Learning discourse: Classroom learning in and through discourse

A case study of a Norwegian multiethnic classroom

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"… it is essentially in the discourse between teacher and pupils that education is done, or fails to be done"

Edwards & Mercer (1987, p. 101).

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Acknowledgements

Summary

A major challenge that Norway and many other European countries presently face is to attend to the linguistic and cultural diversity of current classroom populations as well as to improve the educational opportunities and achievements of ethnic minority children.

The aim of this doctoral thesis is to explore the mediational role of classroom discourse in the development of knowledge and understanding in the multiethnic classroom. Using a sociocultural and dialogic approach, it describes and examines both the way discourse is used and constructed in various classroom contexts and analyzes the role of language and discourse in the development of shared understanding. Special attention is paid to the impact of minority pupils' linguistic and cultural backgrounds on their opportunities for participation and joint meaning making in and through classroom discourse.

The classroom data were collected by means of an ethnographic case study of a multiethnic classroom in Norway. The research class is a third grade class with 24 pupils, 13 pupils are from an ethnic minority background. Besides Norwegian, nine other mother tongues are represented in the class. The class was observed throughout a school year. The observations differed in terms of the number of hours and the extent to which they were accompanied by some kind of recording. In all, about 80 lessons were audio recorded, of which 30 were video recorded as well. The study is based on qualitative analysis of authentic discourse excerpts, using transcribed audio and video recordings, field notes, interviews, teaching materials as well as school and policy documents.

A set of three research questions relating to discourse and learning in the multiethnic classroom has been addressed in the papers presented in the thesis. As to the first question concerning the specific nature of classroom discourse as educational practice, the focus has been on dimensions and qualities of discourse that promote pupils' participation and engagement. The analysis of the communicative interaction in the observed lessons shows how social-interactional, instructional and interpersonal dimensions of discourse jointly create the discourse framework affording opportunities for participation and learning. The findings suggest that certain discursive scaffolding strategies may increase the quantity as well as the quality of pupils' participation in discourse. Attention is drawn to the use of joint attention and joint involvement, to dialogic question and answer practices, and to affective support as mediational devices in discourse-based instruction.

With regard to the second question, which is related to learning as cultural activity, there is an investigation of how classroom discourse may bring about the development of

shared understanding in classrooms where pupils have diverse linguistic and cultural backgrounds. The analysis of the discourse used calls attention to the culturally based nature of language and discourse as well as to the particular forms of discourse employed. It becomes clear that misunderstandings in classroom discourse frequently originate from a discrepancy between what teachers assume to be 'common knowledge', and the different cultural funds of knowledge minority pupils resort to. The findings underscore the importance of a dialogically organized discourse in the multiethnic classroom as it makes way for pupil contributions, opens up for bridging between new and prior knowledge, as well as allowing meaning negotiation in the development of shared understanding.

In relation to the third question, which gives emphasis to learning as discursive activity, there is an examination of how pupils may appropriate the language of academic disciplines, such as mathematics, through participation in classroom discourse and practice. Discourse excerpts from a number of mathematics lessons are investigated with regard to teachers and pupils' collaboration and communication during mathematical problem solving. It becomes evident that pupils' problems in getting access to the discourse of mathematics is often due to a mathematical vocabulary based on everyday concepts that are ambiguous or not familiar to them. Besides, pupils with diverse linguistic and cultural backgrounds may experience difficulties in solving word problems that ask for a mathematical transformation of unfamiliar everyday phenomena. The findings imply that in order to support pupils' problem solving and appropriation of mathematical language and discourse, pupils need assistance – explicit as well as implicit – from more skilled others through guided participation and apprenticeship in mathematical discourse and practice.

In conclusion, the study demonstrates that classroom learning in and through discourse makes intricate demands on teachers as well as pupils, particularly minority pupils. Language minority pupils do not merely need to learn another language, they need to learn *several* varieties of that language, that is, learn the various forms of language and discourse that count as knowing in the school setting. To be able to succeed in school, minority pupils' linguistic as well as cultural backgrounds need to be taken into account. The findings of this study emphasize the importance of making explicit the taken-as-shared premises classroom knowledge builds on. In order to transform classroom discourse into a 'discourse of teaching and learning' for all pupils, allowing multiple ways of sense making and including diverse pupil voices, rethinking and redefining are required. Expanding the instructional repertoire and reinforcing the dialogic function of classroom discourse may make way for diversity as well as equity in classrooms with diverse and multiethnic pupil populations.

List of papers

Paper 1

Pastoor, L. de Wal (2007). Classroom discourse as educational practice: Exploring pupil participation and engagement. *Manuscript submitted for publication.*

Paper II

Pastoor, L. de Wal (2005). Discourse and learning in a Norwegian multiethnic classroom: Developing shared understanding through classroom discourse. *European Journal of Psychology of Education, 20* (1), 13-27.

Paper III

Pastoor, L. de Wal (2007). The mediation of mathematical knowledge in and through discourse: A situated and sociocultural approach. *Manuscript resubmitted for publication.*

1 Introduction

1.1 Introduction

This study is an ethnographic case study carried out in a multiethnic third grade classroom in Norway. It was set up as part of a Dutch-Norwegian comparative research project to study first and second language learning in two primary school classrooms, one in the Netherlands and one in Norway (see Bezemer, Kroon, Pastoor, Ryen, & Wold, 2004).

The analytic focus of the present thesis is on classroom discourse as a mediator of learning in the multiethnic classroom, that is, learning in general, not mere language learning. The aim has been to achieve a deeper understanding of classroom discourse – as educational practice as well as the underlying social, cultural and discursive practices. Special attention is paid to the impact of ethnic minority[1] pupils' linguistic and cultural backgrounds on their opportunities for participation and joint meaning making in and through discourse.

1.2 Background

Norwegian society, formerly perceived as rather homogeneous, has undergone major changes during the past 35 years. Increased migration since the 1970s by non-western immigrant workers, and followed by political refugees in the 1980-1990s, has contributed to a more ethnically, linguistically and culturally diverse society, which manifests itself in increasingly heterogeneous pupil populations in Norwegian primary schools. The current diversity in Norwegian classrooms leads to new challenges for teachers and pupils - as well as to educationalists and educational researchers.

In 1999, the year the joint research project started, the number of immigrants in Norway was 260 742, making up nearly six per cent of the total population of 4 445 329 inhabitants. Of the approximately 580 300 compulsory school pupils during the school year 1999/2000, around 38 600, that is, 6.6 per cent, were registered as language minority pupils[2]. However, in the capital Oslo, the site of the current study, the percentage of language minority pupils was much higher, that is, 28.6 per cent. The top ten minority language groups in Norwegian compulsory schools were (according to size): Urdu, English, Vietnamese, Spanish, Arabic, Bosnian/Croatian, Albanian, Turkish, Somali, and Tamil (SSB, 2000).

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[1] In this thesis, the term 'ethnic minority' refers to a group of people who have a culture, religion or language, which is different from the majority of the population in the place or country they live.
[2] The term 'language minority pupils' means pupils coming from families where a language other than Norwegian is the predominant language spoken in the home. All the ethnic minority pupils involved in this study had other languages than Norwegian as their home language. For the sake of simplicity, the terms *ethnic minority pupils*, *language minority pupils* and *minority pupils* will be used interchangeably in the thesis.

Minority pupils are not a homogeneous group, however. They are varied, not only in terms of their language, but also with regard to ethnicity, culture, socio-economic status and school results, for instance. Yet, on average, the levels of Norwegian minority pupils' school achievement are lower than their classmates with a language majority background (Bakken, 2003; Engen, Kulbrandstad & Sand, 1997; Hvistendahl & Roe, 2004; Lie, Kjærnsli & Brekke, 1997). Consequently, a major educational challenge that Norway, like many other western countries, presently faces is to attend to the linguistic and cultural diversity of current classroom populations as well as to improve the educational opportunities and achievement of minority pupils.

International research has shown that a complex set of factors, such as command of the school language, the differences in language and culture, valorization of ways of knowing in and outside school, the socio-economic family background, parents' educational level, school motivation, learning strategies, and the responses of schools to these, may contribute to the underachievement of minority pupils (Abreu, 1999; Abreu & Elbers, 2005; Cummins, 2000; Elbers & Haan, 2005; Eldering & Kloprogge, 1989; Skutnabb-Kangas, 1981; Thomas & Collier, 2002; Walraven & Broekhof, 1998). Although researchers agree that the difficulties minority pupils experience within the education system are complex, they stress that pupils' proficiency in the national standard language, as both the object and the medium of instruction, is a decisive factor in their school achievement (Cazden, 2001; Cummins, 2000; Thomas & Collier, 2002). As most minority pupils primarily speak their mother tongue at home, the school will be a central setting for learning their second[3] (sometimes even their third or fourth) language. For many minority pupils, it is in and through classroom discourse they most frequently, and to the highest degree, are exposed to the second language (Pastoor, 1998; Wong Fillmore, 1989). The oral and written language used in classroom discourse serves a double function for minority pupils, it transmits the *subject matter* to be learned and it provides an important source of *linguistic input* for their second language acquisition (Wong Fillmore, 1982). Classroom discourse is thus an essential mediator of minority children's learning and reasoning in school.

However, some researchers indicate that one reason why minority pupils' second language development is not as satisfactory as it should be, may be that in traditional, teacher-led classroom discourse, the pupils get too few opportunities to actively participate in

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[3] 'Second' in *second language* refers to a nonnative language acquired after the first language, that is, the mother tongue. In contrast to a foreign language, a second language is learned in the environment in which that language is spoken, e.g. Panjabi speakers learning Norwegian in Norway (cf. Block, 2003).

productive and challenging language learning situations (Ellis, 1984). Teacher-directed classroom discourse rarely affords extended responses and offers limited opportunity for pupils to come with their own contributions (cf. Flanders' (1970) 'rule of two-thirds').

International educational research emphasizes the importance of pupils' active participation in classroom discourse to support learning in general and language learning in particular (e.g., Allwright, 1984; Allwright & Bailey, 1994; Barnes, 1975; Cazden, 1986, 2001; Edwards & Mercer, 1987; Mehan, 1979; Nystrand, 1997; van Lier, 1988; Wells, 1999). Also second language acquisition (SLA) research stresses the centrality of talk and social interaction in the learning process (Block, 2003; Ellis, 1984, 1999; Hall & Verplaetse, 2000).

Consequently, during the last two decades the importance of classroom discourse, especially *spoken* discourse, in educational processes – as the medium for communication as well as learning – has gained wide recognition. Also the most recent national curricula in Norway, *LK06*, that is, *The curriculum for Knowledge Promotion* (2007) and *L97*, that is, *The curriculum for the 10-year compulsory school in Norway* (1999)[4], emphasize active pupil participation as well as the use of classroom discourse [*klasseromssamtaler*] as a tool for working and learning in most subjects. In fact, in the curriculum *L97* the term *samtale*, meaning 'talk' or 'conversation' as well 'to talk with', is mentioned more often than the term 'learning' (Aukrust, 2001, p. 191).

Even if recent curricular reforms promote pupil talk in the classroom, educational practice seems hard to reverse. International research on verbal interaction in classrooms shows a rather reform resistant pattern of classroom discourse, with a teacher talking 75% of the time and pupils sharing the remaining 25% (Dysthe, 1993). An evaluation of Norwegian classroom practice after the implementation of the educational reform *Reform 97*, confirms that introductory, teacher-led whole-class instruction, followed by individual tutoring, is a frequently used approach in Norwegian schools (Klette, 2003). This kind of educational approach leaves little space for active pupil participation and joint meaning making in and through discourse, consequently the asymmetry between teacher and pupil talk persists.

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[4] Following the educational reform, *Reform 97*, a new curriculum, *Læreplanverket for den 10-årige grunnskolen* (1996), usually referred to as *Læreplan 97* (*L97),* was implemented in 1997. The English edition, *The curriculum for the 10-year compulsory school in Norway,* came out in 1999. In autumn 2006, *Reform 97* was succeeded by another curricular reform, *Kunnskapsløftet* [Knowledge Promotion]. In the curriculum for the Knowledge Promotion, *Læreplanverket for Kunnskapsløftet* (*LK06*), new subject syllabuses have been designed. However, the core curriculum of *L97* still applies to *LK06.*

1.3   Classroom discourse

The language used in the classroom is different from the language used in everyday communication. In the classroom one can find several interrelated, though qualitatively different, forms of language and discourse. There is an essential distinction between discourse as *conversation* and discourse as *instruction* (Cazden, 1998). Instructional discourse, in turn, may entail different forms of discourse as 'different ways of understanding' (ibid.), that is, academic ways of understanding and representing different aspects of the world.

