

Trajectories of learning: Participants’ orientations to continuity and change

The evolving understanding of shared contents of learning, provides ground for arguing trajectories of learning. In this dissertation, orientations to continuity and change, constitutive of trajectories of learning, have been explored through tying these notions to a members’ perspective, that is, through anchoring the analyses in the participants’ orientations. Trajectories of learning within activities and extending over several occasions and different material settings are oriented to by the participants, as they are making relevant the past and the future in the
present. In such a way, the notion of the situatedness of a situation has been expanded.

Trajectories of learning have been shown to be actively oriented to by the participants. Through analyzing topicalizations of contents, it has been possible to establish contents as being both the same and in change. Trajectories of learning have thus been traced within activities, and extending over several occasions and settings. How participants build relations between different activities that are separated in time, and how they make relevant relations between different material contexts, has been explored. This helps illuminate how participants make relevant previous experience and project future actions. The activity as a unit of analysis extends the focus on moves beyond the adjacency pair and the immediate sequential context characteristic of much CA research. This extension is done through analyzing participants’ orientations to contents of learning.

The notion of contextual configurations (Goodwin, 2000a) was introduced for the exploration of action in a dynamically changing semiotic environment. In Goodwin’s work, this notion has been used to analyze the temporally unfolding orientations to aspects of the environment, as well as to talk and embodied action within single activities. In this dissertation, I have expanded on this, demonstrating how the same concept can be used in order to capture change in (micro-) longitudinal data. Just as people orient to changing aspects of the interactional and material environment within a sequence of interaction, they can be understood as doing so over several activities that are separated in time and material environment.

What has been added to the analytical framework argued by Goodwin (2000a), is an attention to how participants make relevant in interaction that the activities are related and how they change. For example, Goodwin (2000a) argues that some semiotic structures in the material environment have a duration in time and can be used again and again. In other words, a material environment is making it possible for the participants to return to it again and again. This could be understood as providing a basis for continuity, for orienting to the “same” thing, or “same” content at different moments in time. However, in returning to something as being the same, the participants studied in this dissertation have been found to be doing so in changing ways.

The analytical framework that I have developed is specifically designed to deal with participants’ orientations to change and continuity. The analyses demonstrate the possibility of studying change within a perspective emphasizing the integratedness of interaction, without all change becoming learning. The work conducted in this dissertation, makes it possible to argue different kinds of change: not every way in which interaction changes, is relevant for learning. In the analyses, the participants have been found to be explicitly orienting toward something as having changed, or as being in change.

The notion of change is conceptualized in slightly different ways in the three analyzed activities. In the reading activity, change is very closely linked to “sameness,” in how an evolving shared understanding of the size of blue whales is co-
constructed. In that activity, there are no orientations or expectations from the participants that someone or something should change. This is different in the flight lessons as well as in the jump rope activity. In both of these activities, individual participants are expected to change their participation in the activity. The pilot student is explicitly held accountable for changing, something that is oriented to by both participants, and where the design of the activity could be argued as based on the premise that she should change.

The framework for the analysis of continuity and change, anchored in the participants’ orientations, moreover renders possible the problematization of the notion of change from an interactionist perspective. In the jump rope activity, the fact that one of the participants is held accountable for changing is on the contrary treated as problematic, where the one(s) who is (are) expected to change actively resist changing. As has been shown, participants have ways of displaying misalignments and resistant stance toward change. Hence, it is also possible to see ways of resisting learning.

It is clear from the analyses, that the relations between formal and informal learning (learning in formal and informal settings) are that of a continuum rather than distinction (cf. Drew & Heritage, 1992; Goodwin, 2000a). Through analyzing data from diverse settings, we can see how instructional activities are constituted both within and outside of institutional settings for teaching and learning. As Goodwin (2000a) writes, there is a continuity between vernacular and institutional interaction because of the flexibility provided by the way in which different kinds of semiotic fields can be juxtaposed to each other. The particulars that give institutional settings their distinctive character are built through the use of more pervasive resources that have underlying formal similarities. This is not an absolute distinction as the same kinds of interactional resources and ways of interacting are used in all settings.

An important point to be made in relation to the analyses in this dissertation, is that learning is not tied to teaching. Through the analytical framework developed here, we have ways of conceptualizing learning outside teaching or instructional activities. For example, when learning is understood as changing understanding in activity, then the children involved in the reading activity, are learning about the size of blue whales. The developed framework for analysis thus facilitates the understanding of learning in non-instructional activities.