Classroom discourse as conversation is the informal 'social' language of classroom interaction, which is similar to everyday discourse. Discourse as instruction is the formal language of teaching and learning, that is, *educational discourse* (Mercer, 1995). Then, with the teacher's assistance, educational discourse may be generated into 'educated' or *academic discourse*. Academic discourse involves various forms of subject-specific language (e.g., genres and registers), allowing an academic way of communicating and reasoning in different content areas, such as language arts, social studies, mathematics and science. The language used in the classroom is thus *not* one language, but several *different* varieties of language and discourse, which are used in different contexts and for different purposes.

Table 1. Classroom discourse

Conversational discourse	Educational discourse	Maths	Science	Social Studies	Language Arts	Etc.
		Academic discourse				
Classroom discourse						

Academic discourse involves ways of reasoning and talking that Vygotsky (1987) has termed *nonspontaneous*, meaning they have to be learned. Thus, in order to be able to participate actively in the learning activities of the classroom, pupils need to acquire the different forms of language that classroom discourse consists of. One of the main aims of schooling, teaching and learning, actually implies giving pupils access to various 'schooled', that is, academic, forms of discourse.

Learning a particular subject, such as mathematics, for instance, is learning to use its particular mathematical language and discourse as well as the discursive practices of the

classroom (Kovalainen & Kumpulainen, 2005; Lemke, 1990). These forms of language and discourse may be learned through joint participation in the meaning-making activities of the classroom. Collaboration with and support from others with more expertise allow individual pupils to appropriate the knowledge and skills of a particular discipline. Learning entails *enculturation* into the culture of the classroom community, that is, the discourses, practices, rules and norms, through supported participation in its socioculturally embedded discursive activities of shared meaning-making (Cole, 1996; Hicks, 1995; Lave & Wenger, 1991; Rogoff, 1990; Sfard, 1998a; Vygotsky, 1962, 1978; Wertsch, 1991; Wertsch, del Río & Alvarez, 1995). Classroom learning is thus in many ways a discursive activity (Forman, 1996; Lemke, 1990; Säljö, 2001; Wyndham & Säljö, 1999), that is to say, an activity that entails both *learning to talk* and *talking to learn.*

However, it often takes time for minority children to develop the language competence that is required to succeed in school (Thomas & Collier, 2002). Minority pupils who speak the second language well socially (i.e., the everyday language), may have problems with the language used in the classroom, especially the more academic, subject-specific genres used in content lessons. While it takes language minority pupils approximately two years to develop second language proficiency at the level acquired for social talk, it may take between five and seven years to come up to grade norms in second language academic skills (Cummins & Swain,1986).

Teachers may overlook that pupils who master well social communicative skills, still can have problems with the more abstract and 'disembedded'[5] forms of academic language needed in classroom discourse and practice, particularly in the later grades. Similar to 'the fourth-grade slump' in literacy development reported for pupils from low-income families (Chall, Jacobs & Baldwin, 1990), fourth grade may be a turning point for minority pupils too. These pupils may understand everyday language, but cannot "read the early versions of academic varieties of language they see in books and sometimes hear teachers speak around fourth grade (often earlier today)" (Gee, 2004, p. 19), involving less common language varieties, and more abstract and literary words. To be able to read and discuss the topical content of subject matter lessons, that is, to gain access to opportunities for learning, pupils need to be familiar with academic forms of language and discourse. However, being

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[5] The terms 'disembedded' or 'decontextualized', which are often used to characterize the language of academic discourse, are disputed terms (cf. Mercer, 1995, p. 106; van Oers, 1998). Even though academic language does not refer to an immediate experiential context as everyday language does, it is not 'free of context'. It is embedded in another kind of constitutive context, such as the conventional disciplinary context of a particular discourse community.

simultaneously involved in 'learning language' and 'learning through language' (Halliday, 1993) during the process of academic language acquisition often places severe demands on minority pupils. To facilitate the appropriation of academic 'ways with words' (Heath, 1983), pupils depend on assistance by means of joint involvement *and* guidance from more skilled others in and through meaningful discourse (cf. the idea of *guided participation*, Rogoff, 1990, 1995). There is a close link between the quality of pupil learning and the quality of interaction in classroom discourse (Nicholls & Wells, 1985; Nystrand, 1997). The teacher, then, has a critical role in organizing a discourse that creates opportunities for learning as well as in providing contingent support and guidance.

1.4   Research focus and research questions

As not all types of classroom discourse are 'discourses of learning', it is important to reflect on how to organize a discourse that may promote pupils' development and learning. Even though contemporary curricula advocate educational approaches emphasizing active participation in classroom discourse, the term 'participation' leaves much to be filled in. What kind of participation is referred to and how it can be encouraged? What kind of knowledge is generated by different forms of participation? Educational research has shown that the discourse that goes on in lessons is closely related to what kind of knowledge is constructed (see e.g., Edwards and Mercer, 1987; Hicks, 1995, 1996; Mercer, 1995; Nystrand, 1997).

Educational researchers argue that the structure of classroom discourse, determining who participates with what, when and how in the communicative interaction, is decisive of its learning potential (Aukrust, 2001; Barnes, 1975; Cazden, 1986, 2001; Hicks, 1995, 1996; Mehan, 1979; Nystrand, 1997; Philips, 1972; Wilkinson, 1982). The ways in which teachers structure the discourse in their lessons will therefore be crucial to pupils' opportunities for learning in and through discourse. At the same time we actually know relatively little about the communicative interaction in multiethnic classrooms and pupils' participation in classroom discourse (Abreu & Elbers, 2005; Bezemer, 2003; Hall & Verplaetse, 2000).

The aim of the present study is to explore the mediational role of discourse in the development of knowledge and understanding in the multiethnic classroom. A central question concerns which dimensions of classroom discourse may support participation and meaning negotiation in processes of joint knowledge construction.

The title of the thesis, *Learning discourse*, is polysemic (cf. Alexander, 2000), which calls for consideration of three themes (and ensuing research questions) central in exploring the issue of discourse and learning in the multiethnic classroom:

1. *Learning discourse* as 'learning about discourse', that is, learning about the specific nature of discourse as educational practice, brings about the question: Which dimensions and qualities of discourse may enhance pupils' participation and engagement in educational discourse? (i.e., the central focus of Paper I)

2. *Learning discourse* as 'a discourse of learning' (cf. talking to learn), leads to the question: How can classroom discourse as a mediator of learning bring about the development of shared understanding in classrooms where pupils have diverse linguistic and cultural backgrounds? (i.e., the central focus of Paper II)

3. *Learning discourse* as 'learning to make use of discourse' (cf. learning to talk) generates the question: How can pupils of a multiethnic classroom learn to make use of and appropriate academic forms of discourse, such as the language and discourse of mathematics? (i.e., the central focus of Paper III)

Classroom discourse is very much a situated discourse, involving both micro- and macro-contextual dimensions (see Chapter 2). Consequently, for all three research questions it applies that their relation to wider, institutionally and culturally embedded practices will also be considered. In addition, the study investigates 'learning discourse' in various classroom contexts, that is, in a variety of instructional settings (such as whole class, group and individual tutoring) as well as in relation to different subject domains. In the three studies presented in the thesis, the discursive practices in the classroom are discussed within and across the following subject matter areas:

Paper I: Language arts lessons, that is, Norwegian as a first language (NL1) and Norwegian as a second language (NL2) instruction.
Paper II: Content lessons, that is, 'Christian and Religious Education' (CRE) and 'Science and the Environment', as well as NL2 instruction.
Paper III: Mathematics lessons.

According to Halliday (1993), we should not isolate learning language from all other aspects of learning. Therefore, he proposes to adopt a threefold perspective of *learning language – learning through language – learning about language.* This perspective I also find

useful for the analysis of the learning potential of the discourse in the classroom under study. However, the distinctions are analytical; in actual classroom discourse these three perspectives on language and learning are intertwined. The same applies to the discourse episodes discussed in the papers. In paper I, for instance, the Language arts lessons, aimed at *learning language,* also entail *learning about language*, in the form of rhyming, which is done by means of classroom discourse, in other words, *learning through language*.

1. 5   Relevance of the chosen research topic, theory and methodology

The provision of equal educational opportunity for all pupils despite their social, cultural or linguistic background is a major aim of the Norwegian school system (cf. the core curriculum of *The curriculum for the 10-year compulsory school in Norway*, 1999). The issue of minority pupils' school achievement – many of them lagging behind their majority classmates – provides a focus of concern in Norway, as elsewhere. The ongoing political and public debates in Norway concerning the education of language minority children are accompanied by demands for more research, particularly classroom research, to serve as a basis for the development of theoretical and practical knowledge in the field (Hyltenstam, Brox, Engen, & Hvenekilde, 1996).

    Even if much attention has been given to multilingualism in research on language and teaching (Baker, 2001), it appears that relatively little is known about the educational practice in classrooms where pupils have different linguistic and cultural backgrounds (Abreu & Elbers, 2005; Elbers & Haan, 2004; Hall & Verplaetse, 2000). The few studies that directly explore second language classroom interaction fail to examine "the actual discourse that classroom participants construct" (Ellis, 1984, p. 10). Micro-ethnographic studies based on transcripts of classroom discourse are called for (Watson-Gegeo, 1997). This in-depth, ethnographic classroom study, which is based on observations and transcriptions of authentic discourse, may contribute to a better understanding of what 'actually' goes on in classrooms with linguistically and culturally diverse pupils. Increased insight into the teaching-learning processes of heterogeneous classrooms will be important for theoretical reasons as well for developing educational policy and practice.

    Moreover, the research focus of the present study, classroom discourse as a mediator of joint reasoning and learning, is very relevant in the light of current educational reforms. Formal schooling has always been highly language dependent. Yet, the centrality of language and discourse in classroom learning and teaching is particularly prominent today. In the context of the last educational reforms in Norway, that is, *Reform 97* and *Kunnskapsløftet*

[Knowledge Promotion], new curricula with an emphasis on discursive and participatory approaches to instruction have been introduced. It is important to reflect on the challenges involved in the implementation of these curricular reforms and their adequacy in the multiethnic classroom. The study directs special attention to the kind of difficulties minority pupils with different linguistic and cultural backgrounds may meet in the discourse-based instruction called for in the curriculum.

To study educational practice in classrooms with linguistically and culturally diverse pupil populations calls for a broad spectrum of perspectives. In addition to educational, linguistic and sociological perspectives, *cultural psychology* (Cole, 1996; Shweder, 1990) may offer appropriate perspectives as it takes into account the contextual and cultural embeddedness of classroom practice. The sociocultural and dialogic framework adopted to study discourse and learning in the classroom under research emanates from cultural psychology (e.g., Bruner, 1990, 1996, Gallego & Cole, 2001; Hundeide, 1999, 2003a; Lave & Wenger, 1991; Rogoff, 1990, 1995; Rommetveit, 1974, 1992; Säljö, 2001, 2004; Vygotsky, 1962, 1978; Wertsch, 1991). The sociocultural perspective viewing human learning as an inherently social and cultural process, and not only a cognitive process, that is, the product of the individual's brain, has theoretical as well as methodological implications.

In order to allow a comprehensive study of teacher-pupil interaction in the everyday practices of the multiethnic classroom, an ethnographic research approach has been employed (see Chapter 3). Ethnography values a 'contextual' view of language use insisting that it is impossible to separate speech data from the context under which it has been obtained (Malinowski, 1922). In addition to in-depth observation of classroom activities, the ethnographic approach pays attention to the social and cultural nature of the classroom learning process, that is, it "offers a holistic analysis sensitive to levels of context in which interactions and classrooms are situated" (Watson-Gegeo, 1997, p. 135).

Moreover, the applied sociocultural and situated approach to studying discourse and learning in the multiethnic classroom is very much in line with requests for reenvisioning and reconceptualising research on second language acquisition (SLA) (Firth & Wagner, 1997; Schinke-Llano, 1995). Firth and Wagner (1997) argue that SLA research has been too much dominated by cognitive, mentalistic approaches focusing on individual cognitive processing. In order to expand the ontological and empirical parameters of this field of research, they call for investigations paying attention to contextual and sociocultural dimensions of language and communication.

1.6   Some issues of definition and terminology

The present study focuses on classroom discourse as a mediator of learning in the multiethnic classroom. The central theoretical and analytical concepts used in the thesis will be discussed in Chapter 2, i.e., 'Studying classroom discourse: themes, concepts and theory'. However, some relevant concepts and terms, which are not attended to in Chapter 2, but which may call for clarification, are briefly explained below.

1.6.1   *Culture, multicultural and multiethnic*

As the fundamental premise of the sociocultural approach is that discourse and learning must be understood as inherently social and cultural practices, some attention has to be paid to the notion of *culture*. Over the years, the term 'culture' has been defined and used in many different ways. Nowadays there is wide agreement that there can be no single definition of culture. The definition will rather depend on one's theoretical position and particular research interest, such as studying classroom discourse as a mediator of learning, for instance.

        Duranti (1997, pp. 23-50) presents six different notions of culture based on theories of culture in which language plays a vital role, that is, *culture*: as distinct from nature, as knowledge, as communication, as a system of mediation, as a system of practices, and as a system of participation. All these different notions of culture can be relevant in one way or another to illuminate the various issues discussed in this study. Several of the notions Duranti attends to are interrelated and partly overlap each other. I will briefly outline them here. There is a consensus that culture, unlike nature, is learned. Much of it can be thought of in terms of knowledge, that is, knowledge to make the world understandable, shared by the members of a particular community. However, what one has to know, "does not consist of things … It is rather an organization of these things. It is the forms of things that people have in mind, their models for perceiving, relating, and otherwise interpreting them … a society's culture consists of whatever one has to know or believe in order to operate in a manner acceptable to its members …." (Goodenough, 1964, p. 36). People's worldview – including explicit and implicit representations, beliefs, rules, norms and values – has to be communicated or mediated by means of semiotic tools to be able to share it with others. Viewing culture as a form of communication or mediation means to see it as a semiotic system, that is, a system of meaning making by means of signs, such as language and discourse for instance. As communication and mediation have inherently communal and participatory qualities, this leads then to the notion of culture emphasizing participation in practices:

The idea of culture as a system of *participation* is related to culture as a system of *practices* and is based on the assumption that any action in the world, including verbal communication, has an inherently social, collective, and participatory quality. This is a particularly useful notion of culture for looking at how language is used in the real world because to speak a language means to be able to participate in interactions with a world that is always larger than us as individual speakers and even larger than that what we can see and touch in any given situation. Words carry in them a myriad of possibilities for connecting us to other human beings, other situations, events, acts, beliefs, feelings …. It is then through language use that we, to a large extent, are members of a community of ideas or practices. (Duranti, 1997, p. 46)

Classroom research has shown that members of a particular classroom community often share special repertoires for participating in classroom practice. Classrooms are institutionalized social settings, which have their own, often implicit, norms and rules for interaction, that is, their qualitatively distinct culture, the culture *of* the classroom (Gallego & Cole, 2001). In classroom ethnography, a researcher's task may be seen as one of constructing *a cultural grammar* or theory that describes the rules, norms and understandings that the participants of the classroom community need to know, produce, predict, interpret, and evaluate to participate in socially and culturally appropriate ways (Gallego & Cole, 2001; Green & Bloome, 1997).

However, there is also the culture *in* the classroom, that is, the culture of wider social groups which teachers and pupils represent and resort to in classroom interaction, such as their cultural funds of prior knowledge and practices. 'The culture' of the classroom thus involves various cultures, that is to say, cultures on national, local and community level as well as cultures of ethnic, peer and professional groups, such as teachers: "From this perspective, schools are really *multicultural* social settings where several different cultures converge (even in cases where the population from which students and teachers come is the same)" (Gallego & Cole, 2001, p. 957, italics added). As every classroom thus comprises a variety of cultures, I rather use the term *multiethnic*, and not 'multicultural', concerning the classroom under study, to emphasize that its pupil population involves several ethnic groups and not just several cultures. The term 'ethnic group' here refers to people who share a culture, religion or language, which is different from others with whom they interact. However, as pupil populations of multiethnic classrooms are often both multicultural and multilingual, these terms may be used interchangeably.

1.6.2   *Discourse, discursive practice and discourse analysis*

Another term that needs some attention is 'discourse', since it is used in a variety of ways, in the course of time as well as across different disciplines: "as it has moved back and forward across the globe over the past century, between Russia, Prague, Paris and the USA, circulating in the names of Saussure, Jakobson, Levi-Strauss, Volosinov, Bakhtin, Kristeva, Foucault" (MacLure, 2003, p. 20).

I refrain here from reviewing the various approaches and paradigms, but concentrate on the use of *discourse* in educational research. In relation to education, the term 'discourse' principally refers to discourse as institutional practice, such as *classroom discourse*, as well as to the subject-related discourse of academic disciplines, such as *mathematical discourse.* 'Classroom discourse' includes spoken as well as written language. Yet, in this thesis, classroom discourse primarily concerns "spoken language as it is used in classrooms among teachers and learners" (Allwright & Bailey, 1994, p. 61).

Discourse refers both to a linguistic context, that is, discourse as utterances or text 'larger-than-sentence' level, and to a situational, embedded context, that is, discourse as instances and types of language-in-use (Urban & Sherzer, 1988, p. 284). The first meaning of discourse entails extended communication in speech or writing, often interactively dealing with some particular topic. The second meaning, discourse as spoken or written language as it occurs in different contexts, takes account of the idea that it is a form of social and cultural practice, that the ways in which people use discourse will vary accordingly and as such is not a neutral or transparent medium (Cazden, 2001; Hicks, 1995; Sealey, 1996). Discourse will always comprise the meanings, beliefs, intentions, values and ideologies of its users (Fairclough, 1992; Gee, 1996). Foucault (1980) stresses the relationship between power and knowledge in discourse (often binding them together as power/knowledge to accentuate their interdependence) and points out how a particular discourse defines what is possible to say, know and do as well as establishes the identity of the user of the discourse.

The term *discursive practice* relates to this latter meaning of discourse, that is, discourse conceived as socially and culturally situated communicative practice. Discursive practices are part of a society, community or group's semiotic practices, in and through which members create, interpret and mediate meaning to make the world they live in understandable by drawing upon specific mediational means, for instance language and gestures. The discursive practices of the classroom are constitutive communicative practices implying dialectics of both stable, socially established practices of the classroom community and

situated practices constructed by discourse participants in moment-to-moment interaction (Fairclough, 1992; Hicks, 1995; Kovalainen & Kumpulainen, 2005; Säljö, 2001). The dialectics of discursive practices contribute to reproducing the knowledge of a particular community (e.g., social relationships, knowledge systems, values and beliefs), as well as to transforming it (Fairclough, 1992; Lotman, 1988). In and through the discursive practices of the classroom, knowledge is thus constituted, interpreted, appropriated and transformed.

As 'discourse' has different meanings within different disciplines, also the term *discourse analysis* is ambiguous. The discourse analysis employed in this study involves primarily the analysis of authentic spoken discourse, as it occurred among teachers and pupils in the classroom, based on transcripts of audiovisual records of classroom interaction (cf. Allwright & Bailey, 1994; van Lier, 1988).

2   Studying classroom discourse: themes, concepts and theory

2.1   Introduction

During the last few decades, classroom discourse – and classroom interaction more generally – has become quite a complex field of study integrating theory and method from different disciplines. The duality of classroom discourse both as textual products (oral and written) and as socially situated practice (Hicks, 1995), as well as the dual function of discourse as both a communicative and a cognitive tool (Vygotsky, 1987), add to its complexity. Due to the diverse and composite character of classroom discourse, classroom studies often draw on multiple disciplines, such as theories of education, linguistics, psychology, anthropology and sociology. An interdisciplinary perspective characterizes many research initiatives in the field of classroom research these days, like the joint research project that this study is a result of.

The involvement of multiple disciplines in classroom studies has advantages as well as disadvantages. The various disciplines have different traditions, approaches, and perspectives, and they do not necessarily collaborate in an integrated or coordinated manner. The ensuing 'multivocality' of the discourse on classroom interaction may imply a creative potential, but can also lead to misunderstandings, since it lacks a shared conceptual framework. The same terms may mean different things in different disciplines, such as *discourse* and *genre*, for instance. Then again, there are variations in terminology concerning phenomena that are thematically related or overlapping, notions such as 'focusing' (Klein, 1992), 'joint attention' (Tomasello, 1999), 'joint involvement' (Schaffer, 1992), 'scaffolding' (Wood, Bruner &

Ross, 1976), and 'bridging' (Rogoff, 1990), for example. Notwithstanding certain discrepancies, the different disciplines seem to influence each other and are beginning to converge in certain respects (Gee, 2005; John-Steiner, Panofsky, & Smith, 1994).

However, a complex and wide-ranging field of research such as classroom studies stand for should probably not even try to confine itself to one integrated theory, one single terminology and one particular methodology. As the field of classroom studies thus not has an 'all-inclusive' theoretical and analytical framework, this thesis integrates perspectives and concepts across various disciplines in order to study classroom discourse as a mediator of learning and reasoning as comprehensively as possible:

> … focusing on the social constitution of mental functioning requires us to cross disciplinary boundaries. Instead of viewing this as a barrier, however, we believe that this is an opportunity. It is an opportunity to integrate methods and bodies of knowledge that have been artificially separated by disciplinary boundaries, and it is an opportunity we cannot ignore if we are serious about how theory and practice in education can inform one another. (Wertsch and Toma, 1995, p. 159)

Even if the various perspectives applied in this study do not represent an integrated theory, they embody a sociocultural and dialogic approach to classroom mediation emphasizing the social, institutional and cultural embeddedness of development and learning. In order to situate the present study of discourse and learning in the multiethnic classroom, a short review of earlier classroom studies and some of the related disciplines, themes and concepts involved will be given.

2.2   Early classroom research

Early classroom research, such as Flanders' (1970) classroom studies, involved primarily systematic observation of verbal interaction and the analysis of *linguistic* structures in the discourse. These studies of traditional, that is, teacher-led, discourse across a wide range of classrooms focused on the recurrence rate of teacher and pupil talk by using coding schemes that placed the utterances in ten functional categories. The Flanders Interactional Analysis System exposed the well-known 'two-thirds rule' concerning classroom interaction: for about two-thirds of the time someone is talking, about two-thirds of this talk is the teacher's and about two-thirds of the teacher's talk consists of lecturing or asking questions.

The linguists Sinclair and Coulthard (1975) systematically analyzed and categorized the structure of spoken discourse based on recordings of classroom talk. They conclude that classroom discourse differs from everyday discourse in that it is dominated by a different discourse structure. The basic exchange structure they identified is a triadic sequence of Initiation-Response-Feedback (IRF), that is, a question-initiation by the teacher that elicits a pupil response and is followed by the teacher's feedback (usually an evaluation). The IRF-sequence allows teachers both to control and evaluate pupils' contributions.

The field of classroom research changed focus of interest when sociologists and sociolinguists entered the scene treating classrooms as sites of social relations. Their classroom studies are not so much about language as such but rather about *language use*. As the classroom studies presented below will demonstrate, the language used in classroom discourse depends on institutionally as well as socioculturally situated discursive practices.

2.3   Subsequent classroom studies

The development of sociolinguistics and ethnography of communication emphasizing the *social* character of language use and development as well as the connection between language development and *socialization* (Gumperz & Hymes, 1972; Ochs & Schieffelin, 1983), brought about a major change in the field of classroom research (Pontecorvo, 1997).

In her classic *Classroom discourse*, Cazden ([1988] 2001) examines the special characteristics of classroom discourse as a language of teaching and learning. Her research on 'actual' classroom talk shows that classroom discourse is not only susceptible to the immediate classroom context, but also to a wider sociocultural context. In considering how classroom discourse brings together the cognitive and the social, it is important to take into account that 'social' has two interrelated meanings: "the *micro*sociological meaning of the situation of which talk is a part, and the *macro*sociological meaning of stratifications within society – by class, ethnicity, sex, etc.", Cazden argues (1986, p. 458, italics added).

Consequently, I present below some major contributions to the field that relate to both micro- and macro-contextual dimensions of classroom discourse. However, the distinguished contexts are analytical, allowing us to temporarily foreground one context at a time. In actual classroom discourse these contexts are embedded and intertwined.

2.3.1   *Micro-context studies: The nature and structure of classroom discourse*

The micro-context of classroom discourse refers to the immediate classroom setting, that is, the face-to-face interaction constituted and negotiated between the participants of the

discourse. Every classroom has its own *classroom culture*, that is, its particular ways of organizing classroom interaction and meaning making through classroom discourse (Gallego & Cole, 2001).

In *Learning lessons*, a naturalistic study of classroom discourse, Mehan (1979) describes how the social interactional organization of lessons is developed and maintained over time through the teacher and pupils' turn taking in classroom discourse. He demonstrates that the basic discourse structure in teacher-led lessons, the IRE-sequence (Initiation-Response-Evaluation), is part of larger units, such as topically related sets, that hierarchically constitute a lesson structure. Being able to participate successfully in classroom discourse requires finding out about subtle cues and tacit rules for speaking within the lesson structure. Classroom competence involves both academic and social knowledge. Pupils must not only know the academic content, they also need to learn the appropriate form in which to display their academic knowledge.

Similarly, Edwards and Mercer (1987) emphasize the importance of knowing the rules of classroom talk since it has special properties distinct from talk in other settings. The rules of classroom discourse are part of a more general set of *educational ground rules*, that is, implicit rules of educational talk and practice. Misunderstandings between teachers and pupils may be due to not understanding and/or not following the educational ground rules. Based on video recorded lessons, Edwards and Mercer describe and analyze how teachers and pupils develop shared understanding in the classroom. They pay particular attention to the nature of classroom discourse and the kind of knowledge it produces.