A trajectorial orientation seems to be characteristic of instructional activities, something that is especially strong in activities designed for learning. The data indicate that it is significant for instructional activities that there is this kind of trajectory orientation, where the trajectorial orientation seems to be intrinsic to instruction and part of what constitutes instruction.
Learning as situated cognition in change

In this dissertation, learning has been conceptualized as changing understanding in situated activities. A procedural understanding of cognition and learning has been argued. As Goodwin (2000a) writes, the analysis of action as something that is accomplished, through the temporally unfolding juxtaposition of multiple semiotic fields with diverse structure and properties, has a range of consequences. The analytic boundaries between language, cognitive processes, and structure in the material world dissolve. Further, cognition is understood as distributed over the participants and their material environment (Hutchins, 1995a, 2006).

Drawing on this theoretical framework, and focusing multiparty interaction in situated activities, an understanding of learning as it evolves in interaction has been developed. Thus it has become evident, that the co-construction of contents of learning, and the active work of establishing and sustaining shared understanding, is crucial to processes of learning. The way that the participants in the different activities work to establish shared understanding of a content of learning, can be understood as situated cognition in change. Through focusing how participants create shared understandings of contents of learning, and how these shared understandings evolve over time, it is possible to argue learning in an interactionist perspective in a way that goes beyond changes in interaction patterns.

Through the framework provided by Goodwin (2000a) and Hutchins (2006), with the addition of including change, it is possible to see how learning processes are not only a matter of changes in individual mental structures. Instead, all participants in the activity are actively involved, be it in interaction between peers or between teachers and students. The analysis is closely tied to the unfolding interaction and how the participants deal with issues of learning, how they are handling processes of learning, and establishing and sustaining trajectories of learning. Through highlighting the interactional work required to learn, highlighting co-constructions, the fruitfulness of analyzing the situated activities, rather than the individual participants, has been demonstrated. Through focusing the activity and participants in interaction with each other rather than the participating individuals in isolation, it has been possible to shed light on how deeply embedded that processes of learning are in interaction.

The analyses of how the pilot student develops situation awareness in this educational setting, was a useful way of showing how something that is traditionally conceptualized as a cognitive competence, can also be fruitfully understood as intrinsically interrelated with interaction. It is highlighted how this cognitive competence or skill is not a matter of two minds coming together (e.g. Endsley, 1995; Prince, Ellis, Brannick & Salas, 2007) – one learning and the other already knowing – but that something specific happens in the procedural development of SA, that furthers our understanding not only of how participants develop a cognitive competence such as SA, but moreover demonstrates how it is established and sustained in interaction. Thus, the results are relevant for an understanding of work in the airline cockpit more broadly. It is necessary for the pilots to establish and sustain shared SA. Regardless of their respective roles and responsibilities
in a formal sense, this needs to be done — and is done by the participants — in the situated moment-to-moment interaction. In this respect, my work also contributes to Nevile’s (2004) argument about SA as interactionally accomplished, shared understanding between the pilots.

However, learning as situated cognition in change is not restricted to concepts for cognitive skills or specific practices. Instead, in line with the respecification of cognition in terms of changing understanding as it evolves in interaction between participants, the analyses of learning carried out in this dissertation could be argued as situated cognition in change more broadly. For example, in the reading activity, the established trajectory of learning “size of blue whales,” the children are orienting to the size of the blue whale in more abstract ways toward the end of the activity than in the beginning. Through reasoning about the size of blue whales, discussing it and contrasting it to other animals, and material objects both inside and outside of the book, the children are developing changing shared understandings in situated activity.

To end, this dissertation shows the fruitfulness of conversation analytic work for the understanding of learning processes. The dissertation contributes to the understanding of the many resources that people draw upon in interaction, in order to establish and sustain the activities in which they are engaged. The results of the analyses underline the importance of including embodied action into our understanding of learning processes. Embodied actions have been shown to be intrinsic and constitutive parts of the interactive constructions of contents of learning, and not as simple add-ons to talk. In line with a participationist understanding of learning, learning has been shown to be an active accomplishment, in contrast to the notion of a (more or less passive) reception of knowledge.

Moreover this work contributes to CA research, by the way of analyzing and documenting trajectories of activities that develop and extend beyond an immediate sequential context. The dissertation underscores the highlighting of learning as co-construction and the importance of anchoring the analyses in the participants’ orientations. This deepens our understanding not only of how people learn, but also of how they make relevant knowledge and previous experiences in different activities and situations. The understanding of learning and change as action, which can be initiated, aligned with, and resisted, seem to open up for future developments within CA, where we might be able to describe more precisely how human learning is constituted. The framework developed in this dissertation could possibly be of help in such an understanding.
References


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APPENDIX

Transcription convention

The transcription convention has been adapted from Ochs, Schegloff and Thompson (1996), with some minor changes.