The focus in this subsection is on introducing pupils to specific patterns and norms of classroom communication, that is, the culture *of* the classroom. Yet, classroom rules and norms may also be related to wider social and cultural contexts. Sociolinguistic, sociological and anthropological approaches to classroom discourse put emphasis on schools as institutional and cultural learning environments that call for language socialization and enculturation: "linguistic and cultural knowledge are *constructed* through each other" (Watson-Gegeo, 2004, p. 339).

The next subsection calls attention to cultures *in* the classroom (Gallego & Cole, 2001). It explains how the wider social and cultural 'macro-context', that is to say, the socioculturally patterned discursive practices of various communities beyond the school, has an effect on pupils' communication styles in the classroom and consequentially on their educational accomplishments.

2.3.2   *Macro-context studies: Social and cultural variations in discursive practices*

While the micro-context is used to refer to the immediate interactional situation in the classroom, the macro-context refers to 'non-immediate interactional settings' (Abreu, 2000, p. 2), that is, wider sociocultural systems. Micro-contexts do not exist in a vacuum, that is, 'micro' presupposes 'macro' (Alexander, 2000). However, 'macro' also presupposes 'micro'; the relationship between macro- and micro-contexts is a dialectic one (Abreu, 2000; van Oers, 1998). Accordingly, successful participation in classroom activities requires special ways of dealing with communicative rules and norms, which are situationally as well as socioculturally based.

One of the first publications in this field of research, *Functions of language in the classroom* (Cazden, John & Hymes, 1972), examines varieties of language and communicative strategies used in the classroom from several disciplinary perspectives. Philips' (1972) contribution to the book is a study of native American children in Warm Springs. The Indian pupils were considered to be 'shy' since they were rather reluctant to talk in teacher-led, whole class discourse and it turned out that they participated even less as they grew older. Apparently, the Warm Springs Indian pupils preferred to participate in group activities, which did not create a sharp distinction between individual performer and audience, and which allowed them to speak on their own initiative, that is, not solicited by a teacher or leader. Philips explains the pupils' unwillingness to conform to whole-class procedures as being a consequence of the dissimilar patterns of communication pupils experience in the classroom and in the Indian community activities. Philips introduced the notion of *participant structure*[6], which means, "the rights and obligations of participants with respect to who can say what, when, and to whom" (Cazden, 1986, p. 437). These normative rules for participation, which are implicit and appropriated through interaction, are decisive of gaining access to the learning opportunities in the classroom (Erickson, 1982; Philips, 1972; Mehan, 1979, Cazden, 2001).

Not only ethnic groups, but also social classes may have distinctive norms with regard to type and quantity of participation in discursive activities. Theories of social and cultural reproduction (e.g., Bernstein, 1973; Bourdieu, 1977; Willis, 1977) stress that social and cultural differences in language use both reflect *and* reproduce different life conditions and class-and-culture based inequalities. Bernstein's (1973) research on social class differences in communication calls attention to the structures of power and control that govern classroom

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[6] Erickson (1982) changed the term to 'participation structure' to indicate a more dynamic process of participation.

discourse, treating some groups more favourably than others. Willis (1977) explains how schools' cultural reproduction of social class inequalities provokes resistance from working class students and creates a 'counter school culture'.

Based on long-term ethnographic work, Heath (1983) shows patterns of language socialization in three communities in South Carolina (US): two rural mill communities, Trackton and Roadville (a predominantly black and a predominantly white working-class communitity, respectively), as well as Maintown, the mainstream middle-class 'townspeople' living in the suburbs of Trackton and Roadville. Heath found that the people in these communities socialized their children into talking, reading and writing, that is, *ways with words*, in very different ways. She demonstrates how different story-telling practices in black and white working-class communities lead to the use of different narrative styles by the children themselves. The children from Trackton and Roadville, experiencing a discontinuity between community and school norms of interaction, eventually fell behind in school and frequently dropped out. The Maintown children succeeded as from childhood on they were acquainted with various school-oriented ways of using language, such as labeling items and events, describing features and reading books. From an early age, the mainstream children were socialized into IRE-sequenced discourse structures characteristic of classroom lessons (Mehan, 1979). Unlike the Trackton and Roadville children, Maintown children experienced cultural continuity between the discursive patterns at home and in school.

By adopting an interpretive perspective, 'cultural discontinuity' studies attempt to gain insight into how children from diverse social, cultural and ethnic groups learn to use and understand language in different ways, and how these differences affect communication and meaning-making, and thus learning, in the classroom. However, it is important to bear in mind that these differences, that is, what pupils do or do not do with language, are not about linguistic or intellectual 'deficiencies', but about what the pupils are disposed to do (Edwards, 1997).

The discursive practices pupils have developed as members of particular communicative communities are related to specific social contexts as well as cultural norms and values, which may differ from the discourse in the classroom. For that reason, Cazden (2001) stresses that classroom discourse has to be considered a complicated medium that cannot be viewed as transparent, particularly not when participants have different linguistic and social backgrounds. Cazden (1986) further argues that research on classroom discourse that aims at contributing to enhanced quality as well as increased equity needs to consider both 'micro' and 'macro' dimensions of the context the classroom discourse is embedded in.

2.4   Current developments and perspectives

The concerns of the classroom studies presented above, that is, issues related to micro- and macro-contexts of classroom communication producing differential access to opportunities of learning, are still relevant in contemporary educational research. However, the sociolinguistic studies discussed above (e.g., Heath, 1983; Philips, 1972; Willis, 1977) involved monolingual English speaking pupils, even if they did not speak the Standard English of their teachers. Present diverse and multiethnic classrooms include bilingual pupils from a variety of linguistic groups with even more diverse backgrounds.

The increasing ethnolinguistic and cultural heterogeneity of current classroom populations, making intricate communicative demands on both teachers and pupils, is a challenge for current educational research and practice. Moreover, the persisting educational achievement gap among ethnic and social class groups is a pressing concern of education reforms, pursuing educational approaches that may bring about greater equity and inclusion of all pupils in classroom discourse and practice. In this connection, researchers continue to call attention to the educational consequences of sociocultural differences in discursive practices (e.g., Cazden, 1995, 2001; Elbers & Haan, 2004, 2005; Gee, 1996, 2004; Hicks, 1995; Mehan, 1998). As Hicks (1995, p. 72) stresses, "Educators working across disciplinary domains have begun to recognize that educational reform requires addressing traditional classroom discursive practices". Accordingly, educational practices providing learning environments that can meet the communicative needs of *all* pupils, including linguistically and culturally diverse pupils, are called for.

Moreover, rapid developments in modern western society, leading to different demands and changing conceptions of knowledge and learning, also demand educational approaches promoting participation in discourse (MacLure, 1994). As citizens of democratic societies, today's pupils are supposed to learn to express viewpoints, get engaged in discussions, and learn how to interpret information independently. Creating new conditions for classroom talk that facilitates pupils' access to the floor is viewed as an emancipatory task, evading the prevailing asymmetry between the quantity of teacher and pupil talk. As traditional teacher-led discourse tends to generate passive pupil roles and requires particular discourse skills, more collaborative and less hierarchical forms of discourse, like small-group talk, are encouraged (Alexander, 2000).

The current 'rise of oracy' (MacLure, 1994) in classrooms can as well be linked to the emerging recognition of the centrality of active participation and talk in the learning process. Drawing on interactional and sociocultural approaches to learning, it is argued that pupils

learn best when they are actively involved in exploring ideas and constructing meaning with others through participation in classroom discourse. Contemporary school curricula thus emphasize active pupil participation, collaboration and negotiation of meaning. Discourse and dialogue are promoted as central 'mediators of learning' (Bakhtin, 1981, 1986; Dysthe, 1999; Mercer, 1995; Nystrand, 1997; Vygotsky, 1962, 1978; Wertsch, 1991; Wertsch & Toma, 1995; Wells, 1999). However, in spite of the curricular reforms, there is vast evidence of a continuing prevalence of teacher-directed lessons and the persistence of the triadic dialogue of IRE/IRF in contemporary classroom practice both in Norway (Klette, 2003) and abroad (Alexander, 2000; Lemke, 1990; Nystrand, 1997).

In conclusion, in contemporary classroom practice, classroom discourse is not only a very central but also a quite complex mediational means (Cazden, 2001; MacLure, 1994). The communicative interaction in current classrooms, with heterogeneous pupil populations, and more varied participation structures in different instructional settings, has become quite intricate and, therefore, more complicated for its participants to relate to as well as for researchers to study.

While previous classroom studies often identified patterns of communicative interaction in the classroom as expressions of underlying rules and structures, the present study pays particular attention to the question of how the discursive practices observed can promote and support diverse pupils' opportunities for participation and learning. In order to study discourse as a mediator of reasoning and learning in the multiethnic classroom, the thesis employs a sociocultural and dialogic framework.

2.5   A sociocultural and dialogic approach to discourse and learning

The intention of this study is to shed light on the mediational role of classroom discourse in the development of knowledge and understanding in the multiethnic classroom by using a sociocultural and dialogic approach (Bakhtin, 1981, 1986; Hundeide, 1999, 2003a; Lantolf, 2000; Lave & Wenger, 1991; Vygotsky, 1962, 1978; Renshaw, 2004; Rogoff, 1990, 1995; Rommetveit, 1974, 1992; Säljö, 1998, 2001; Wertsch, 1991). The adopted approach views human learning and development as a process that is inherently social and cultural; and as a communicative process whereby knowledge is shared through dialogue and joint interaction within the context of situated discourse and practice.

Over the years, children's cognitive development and learning have been conceived in different ways, such as the unfolding of innate knowledge and abilities (cf. nativist theories); the consequence of conditioning and reinforcing desired behaviour and skills (cf. behaviourist

theories); the result of internal mental processes, like perception and memory, actively processing information from the outside world (cf. cognitive theories); and the process of continuous self-construction resulting from the child's interaction with her/his physical environment (cf. constructivist theories). While these approaches primarily focus on individual intellectual processes *within* the child, the sociocultural approach emphasizes *social* interaction as the basis for children's development and learning. However, the sociocultural focus does not ignore universal dimensions of cognitive development, rather, in its analysis it emphasizes social and cultural dimensions (Wertsch & Toma, 1995).

Vygotsky (1981b) stresses that the development of what he calls 'higher', that is, uniquely human, mental functions such as voluntary memory, reasoning and the formation of concepts, has its origins in social processes. He argues that a child's development appears twice, or on two planes: first *between* people – intermentally – on the social plane, and then *within* the child – intramentally – on the individual plane (Vygotsky, 1981a). Even though the same mental functions that subsequently appear on the social and the individual plane are interrelated, they are not direct reproductions; the mental structures and functions get transformed in the process of 'internalization'[7] (Wertsch & Stone, 1985). To characterize the process by which socially constructed meaning is adopted by individuals the term *appropriation* (Bakhtin, 1981; Leont'ev, 1981) is often preferred. Appropriation is considered to be a more dynamic and dialogic construct than internalization, which may connote a process of simply 'taking in'.

The notion of appropriation stands not just for the process of taking over shared meaning, but also for making it 'one's own' (Herrenkohl & Wertsch, 1999), that is, reflecting individual understanding. Concerning appropriation, Bakhtin (1981) underlines the importance of making others' words and expressions one's own by *actively* adjusting those to own intentions and interpretations:

> The word in language is half someone else's. It becomes 'one's own' only when the speaker populates it with his *own* intention, his *own* accent, when he *appropriates* the word, adapting it to his *own* semantic and expressive intention. (p. 293, italics added)

Furthermore, the sociocultural perspective implies that a child's mental development is not merely an individual, spontaneous process but an *assisted* process where the child

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[7] Vygotsky's notion of *internalization* emphasizes internalizing social and cultural, rather than physical, activities, unlike Piaget who was primarily concerned with how children internalize logical features of their interaction with the external, physical world (Wertsch, 1981).

becomes involved in interaction with – and gets support from – more skilled members of the community. Yet, Vygotsky not only emphasizes that children's development and learning is mediated by interaction with other people, he also stresses the importance of mediators in the form of objects and symbols, especially language. These *mediational means*[8] may consist of mental tools, that is, forms of language and discourse, concepts, categories, numbers, diagrams and maps, as well as technical tools (or artefacts), like paper, pens, abacuses, compasses, calculators and computers (Hundeide, 2003a; Säljö, 1998, 2001). Mediational means are provided by the culture and the community the children are a part of (Leont'ev, 1981; Rogoff, 1990, Wertsch, 1991).

The culturally elaborated tools that pupils appropriate both mediate *and* constitute the learning that takes place; they both allow situated co-construction of knowledge and are appropriated to support future independent problem-solving. In this way, mediational tools provide "the link or bridge between concrete actions carried out by individuals or groups, on the one hand, and cultural, institutional, and historical settings, on the other" (Wertsch, del Río & Alvarez, 1995, p. 21). The linkage becomes especially apparent in various forms of language and discourse as mediational means. This is particularly relevant in relation to classroom instruction, which very much relies on language and discourse to coordinate joint activity as well as to co-construct meaning.

Vygotsky (1978, 1987) argues that instruction only leads to development when it proceeds ahead of development. Hence, the teacher must not just focus on the pupil's actual level of development, but on those functions that are in the process of maturing, that is, the pupil's latent potential. In order to be effective, instruction must occur within the pupil's *zone of proximal development,* which Vygotsky (1978) defines as:

> the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (p. 86)

Accordingly, Vygotsky claims that learning occurs within this zone of *proximal* or *potential development* (Alexander, 2000). The task of the adult or peer more skilled in a particular activity is to *scaffold* (Wood, Bruner & Ross, 1976) the child's understanding across the zone through sensitively structuring the learning task as well as providing assistance, by means of

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[8] In the thesis, the terms *mediational means*, *mediational tools* and *cultural tools* are used interchangeably.

questions, hints, and explanations, for instance. The initial support is then gradually removed as the child's competence grows.

The concept of scaffolding, which at first mainly related to interactions with young children, is nowadays applied to school children too, not just in relation to assisting individual children but also concerning class and group instruction (Dysthe, 1993). Joint participation in whole-class discourse, allowing pupils to get involved at different levels, has the potential to provide for multiple, overlapping zones of proximal development (Brown, Metz & Campione, 1996; Cazden, 2001; Moll & Whitmore, 1996). Knowledge is shared and meanings are negotiated through the different participants' contributions to the discourse. Classroom knowledge is thus "talked into being" (Green & Dixon, 1993), that is, co-constructed by teachers and pupils through their participation in the various discursive practices of the classroom.

However, classroom discourse stands for more than ways of using language, it also involves ways of interacting with others, interpretive frames, values and goals that transmit and promote the culture of schooling. Consequently, displaying appropriate participation in classroom discourse implies learning all these ways of interacting, communicating, interpreting and valuing consistent with the discursive practices of the classroom.

In order to explicate the mediational role of discourse and joint social action in developing shared understanding in the classroom, I present below two interrelated and complementary notions of learning that are central to the sociocultural perspectives employed in this study:

1. *Learning as discursive activity*, that is, developing shared understanding through discourse and dialogue.
2. *Learning as situated activity*, that is, developing shared understanding through participation and enculturation.

2.5.1   *Learning as discursive activity: discourse and dialogue*

A sociocultural and dialogic approach not only views learning as a social process that takes place between people, it also underlines the discursive as well as dialogic nature of the teaching and learning process (e.g., Bakhtin, 1981, 1986; Lotman, 1988; Rommetveit, 1974, 1992; Wells, 1999; Wertsch & Smolka, 1993).

Rommetveit[9] (1992) argues that human cognition is inherently dual and stresses that new understandings come into being through dialogue: "the developing human mind is dialogically constituted" (p. 23). Within this perspective, it is argued that education should be conducted as a dialogue[10] between teachers and pupils (Dysthe, 1999; Hundeide, 1999; Nystrand, 1997; Renshaw, 2004; Wells, 1999). Every discursive activity may be dialogical in the sense that it both responds to and is directed toward others. Yet, "discourse does not become dialogic in a Bakhtinian sense just because speakers take turns; discourse is dialogic to the extent that each utterance is dependent on another and that the tension between voices creates new meaning" (Dysthe, 1999, p. 81). Bakhtin's (1986) emphasis on dialogue, the speaker's response orientation and the idea that each utterance is filled with multiple 'voices', that is, resonances and perspectives of previous utterances made by others, is fundamental in the dialogic approach.

Learning is a *semiotic* process, that is, a process of meaning making, with language as a principal semiotic tool (Bruner, 1990, 1996; Halliday, 1993; Vygotsky, 1981b). Both Vygotsky (1962, 1987) and Bakhtin (1981, 1986) underline that meaning is not *in* language itself, nor do individuals make meaning by themselves; it is intersubjectively constituted, that is to say, created *between* interlocutors through joint interaction and dialogue. Vygotsky (1962, 1987) emphasizes that although words have meaning, that is, literal meaning, only speech has *sense:* "A word acquires its sense from the context in which it appears; in different contexts it changes its sense" (1962, p. 245). 'Sense' refers thus to one of several meanings a word may bear; its interpretation is an integral part of situated language use and is thus relative to the communicative context and the meaning negotiations that take place there and then.

In spite of Vygotsky's distinction between meaning and sense, his work tends to convey a rather homogeneous view of language as a mediational means in intermental as well as intramental functioning (Dysthe, 1993). In this context, Bakhtin's contributions are significant, since they rouse our awareness of the multiple nature of language by drawing

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[9] In the late sixties, the Norwegian psychologist Ragnar Rommetveit developed a dialogical approach to language and mind comparable to Bakhtin's dialogism before Bakhtin's work was known in the western world. In *On Message Structure* (1974), Rommetveit outlines a model of language and communication based on the intersubjectivity of the interlocutors and the reciprocity of their perspectives (Dysthe, 1999; Wertsch, 2003).
[10] However, despite its reciprocity, education is not a dialogue between equals; due to the teacher's status and experience, the teacher's role is different from that of the pupils. Like scaffolding, educational dialogue presumes an asymmetrical relationship between a learner and a more knowledgeable other, that is, a novice and an expert (Rogoff, 1994; Wells, 1999). Yet, a dialogue between peers will most likely involve a more symmetrical relationship than a dialogue between teachers and pupils.

attention to the dynamics of dialogue as well as to the various forms of language and discourse. Bakhtin (1981, 1986) distinguishes *social languages*, which are forms of language belonging to a particular group of people (e.g., social dialects and professional jargon), as well as *speech genres*, which are types of utterances "belonging to typical situations of speech communications" (1986, p. 87). These constructs are analytically distinct, but in reality they are often intertwined since speakers from certain social groups call upon particular speech genres (Wertsch & Smolka, 1993). The military make use of military commands and mathematics teachers draw on the mathematics register in their lessons, for example.

Social languages and speech genres, that is, mediational means that are of sociocultural, institutional and historical nature, give support to Vygotsky's idea of linking the intermental and intramental. According to the sociocultural perspective, human mental functioning is shaped by the forms of language use and reasoning available to members of a particular community with its specific discursive practices. Learning mathematics, for instance, is very much a discursive activity. It involves talking to learn mathematics as well as learning to talk mathematically, that is, learning the specific vocabulary and genre (register) of mathematical discourse. Still, learning to speak the language of mathematics entails more than acquiring a shared conceptual vocabulary, it also requires appropriating shared mathematical understandings: "Learning to speak, and more subtly, learning to *mean* like a mathematician, involves acquiring the forms and the meanings and ways of seeing enshrined in the mathematics register" (Pimm, 1989, p. 207).

Theories of discourse frequently give emphasis to the development of stable, shared meanings by socializing learners into established norms and values of the discourse community (a perspective that will be further discussed in the next section; cf. Brown, Metz & Campione, 1996; Edwards, 1990). Yet, Bakhtin (1981) draws attention to the role of dynamic interaction, diversity and dispute, that is, 'interanimation of voices', in creating new meanings (Nystrand, 1997).

Lotman (1988), extending the ideas of both Bakhtin and Vygotsky, argues that all, i.e., oral as well as written, texts perform two basic functions, that is, a *univocal* and a *dialogic* function, although in a given discursive activity one of these functions is usually dominant. The 'functional dualism' he calls attention to involves a *univocal* function of texts, characterized by the transmission metaphor of communication (Säljö, 2001), aimed at conveying meanings adequately, and a *dialogic* function of texts, involving multiple voices, where the text's function is seen as a generator of new meanings.

The two functions of text – univocal and dialogic – represent two styles of intermental functioning in the classroom (Wertsch & Toma, 1995), that is to say, transmission (cf. traditional IRE-discourse) and transformation (cf. dialogic discourse), respectively. Classroom discourse[11] dominated by IRE-sequences (Initiation-Response-Evaluation) is usually grounded in the univocal function of texts, that is, having clearly defined, unambiguous meanings, which "is fulfilled best when the codes of the speaker and the listener most completely coincide, and, consequently, when the text has the maximum degree of univocality" (Lotman, 1988, p. 34).

On the other hand, dialogic discourse provides a space for diverse voices in the development of shared understanding, since difference and negotiation are the very essence of the text's function as a thinking device. Consequently, the dialogic function of discourse is particularly important in classrooms with heterogeneous pupil populations (Pastoor, 2005: Paper II).

In conclusion, the different social communicative practices children meet in different settings, at home as well in school, will mediate various forms of mental functioning and consequently develop different ways of understanding and learning. Still, how may children appropriate the different constitutive discursive practices – with their often implicit codes and rules? Participation and enculturation into sociocultural practices facilitate children to acquire the appropriate cultural tools for communicating and thinking in ways validated within a given community.

2.5.2 *Learning as situated activity: participation and enculturation*

The situated-sociocultural approach, which has gained wide recognition since the 1990s, stresses the situated nature of knowledge acquisition as well as knowledge: "Knowledge is *situated*, being in part a product of the activity, context, and culture in which it is developed and used" (Brown, Collins & Duguid, 1989, p. 32, italics added). The view of learning as situated activity reunites the social, cultural and physical contexts within processes of acquiring knowledge and understanding (Chaiklin & Lave, 1993; Lave & Wenger, 1991; Rogoff, 1990, 1995).

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[11] The lack of a shared conceptual framework in the field of classroom interaction becomes apparent in relation to terms such as 'discourse' and 'genre'. The language of the classroom is usually termed 'classroom *discourse*' (Cazden, 1986, 2001; Hicks, 1996; Wertsch & Toma, 1995) and may be regarded as a '*Discourse*' (Gee, 1996). Wertsch and Smolka (1993) on the other hand, refer to classroom discourse as 'the *speech genre* of classroom interaction' (p. 80), emphasizing that this is language used in a particular setting, that is, the classroom. Yet others refer to different discipline-related, academic forms of classroom discourse, such as discourses of science and mathematics, as *genres of discourse* (Pontecorvo, 1997; Wells, 1999).

Sfard (1998a) refers to the situated view of learning as the *'participationist'* approach as it supports the learning metaphor of participation: "the idea of learning as *becoming a participant* in a certain practice or discourse" (p. 120). The focus of this perspective is not on having knowledge but on *doing*, that is, participation in ongoing sociocultural activities, as well as on *how* knowledge is used and produced in various settings. For each setting demands and develops cognitive processes of specific kinds (Resnick, Pontecorvo & Säljö, 1997; Säljö & Wyndham, 1993).

Furthermore, this new notion of learning views learning as a process of *enculturation* into a particular 'community of practice' and its culture through apprenticeship. Apprentices, that is to say, learners, become experts through participation in the practices of the community (Brown, Collins & Duguid, 1989; Lave & Wenger, 1991; Forman, 1996; Sfard, 1998a, 1998b; Säljö, 1994; 2001). The learning process is seen in terms of a 'transformation of participation' (Rogoff, 1994, 1995), from peripheral to full participation in a special type of practice or discourse. Learners' *legitimate peripheral participation* (Lave & Wenger, 1991) provides them with opportunities to gradually make the culture of a particular community of practice theirs, that is to say, learning how to perform, speak, believe and value in order to eventually become full participants.

Learning is thus considered to be an integral aspect of participation in practices. So, school learning occurs along with participation in the institutional, situated practices of the classroom. Pupils gradually learn to act in accordance with the classroom community's norms, rules and routines, which often are implicit as well as complex. To avoid connotations of craft apprenticeship in workplaces, the terms *cognitive apprenticeship* (Brown, Collins & Duguid, 1989; Collins, Brown & Newman, 1989) or *apprenticeship in thinking* (Rogoff, 1990) are used in relation to apprenticeship learning in school. Rogoff's (1990, 1995) concept of *guided participation* draws attention to that in a system of apprenticeship both pupils' active participation *and* guidance from more skilled others, involving overt assistance as well as implicit leads embedded in sociocultural practices, are essential for their development and learning. As pupils' skills and competence grow, the initial support is gradually removed and pupils as well as teachers' roles and responsibilities change. What is more, when becoming an 'insider', that is, a full member of the classroom community, the pupil's identity changes as well (Hundeide, 2003b; Rogoff, 1994)

The notion of cognitive apprenticeship is especially relevant in relation to learning in different academic disciplines, as in mathematics or science, which have their own vocabularies and specific discursive practices. In order to appropriate the ways of thinking

and communicating valued in mathematics, for instance, it is vital for pupils to get access to meaningful discourse and practice within a community of mathematics learners. The role of more experienced community members, such as the mathematics teacher or more expert classmates, involves communicating "the norms, values and discourse practices of the community to newcomers" (Forman, 1996, p. 118).