1 Temporal and sequential relationships

A. Overlapping or simultaneous talk is indicated with brackets. A left bracket indicates a point of overlap onset, whether at the start of an utterance or later. A right bracket indicates a point at which two overlapping utterances both end or where one ends while the other continues. Brackets are also used to indicate onset and ending of embodied actions in relation to surrounding talk.

B. Equal signs ordinarily come in pairs – one at the end of a line and another at the start of the next line or one shortly thereafter. They are used to indicate two things:

1) If the two lines connected by the equal signs are by the same speaker, then there was a single, continuous utterance with no break or pause, which was broken up in order to accommodate the placement of overlapping talk.

2) If the lines connected by two equal signs are by different speakers, then the second followed the first with no discernable silence between, or was “latched” to it. Equal signs within turns and between words indicate that the words are “latched.”

C. Numbers in parentheses indicate silence, represented in tenths of a second; what is given here in the left margin indicates 4/10 seconds of silence. Silences may be marked either within an utterance or between utterances.

D. A dot in parentheses indicates a “micropause,” hearable but not readily measurable; ordinarily less than 2/10 of a second.
2 Aspects of delivery, including aspects of intonation

A. The punctuation marks are not used grammatically, but to indicate intonation. The period indicates a falling, or final, intonation contour, not necessarily the end of a sentence. Similarly, a question mark indicates rising intonation, not necessarily a question, and a comma indicates “continuing” intonation, not necessarily a clause boundary. The inverted question mark indicates a rise stronger than a comma but weaker than a question mark.

B. Colons are used to indicate the prolongation or stretching of the sound just preceding them. The more colons, the longer the stretching. On the other hand, graphically stretching a word on the page by inserting blank spaces between the letters does not indicate how it was pronounced; it is used to allow alignment with overlapping talk.

C. A hyphen after a word or part of a word indicates a cut-off or self-interruption.

D. Underlining is used to indicate some form of stress or emphasis, either by increased loudness or higher pitch. The more underlining, the greater the emphasis. Especially loud talk may be indicated by upper case; again, the louder, the more letters in upper case.

E. The degree sign indicates that the talk following it was markedly quiet or soft. When there are two degree signs, the talk between them is markedly softer than the talk around it.

F. The up and down arrow mark sharper rises or falls in pitch, or may mark a whole shift, or resetting, of the pitch register at which the talk is being produced.

G. The combination of “more than” and “less than” symbols indicates that the talk between them is compressed or rushed. Used in the reverse order, they can indicate that a stretch of talk is markedly slower or drawn out. The “less than” symbol by itself indicates that the immediately following talk is “jump-started,” that is, sounds like it starts with a rush.
H. Hearable aspiration is shown where it occurs in the talk by the letter “h” – the more h’s, the more aspiration. The aspiration may represent breathing, laughter, etc. If it occurs inside the boundaries of a word, it may be enclosed in parentheses in order to set it apart from the sounds of the word. If the aspiration is an inhalation, it is shown with a dot before it.

I. A word within the symbols for pound, indicates that the word is produced with a “smiley” voice.

3 Other markings

{(   )} A. Double parentheses are used to mark transcriber’s descriptions of events, rather than representations of them.

(word) B. When all or part of an utterance is in parentheses, this indicates uncertainty on the transcriber’s part, but represents a likely possibility.

(   ) Empty parentheses indicate that something is being said, but no hearing can be achieved.

(try 1/ try 2) C. Alternative hearings of the same strip of talk are separated by a slash. When occurring in the line with an English translation, a slash indicates two possible versions of translating the Swedish word.
10. Agnes Nobel 1979: Boken i skolan. En analys med särskild inriktning på bibliotekets funktion i grundskolan.
35. Per Hanson 1990: Styrning och kultur. En studie om förändringsbetingelser i kyrklig församlingsverksamhet.
44. Abelardo Castro Hidalgo 1992: Det traditionella och det ”andra” universitetet. En början till samspel?
54. Birgitta Almqvist 1994: Approaching the Culture of Toys in Swedish Child Care. A Literature Survey and a Toy Inventory.
74. Michael A. A. Wort 1998: Distance Education and the Training of Primary School Teachers in Tanzania.
90. Evelyn Säll 2000: Lärarrollens olika skepnader; estradör, regissör och illuminatör. En longitudinal studie av blivande lärares föreställningar.
120. Daniel Pettersson 2008: Internationell kunskapsbedömning som inslag i nationell styrning av skolan.
121. Max Scharnberg 2009: Textual Analysis of a Recovered Memory Trial Assisted by Computer Search for Keywords.