Pupils' participation in academic discourse supports their learning by enabling them to use, develop and appropriate the cultural tools and practices for meaning making, such as scientific forms of reasoning and talking (Brown, Collins & Duguid, 1989; Herrenkohl & Wertsch, 1999; Resnick, Pontecorvo & Säljö, 1997). Pupils acquire an understanding of how other members of the classroom community think and interpret through what they do and how it is talked about in classroom discourse. Successful enculturation into a community of learners leads pupils to replace everyday discourse with academic, discipline-based forms of discourse in the construction of knowledge.

Meaning is not *in* the language, but is in a particular community's *use* of the language (Gee, 1996), that is, in their discursive practices. Apprenticeship into discursive practices affords learners to appropriate the tools for meaning making through joint interaction and dialogue with people who have already mastered the discourse. Dialogic inquiry and meaning negotiation play a decisive role in apprenticeship as a context for learning (Brown, Metz & Campione, 1996; Wood, Bruner & Ross, 1976; Rogoff, 1990; Vygotsky, 1962):

> Dialogues provide the format for novices to adopt the discourse structure, goals, values and belief systems of scientific practice. Over time, the community of learners adopts a common voice and common knowledge base, a shared system of meanings, beliefs, and activity. (Brown, Metz & Campione, 1996, p. 162)

Creating a certain level of shared understanding is crucial in clearing the ground for joint knowledge construction. The act of creating a temporarily shared understanding, that is, "a shared social reality with respect to some state affairs" (Rommetveit, 1992, p. 23), between the participants in social interaction and discourse is referred to as establishing *intersubjectivity*. To achieve intersubjectivity between teacher and pupils in classroom discourse, in order to draw them together toward a common focus, activity or goal requires establishing joint attention and shared reference frames (Tomasello, 1999; Klein, 1992). Joint reference frames can be explicitly created through meaning negotiation but also more implicitly by using a particular form of discourse as a contextual frame: "Discourses are the

socially, culturally, historically developed frames in which the members of a group make and understand meaning" (John-Steiner, Panofsky & Smith, 1994, p. 38).

Despite dialogue and negotiation, classroom learning is very much a teacher-dominated affair. For it is the teacher's responsibility to lead pupils into a predetermined culture of classroom knowledge and practice with shared ways of speaking, thinking and interacting, that is, the development of a 'schooled', or academic, discourse: "The development of classroom knowledge is the development of a discourse, the creation of a shared conceptual framework, a common language for the interpretation and communication of thought and experience" (Edwards, 1990, p. 61).

However, putting emphasis on the teacher's 'leading' role in discourse does not mean ignoring pupils' contributions. Guided participation involves using pupils' everyday experiences and concepts as 'bridging' devices for conceptual development and learning (Rogoff, 1990). This is particularly important when classroom discourse is used as a means for supporting participation in discipline-based forms of discourse and practice, as in science and mathematics (Pontecorvo, 1997).

The two notions of learning discussed, that is, learning as discursive as well as situated activity, are interrelated and complementary. Both notions are important for explicating the sociocultural processes entailed in learning, and for illustrating how learning activities can be understood as social and dialogical in nature (Säljö, 2001, 2004). They jointly recognize learning in school as originating in social and discursive interaction as well as shaped by the institutional and cultural practices of the classroom. Both notions are presented here since they emphasize different dimensions of the sociocultural perspective on learning employed in the thesis. As the two notions of learning, i.e., as discursive and as situated activity, refer to different approaches – a semiotic and a modelling approach respectively (cf. Pontecorvo, 1997) – also the knowledge generated through these activities will be of a different nature.

In learning as discursive activity, the emphasis is on discourse and dialogue, that is, joint reasoning and meaning negotiation. Overt reasoning in dialogic discourse may allow generation as well as transformation of knowledge. The teaching-learning process involves explicit statements as well as implicit hints resulting from guided participation and dialogic scaffolding in and through discourse. This more formal kind of instructional practice is favourable to learning 'context-reduced'[12], scientific concepts and academic discourse.

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[12] As 'decontextualized' is a disputed notion, 'context-reduced' is sometimes used, in which 'reduced' refers to the immediate context of the experienced world. However, scientific concepts are related to a new kind of context constitutive of meaning, that is, the particular discursive context embodied in academic discourse, genre

Learning as situated activity, on the other hand, highlights participation and enculturation. It places primary emphasis on 'ways of doing and being'. Situated learning is mostly unintentional, learning occurs through imitation and modelling along with direct participation, meaning "informal tacit learning as part of a broader process of participation" (Hundeide, 2003b, p. 122). This more tacit way of learning sustains reproduction of classroom knowledge, especially matters involving cultural knowledge concerning norms, rules and procedures. The knowledge generated from joint participation in classroom practice is primarily contextualized and experience-based. When word meanings are not taught explicitly, the process of meaning acquisition through participation in situated practice may be limited to the learning of spontaneous or everyday concepts. Appropriation of academic concepts demands participation *and* guidance from more skilled others, i.e., *guided participation* (Rogoff, 1990, 1995) involving bridging between familiar everyday and academic concepts.

However, the indicated differences between the two sociocultural notions of learning are just analytical, allowing us to foreground one notion at a time. In actual classroom activities, discursive and social practices are constituted through each other and in the generated classroom knowledge both types of knowledge are intertwined, although, in a particular classroom activity the generation of one type of knowledge may dominate.

Until lately, sociocultural approaches to classroom learning were primarily relevant regarding research and practice in the field of 'mainstream education' (Measures, Quell & Wells, 1997). Yet, more recently, sociocultural perspectives have been applied in research on learning in multiethnic classrooms (Abreu, 1999; Abreu & Elbers, 2005; Elbers & Haan, 2004, 2005; Moschkovitch, 2002; Pastoor, 2005, Papers I-III).

3   The present study

3.1   Introduction

The present study draws its empirical data from an ethnographic case study of a Norwegian multiethnic classroom during the school year 1999/2000. In the course of a collaborative research project, qualitative research was carried out to gain insight into language practices in multiethnic classrooms in the Netherlands and in Norway (see Bezemer, Kroon, Pastoor,

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and register. Consequently, van Oers (1998) argues that we may rather refer to this process of (re)framing conceptual knowledge as a process of 'recontextualizing'.

Ryen & Wold, 2004). The initial findings from the comparative case study are further developed in the present study, which focuses on discourse as a mediator of learning in a classroom with a linguistically and culturally diverse pupil population.

The study aimed at examining processes of teaching and learning in the multiethnic classroom, based on observations and recordings of current classroom interaction. Since relatively little is known about educational practice in multiethnic classrooms (Elbers & Haan, 2004; Hyltenstam, Brox, Engen & Hvenekilde, 1996; Ryen & Wold, 1996), it was important not to be narrow-minded when entering the research classroom. Every particular way of seeing may involve not seeing something else. Keeping an open eye for unanticipated events may allow for the discovery of 'what counts' in a particular classroom setting. For that reason, the study started off with an open agenda and with broad, rather than specific, research questions.

However, as is characteristic of ethnographic fieldwork (Hammersley & Atkinson, 1995), the nature of my observations shifted in scope as well as in character as the research progressed. As I became more familiar with the various classroom settings, specific dimensions of classroom interaction caught my interest. In the course of research, *sensitizing concepts* (van den Hoonaard, 1997), i.e., constructs that make the researcher aware of possible lines of inquiry, emerged. These sensitizing concepts came forward through studying the observational data in their own right, as well as in light of existing theoretical understandings. Theoretical knowledge, such as outcomes of previous classroom studies and perspectives from sociocultural theories of learning (see Chapter 2), generated *foreshadowed problems* (Hammersley & Atkinson, 1995, p. 24). 'Foreshadowed problems' is a term introduced by the pioneer in ethnographic fieldwork, the anthropologist Bronislaw Malinowski (1922). He underlines the importance of distinguishing between foreshadowed problems and predetermined ideas when entering the field:

> Good training in theory, and acquaintance with its latest results, is not identical with being burdened with 'preconceived ideas'. If a man sets out on an expedition, determined to prove certain hypotheses, if he is incapable of changing his views … his work will be worthless. But the more problems he brings with him into the field, the more he is in the habit of moulding his theories according to facts, and of seeing facts in their bearing upon theory, the better he is equipped for the work. Preconceived ideas are pernicious in any scientific work, but *foreshadowed problems* are the main endowment of a scientific thinker, and these problems are first revealed to the observer by his theoretical studies. (1922, pp. 8-9, italics added)

Foreshadowed problems and sensitizing concepts are thus analytical devices that facilitate the shift from comprehensive observation to more focused observations as well as to analysis of particular aspects of classroom interaction. As the study advanced, certain sensitizing concepts became more elaborated and gradually turned into a set of analytical constructs and research problems.

As Hammersley and Atkinson (1995) call attention to, developing the research problems and the analytical framework during the early stages of the research process is one of the distinguishing features of ethnography: "… it is frequently well into the process of inquiry that one discovers what the research is *really* about; and not uncommonly it turns out to be about something rather different from the initial, foreshadowed problems" (p. 206). Such a responsive research approach, open to the researcher's commitment to (re)formulate and (re)test assumptions and theories in the light of further data, is consonant with the idea of ethnographic research design as an emergent and reflexive process (Hammersley & Atkinson, 1995; Massey & Walford, 1998). This kind of evolving and reflexive approach to developing the eventual research questions, and the adopted analytical framework, has also been employed in the present study.

The title of this thesis, *Learning discourse*, indicating the thematic and analytic focus of the study, is the result of a sensitizing construct derived from studying the initial collected data, theoretical perspectives on discourse and learning, as well as earlier studies of classrooms in general, and multiethnic classrooms in particular. The focal theme 'learning discourse' produced a set of three research questions concerning (1) the specific nature of classroom discourse as educational practice, with a particular focus on discourse dimensions enhancing pupil participation, (2) the role of classroom discourse in developing shared understanding in the multiethnic classroom, and (3) the appropriation of academic forms of discourse, such as mathematical discourse (see 1.4 for a more elaborate description).

In order to investigate the generated research questions, an ethnographic approach was adopted as it allows directing attention to both micro- and macro-contextual dimensions of classroom interaction, which is of particular importance in classrooms with diverse pupil populations.

3.2   Classroom ethnography

Discourse and learning in multiethnic classrooms may be investigated in different ways. However, what can be learned and understood through one research approach is different from what can be learned and understood from another. Hence, there is a close connection

between the research questions brought forward in this study and the research design chosen, that is, an ethnographic case study. Studying teacher-pupil interaction during the everyday practices of the multiethnic classroom 'at first hand', called for a research approach only classroom ethnography can meet.

Classroom ethnography involves in-depth observation of classroom life over an extended period of time, such as a school year or a semester. It is a situated approach that aims at investigating what 'actually' goes on inside the classroom by studying its micro-universe, since it is there the actual teaching and learning take place. In this kind of naturalistic, that is, non-experimental, qualitative research, the emphasis is on observing, describing, interpreting, and understanding naturally occurring classroom behaviour rather than testing preformulated hypotheses.

The term 'ethnography' is used in various ways. Depending on the context of use, it may refer to a wide variety of phenomena, that is, "as a process, a product, an area of study, or a way of constructing knowledge" (Green & Bloome, 1997, p. 183). Despite this, Hammersley (2006) distinguishes as central to ethnography its particular methodological orientation:

> I will take the term to refer to a form of social and educational research that emphasises the importance of studying *at first hand* what people do and say in particular contexts. This usually involves fairly lengthy contact, through participant observation in relevant settings, and/or through relatively open-ended interviews designed to understand people's perspectives, perhaps complemented by the study of various sorts of documents – official, publicly available, or personal. (p. 4)

When studying classroom interaction, particularly interaction in the multiethnic classroom, one has to keep in mind that one cannot study the micro-context of classroom practice separated from its wider macro-context. An analysis of classroom discourse, for instance, involves accounting for various contextual levels, that is, the institutional and cultural context concerning classroom discourse as the discourse of schooling as well as the particular classroom context where teachers and pupils jointly create situated meaning through discourse. Therefore, it is of fundamental importance that another essential characteristic of classroom ethnography is its sensitivity to context. In this respect, Watson-Gegeo (1997) underlines classroom ethnography's distinct values as follows: "In contrast to quantitative approaches to classroom research, classroom ethnography emphasizes the

sociocultural nature of teaching and learning processes, incorporates participants' perspectives on their own behaviour, and offers a holistic analysis sensitive to levels of context in which interactions and classrooms are situated" (p. 135).

Consequently, classroom ethnography has achieved extensive support as an approach to classroom research in education in general as well as in studies of language teaching and learning (Allwright & Bailey, 1994; Erickson, 1977, 1982; Green & Bloome, 1997; Hammersley, 1990, 2006; van Lier, 1988; Massey & Walford, 1998; Watson-Gegeo, 1997).

3.3   Criteria for classroom selection

The research questions, the ecological validity of the Dutch and Norwegian classrooms with respect to pupil characteristics, as well as the issue of gaining entrance, had impact on the selection of the classrooms in the two countries.

Given the focus of the comparative case study, that is, first and second language acquisition in a multicultural context, a linguistically and culturally diverse pupil population had to be a characteristic feature of the school to be selected for our research. In agreement with the Dutch counterparts, it was decided that the project would be carried out in a multiethnic school from an urban area characterized by a culturally and socio-economically heterogeneous population. As an ideal classroom for our study, we saw a class and a school with a rather balanced percentage of language minority pupils and language majority pupils (i.e., pupils speaking the dominant school language as their first, and usually sole, language). At least 40 percent of the classroom population should be registered as language minority pupils.

Furthermore, the Norwegian class to be studied had to be comparable with the Dutch research class in terms of the pupils' age, grade and literacy level. Another consideration was that in Norway in 1997, as part of a wide-ranging educational reform called *Reform 97*, compulsory education in Norway was extended to ten years[13], that is, from the ages of six to sixteen. The first cohort of pupils starting school at the age of six and following the new curriculum was in the third grade the year we were to collect our data, the school year 1999/2000. Consequently, it was decided to focus the Norwegian classroom study on a third grade class. In Norway, literacy lessons started off in the second grade at that time[14]. Thus, by grade three, pupils were in their second year of learning to read and write. In the Netherlands,

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[13] Since 1997, Norwegian compulsory education consists of seven years of primary education and three years of lower secondary education.
[14] At present, as a result of the educational reform *Kunnskapsløftet* [Knowledge Promotion] in 2006, reading and writing instruction is introduced in the first grade.

most pupils enter school at the age of four[15] and start learning to read and write in the third year of primary school when they are about six years old. This lead to the selection of a third grade class with eight-year-old pupils in Norway, which, in terms of the pupils' literacy experiences, was comparable to the selected fourth grade class with seven-year-old pupils in the Netherlands.

3.4   Gaining entrance

With the above mentioned considerations in mind, and along with the information received from Oslo Education Authority (*Skoleetaten*) regarding various schools' pupil populations, three primary schools meeting the criteria were selected as potential research sites. Two of the three schools approached in February 1999 indicated that for various reasons it would be difficult to participate in a research project the following school year. However, the principal of the third school, *Ekelund* Primary School, indicated great interest in taking part in the study, once the aim of the research project and what it involved were explained. The next step was to find a form teacher, due to teach the next term's third grade, who was willing to participate in our study.

Ekelund's lower grades consisted of two parallel classes each. The teacher who was initially suggested by the principal, the form teacher of class 2B (the later 3B[16]), hesitated to participate as it would be her first time teaching a third grade class. The form teacher of the parallel class 2A (the later 3A) was not initially proposed by the principal, as she already had some other assignments in addition to her regular teaching. However, this teacher subsequently contacted us of her own initiative, telling us that she would very much like to participate in our study the following school year.

The next step was to send an application to *Ekelund*'s School Board (*Driftsstyre*[17]) to gain their approval to carry out research at their school. The research request also included plans for a pilot project, due to be conducted prior to the main data collection, which was carried out during the spring term of 1999 in another third grade class at the same school. The pilot project was designed to test our research methods of observation and interviewing, as well as to learn more about the technical aspects of audio and video recording in a classroom.

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[15] According to the Dutch *Leerplichtwet* [Compulsory Education Act] children must attend school once they have turned five, but they can start school when they are four years old.
[16] To create a stable classroom environment, Norwegian form teachers usually teach a class for a number of years, especially at the lower primary stage.
[17] Since 1998, *Ekelund* has its own School Board (*Driftsstyre*), which has authority over the school's management. This board consists of five board members, that is, two school employees, two parents and one representative of the urban district council.

In addition, it contributed to identifying some of the challenges in the field and allowed us to formulate certain research questions in more detail.

3.4.1 *Ethical considerations*

As it is important to secure the permission as well as the confidence of the teachers, pupils and parents concerned, all of these groups were thoroughly informed about the research project and the researchers' presence in the classroom. As soon as the school board approved, the parents of the pupils involved in the study were contacted. Consent letters, translated into the different home languages, explaining aims and methods of our study were sent home to the pupils' parents. In addition, the parents were informed about the classroom study at a parent-teacher meeting. All parents gave their written consent to the planned research in their children's classroom as well as to the interviewing of the child in the course of the school year.

The staff, as well as the parents and the pupils, were all informed that the identities of the participants in the project would not be revealed. The school, teachers and pupils have therefore been assigned fictitious names to protect their anonymity. Yet, despite being fictitious, the names chosen are ethnically distinctive.

Furthermore, it needs to be emphasized that it is not the intention to be critical of the teachers involved in this study. It is well known that teachers are under various constraints when teaching, such as constraints of time, materials and syllabi, as well as pupil expectations (Polio, 1996). It is therefore important to be aware of the teachers' exposed position in reporting classroom research:

> It is impossible for any teacher to keep track of all that is said and done, and all that is implied, in any lesson. There are many distractions, and other priorities apart from strictly pedagogic ones. We are merely using our privileged position as observers who have unique access to a permanent record of events, to try to identify what happened, in the belief that it is essentially in the discourse between teacher and pupils that education is done, or fails to be done. (Edwards & Mercer, 1987, p. 101)

The Norwegian Social Science Data Services (NSD[18]), a national resource centre servicing the Norwegian research community, which was informed about the research project, gave their approval. Their approval takes into account such issues as the achievement of informed consent, the provision of confidentiality of the participants, the research methods and the procedures guaranteeing the safekeeping of the collected data.

3.5   The school, the teachers and the pupils

3.5.1   *The school*

The research school, *Ekelund*, is an urban primary school situated in Norway's capital, Oslo. The school is located in what used to be a typical industrial neighbourhood, with a population primarily composed of factory workers. Recently, urban renewal and modern blocks of flats have changed the neighbourhood's distinct character. About one-third of the population in this part of town consists of immigrants from non-western countries. The neighbourhood's present population is rather heterogeneous, ethnically and culturally as well as socioeconomically.

Like most Norwegian primary schools, *Ekelund* is a public school. It is a school for grades one to seven, with nearly 400 pupils the school year 1999/2000. The school has sixteen classes and about forty teachers, both form teachers and subject teachers, employed. Additionally, there are another twenty staff members working in the after-school-programme, the library, the administration, and the cleaning division. Every grade has, in addition to their own classroom, access to another classroom to be used for various activities, such as the Norwegian as a second language lessons.

In 1999, approximately 45 per cent of the *Ekelund* pupils were registered as language minority pupils, and about 25 different mother tongues were recorded. Urdu was by far the most frequently registered mother tongue, followed by Albanian, Somali, Panjabi and Tamil (ranked according to their frequency). During the school year 1999/2000, *Ekelund* had two bilingual teachers, one Urdu-Norwegian and one Somali-Norwegian. The multicultural character of *Ekelund* is acknowledged in some of the school documents, including the school's action plan for the year 2000. To emphasize the school's multilingual environment, the weekly lesson called 'School's and Pupil's Options' was spent on a joint language learning programme for grades one to four over a period of five weeks during spring 2000.

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[18] NSD has set up a special privacy issue unit responsible for contact between the research community and the Norwegian Data Inspectorate, which makes NSD a mandatory broker in all cases where research involves the collection of personal data.

The pupils could make a choice out of seven different languages, including Arabic, Danish, French, Italian, Somali, Spanish and Urdu. During these weeks the children learnt some basic words and expressions, and a song in the language of their choice.

3.5.2 The teachers

Class 3A had more teachers than what was common in other *Ekelund* classes. This was partly due to the fact that the form teacher also taught another grade as an Arts and Crafts teacher.

Karin, the form teacher, had more than twenty years of teaching experience. She had been employed at *Ekelund* for about ten years, and had been 3A's form teacher since the second grade. Karin taught the class for sixteen periods a week: Mathematics, Norwegian as a second language (NL2), Social Studies, Arts and Crafts, and Music (see Appendix C for timetable class 3A). She is a dedicated teacher who has taken further education relevant to language minority pupils, for instance courses in NL2.

Jon, the co-teacher, was a young and recent graduate from the Teacher Training College. He taught class 3A for thirteen periods a week: Norwegian as a first language (NL1), Science and the Environment, Physical Education, English, and Free Activities. Besides being a teacher in 3A, Jon also co-taught class 3B. Tore, a young university educated teacher, took the class for the subject Christian Knowledge and Religious and Ethical Education (CRE), for two periods a week.

Nasreen, the bilingual Norwegian-Urdu teacher, taught various 3A pupils for six periods a week. She had two separate Urdu lessons with the Urdu-speaking pupils in 3A. At first, Nasreen assisted Jon and Karin in their classroom teaching. Later on, when the class was split in two during Mathematics lessons, she taught one of the groups. Hassan, the bilingual Norwegian-Somali teacher, was allocated three periods a week in 3A, in order to teach a pupil with a Somali background. The pupil was usually taken out of the class for separate tuition, which was given in either Somali or Norwegian.

Kine was a young teaching assistant assigned to a minority pupil with rather serious learning disabilities. She helped him during the lessons or took him out of the classroom for separate tuition. Annette, Eskil and Niklas were substitute teachers, standing in for the other teachers when required (See Appendix B for overview of teaching staff and teaching periods).

3.5.3 The pupils

Class 3A, the research class, was one of two parallel classes of *Ekelund*'s third grade. This third grade belonged to the first group of pupils who started schooling at the age of six, as a

result of the educational reform in 1997. The pupils were approximately eight years old, when our classroom recordings started autumn 1999.

Eleven of the twenty-four pupils in class 3A had Norwegian as their first language, while thirteen pupils had Norwegian as their second language and were registered by the school as language minority pupils. Besides Norwegian, nine other mother tongues were represented in the class: Albanian, Arabic (three pupils), Croatian, Hindi, Mandingo, Panjabi, Somali, Turkish, and Urdu (three pupils) (see Appendix A for an overview of pupils' names and ethnolinguistic backgrounds). Ten of the thirteen minority pupils were born in Norway, while three of them had lived in Norway for only a few years. Twelve minority pupils participated in the NL2 lessons; one minority pupil followed the NL1 lessons.

3.6   Data collection

Various ethnographically oriented research methods were used during the data collection, resulting in a primary data base consisting of field notes and audio and video recordings of the regular class, as well as the 'pull-out' instruction for pupils learning Norwegian as a second language. The classroom recordings were supplemented with interviews with the pupils, the teachers and the principal, as well as written documents such as textbooks, pupils' workbooks, school documents and policy papers.

3.6.1 *Observations*

The main data collection in the selected research classroom took place during the school year 1999/2000. In agreement with the Dutch counterparts, it was decided to start off in 1999 with a whole week of classroom observation as well as audio and video recording during the week immediately following the autumn holiday in the respective countries. In addition to these five days of continuous observation and recording, involving 25 regular lessons and 6 pull-out lessons in Norwegian as a second language (each lesson lasting 45 minutes each), subsequent classroom observations with and without recording were undertaken frequently throughout the school year (for overview of my school visits, see Appendix H). After the initial period of broad familiarization, the classroom was visited recurrently, although with a gradually more selective approach, that is, choosing specific lessons and activities for closer examination in order to attend to particular research interests.

The classroom contexts studied involved various instructional settings within the regular classroom of class 3A, such as whole-class teaching, group work and individual instruction, as well as the withdrawal class for the teaching of Norwegian as a second

language. Also some visits to the mother tongue instruction classes for minority pupils of Pakistani and Somali descent were included. Furthermore, I attended parent-teacher meetings, was present at school events like literacy nights and the1000[th] anniversary-jubilee of Oslo and joined the class in their Christmas and Santa Lucia Day[19] celebrations. I also took part in class outings, such as trips in the neighbourhood and to the skating rink in the centre of town.

Educational ethnography is concerned with recording naturally occurring events as they happen in the day-to-day course of the classroom. Participant observation allows researchers to observe classroom communication at first hand and *in situ*, that is, in its natural environment. To ensure that the recorded data would reflect ordinary classroom life, we tried to be as unobtrusive as possible when present in the classroom. So as not to disturb the regular classroom interaction, the research team decided not to participate in the classroom interaction and to be 'complete observers' during recording.

However, the researcher's presence in the classroom and the recording itself may well interfere with the regular classroom interaction (cf. 'the observer's paradox'; Allwright & Bailey, 1994, p. 71). For that reason, we prepared both teachers and pupils for what would come before we started the classroom recording. We introduced both ourselves and the recording equipment, as well as answered questions concerning the recording itself and the purpose of it. The pupils were told that we would be in their classroom in order to learn from them since we were interested in knowing more about everyday life in a classroom where pupils had different mother tongues. As it finally turned out, we had no reason to believe that the presence of the researchers or the recording equipment had 'distorted' the classroom interaction.

During the main research period, I visited *Ekelund* approximately 70 times (this was in addition to almost 20 visits during the pilot project) for observations, interviewing and discussions with the staff (see Appendix H). In addition to the initial week of classroom observation, I visited the research class throughout the remainder of the school year for approximately another 30 days for the observation of selected school days, lessons and events. The observations, primarily carried out in the regular class and the Norwegian as a second language class, varied in terms of the number of hours, the number of observers present (one or two), and whether they were accompanied by some kind of recording or not. In all, about 80 lessons were audio recorded, of which 30 were video recorded as well.

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[19] Santa Lucia Day: Scandinavian celebration of Santa Lucia, the Saint of Light, on December 13th, which is one of the shortest and darkest days of winter.

3.6.2 *Recordings*

In current ethnographic classroom research, the value of combining different complementary forms of classroom recording, such as field notes, audio and video recording is emphasized (Hammersley & Atkinson, 1995).

The fact that we did not participate actively in the classroom interaction, made available more time for observation and also made it easier to make *field notes*, that is, written records of observations, conversations, interactions and situational details, on site. However, writing down everything seen and heard is impossible, for that reason audio and video recording became an essential supplement to observation. The observational notes could then focus on aspects of context that were not tape recorded, like non-verbal and contextual information, including what was written on the blackboard.

Since we were interested in recording actual classroom talk and not just in obtaining a general idea of content, we used audio recording equipment frequently. One important decision was the kind of equipment to use in order to succeed in comprehensively recording classroom communication. To start with, throughout the pilot project and during the first period of recording in the main research classroom[20], we used an audiocassette recorder, which recorded on analogue cassette tapes, and one or two stationary microphones. In addition, a wireless microphone was worn by the teacher to record her/his monitoring of individual pupils in various classroom settings, and not just whole-class instruction. After the Christmas holidays we started recording on digital audio tapes by means of a MiniDisc (MD), which was less obtrusive and easier to install. The teacher continued to use the wireless microphone, though the stationary microphones were omitted.

Making detailed transcriptions of audio recorded classroom conversations is a time-consuming[21] process, even if you use standard orthography (Allwright & Bailey, 1994). Therefore, strategic decisions need to be made regarding whether full transcription is necessary and how detailed transcriptions should be (Hammersley & Atkinson, 1995). Ochs (1979) draws attention to the fact that transcribing is not an objective 'straight track' procedure, but "a selective process reflecting theoretical goals and definitions" (p. 44). Transcriptions will thus differ in degree of specificity depending on the research purpose and

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[20] During this first period, an audio-video technician from the Department of Psychology took care of the technical aspects of recording. After Christmas, we merely audio recorded, which was done by the researchers themselves by means of a MiniDisc.
[21] While transcribing native speaker dyads normally takes about five times the length of the recording, detailed transcription of one hour of recording in a classroom where there are many non-native speakers and/or speakers with similar voices that overlap frequently, can take up to 20 hours to transcribe (Allwright & Bailey, 1994, p. 62).

the kind of analysis the researcher has in mind. Although selectivity is to be encouraged, researchers have to be conscious of their decisions about what information to present or not to present, since the generated transcripts will be used as a basis for subsequent analyses and interpretations.

The audio tapes of the whole week of classroom recording (4-8 October 1999) were transcribed by the two researchers[22] that were present in the classroom at the time the recording took place. At first, the recordings were carefully but rather generally transcribed, that is, not in full detail, though accurate enough for the purpose of a preliminary analysis of the classroom observations. Later, more detailed transcripts were made as specific lessons, practices or episodes were selected for the purpose of closer examination and further analysis (more about this in the Analysis section 3.7). It is often assumed that transcribing is to come before data analysis. However, preliminary analyses occur throughout the research process, and from the moment we start collecting our data, for example, when making field notes (deciding what and how to write down), when recording (deciding what and how to record), and when transcribing (deciding what and how to transcribe).

Subsequent observations and audio recordings were treated very much in the same way as the first classroom recordings. This entailed making rather general summaries of the recordings initially, yet transcribing in more detail later what caught immediate attention and/or what seemed significant in relation to the research questions. Then, when episodes were selected for further examination and analysis, the audio tapes were replayed and the transcriptions improved. The final transcriptions were then added to the corpus of earlier collected texts.

During the first period of familiarization, the classroom interaction in the regular classroom was also videotape recorded. Video recording can serve as an 'external memory' (Mehan, 1981, p. 47), relieving the researcher from having to write down all the details of classroom interaction meticulously. The video recorder was stationary, placed in a corner of the classroom over the washbasin, to the right of the blackboard. The video camera's fixed position made the recording minimally intrusive, and the teachers as well as the pupils seemed to acclimatize quickly to the recording. The video recordings gave a comprehensive overview of what happened in the classroom, but could neither reveal details of individual pupils' interaction, nor show what was written on the blackboard. However, the limitations of

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[22] Twenty of the twenty five lessons recorded were transcribed by me; the remaining five lessons were transcribed by Astri Heen Wold, the other researcher present. During transcribing, we used a tape recorder with a 'transcriber' function, that is, a tape recorder with a foot pedal to control stopping, rewinding and starting the tape.

microethnography, that is using "machine recording as a primary data resource in fieldwork research" (Erickson, 1986, p. 144), can be overcome by complementing it with data resources of regular ethnography, such as observations and field notes. Hence, the videotapes were mainly used as a triangulation device[23] to cross-check the reliability of the field notes and audio recordings.

3.6.3 *Interviews*

To complement the collected classroom data, I interviewed all twenty-four pupils as well as the five teachers and a teaching assistant involved in teaching pupils of the research class. All pupil and teacher interviews[24] were audio recorded, and were afterwards transcribed by a professional transcriber typist.

Interviewing pupils is less common than interviewing teachers **(**Cazden, 1986, p. 457). However, when one regards education as a dialogic phenomenon, it is essential to get both teachers' and pupils' accounts and interpretations of their participation in classroom activities. The semi-structured interviews were relatively open-ended, designed to allow the participants to share in their own words what was important to them about being a pupil or a teacher in the multiethnic classroom under study, as well as to gain supplementary contextual information.

Towards the end of the school year, each pupil was withdrawn from class for an individual interview for the duration of approximately one teaching period (45 minutes). The pupils were told that the reason for interviewing them was that they were 'experts' on what it is like to be a pupil in this particular classroom, and that I would like to learn from them. The interviews focused on such matters as (a) family composition, the language(s) spoken at home, with whom the pupils speak these languages and the language they prefer to speak or speak the best, (b) their relation to the country where their first language is spoken, (c) how they experience school, the class and their relations with other classmates, (d) enquiries about which subjects they like, dislike or experience as difficult, (e) how they cope with difficulties in carrying out school tasks or not understanding what the teacher says, (f) (meta) language questions (e.g., Do you know what a word/sentence is?), (g) activities they are engaged in after school and during the weekends, and finally (h) their plans for the future, what they

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[23] However, in Paper I, *Classroom discourse as educational practice*, in which I compare NL1 and NL2 lessons on rhyming, I made use of the video recorded interaction of a NL1 lesson as a major source of information. I was not able to be present at the NL1 rhyming lesson, since I observed the concurrently conducted NL2 lesson in the classroom next door. The Norwegian video tapes were not used in the comparative data analysis of the joint study, since the Dutch research team did not video record the interaction in their research classroom.
[24] Except the two bilingual teachers who preferred that notes be taken rather than being audio recorded during the interview. What they said during the interview was therefore written down by hand, as detailed as possible.

would like to do when they grow up. The information collected by means of these interviews facilitated a more comprehensive and more *emic,* that is, participant-relevant, interpretation of pupils' participation and performance than what classroom observations and recordings on their own might have allowed.

The conducted teacher interviews involved interviews with the form teacher, the co-teacher, the subject (CRE) teacher and the two bilingual teachers of class 3A. A 'long interview' (cf. McCracken, 1988) of about two hours was conducted with the form teacher in September 1999, before the classroom recording started. This interview intended to obtain insight into the teacher's educational reflections, concerns, motivations, and so on. Also time was given to the teacher's own biography during the interview, in which she told about her personal experiences of being a pupil, her teacher education and her professional career.

The other teacher interviews were semi-structured interviews, which were carried out at the end of the school year. They were conducted at school and lasted for approximately one hour each. In addition to interviewing each teacher formally concerning their educational objectives and reflections regarding teaching the pupils of 3A, there were also informal talks with the teachers during breaks and lunch hours on issues that had caught attention as they came up. Furthermore, there was also set aside time for more formal discussions with the form teacher to discuss topics of interest for both parties.

While observation provides information about current classroom interaction, the interviews with teachers and pupils provided a chance to learn how they themselves reflect on their participation, goals, assumptions, and any other topics of importance to them. Incorporating participants' own accounts of past and present experiences may allow the researcher to achieve an insider's perspective on classroom life.

Furthermore, the school's principal was interviewed about his considerations, understandings and experiences in running a school with a culturally and linguistically diverse pupil population and about the school's commitment to principles of multilingual education.

3.6.4 *Documents*

The classroom data collected at the micro-level also included various written texts, such as pupils' work, homework sheets, textbooks and other teaching materials. These classroom documents were supplemented by secondary data at the meso- and macro-level, such as school documents (e.g., action plans, pupil registration, timetables), national curricula, and papers on local and national educational policies.

3.7   Analysis

The present study is primarily based on qualitative analysis of excerpts of classroom discourse, using transcribed audio recordings (and a few video recordings). The transcriptions are complemented and triangulated with field notes, teacher and pupil interviews, and written documents.

Investigating the complex and multifaceted interaction in a multiethnic classroom calls for collecting comprehensive classroom data. Yet, there is a limit to the amount of data that can be reasonably handled. In order to achieve a better overview, some crucial decisions had to be made regarding how to organize the collected data as well as how to choose what to analyze. A variety of ethnographic procedures was pursued to reduce and structure the large amount of data before starting off with the actual analysis.

An important tool for structuring and presenting the data collected during the five consecutive days of classroom recording in October 1999 was an English *synopsis* comprising the transcribed data. In the synopsis there was a separate column, to the left of the transcribed classroom discourse, for additional information such as observational notes and tentative analytic comments. The synopsis also comprised information about the school, the teachers and pupils involved, the seating arrangements, the timetable, and copies of the teaching materials referred to in the classroom accounts.

The synopsis was written in English in order to allow the Dutch researchers access to the Norwegian classroom data. In that way, the synopsis facilitated triangulation of data as well as a triangulation of multiple perspectives due to the international and multidisciplinary composition of the research team. As a result of joint processes of triangulation and validation, these earliest collected data became a major source of knowledge about the educational practice in the Norwegian classroom. Frequently discussing the collected data with fellow researchers abroad allowed for discovery of the significance of classroom episodes and details of classroom practice that researchers doing fieldwork 'at home' might be otherwise likely to overlook. To see the strange in the familiar may be difficult for 'insiders'. The anthropologist Kluckhohn illustrates this well when saying "The fish would be the last creature to discover water" (cited by Erickson, 1986, p. 121).

Qualitative analysis is the product of an inductive and generative process. As mentioned earlier, the initial analysis started already in the classroom, because deciding what to observe and record is a selective process. Then, the more formal analysis began with a thorough and systematic reading and rereading of the texts assembled in the synopsis to achieve "a sense of the whole" (Tesch, 1990, p. 96), and to strengthen the subsequent

interpretation of individual data segments. This way of studying and analyzing classroom data is often referred to as a *hermeneutical interpretative* approach. The hermeneutical circle, considering the whole in relation to its parts and vice versa, is a methodological device that provides a vital means for inquiry and comparison in qualitative analysis (Tesch, 1990).

Subsequently, the meaning and relevance of particular classroom episodes were considered in relationship to the whole, that is, the entire corpus of data. Once these episodes became better understood, the whole itself became more perceptible. Finally, in the light of emerging new understanding of the whole, the parts were reinterpreted. The intent of studying and interpreting episodes in a hermeneutical way was to try to find out what they actually meant as well as to decide what episodes were *meaningful episodes* in relationship to the total data corpus.

In his attempt to demystify data construction and analysis in qualitative research, Erickson (2004) emphasizes that data analysis is never theory-independent, thus data and analysis have to be constructed *together*. Qualitative data, as well as the patterns or themes discerned in the data, do not simply emerge; they must be *actively* discovered by the researcher using a set of data sources. Thus, transcribed audio and video recordings, field notes and interview transcripts are not 'data' in their unreduced form, "they are resources for data construction within which data must be discovered" (Erickson, 2004, p. 486).

The data compiled in the synopsis were continually reviewed and analyzed along with data from additional site visits that allowed refining of the analysis. Based on triangulation of various data resources, that is, observational notes, transcripts, interviews and documents, certain recurrent and/or meaningful episodes caught the eye and were selected for further analysis. As soon as an episode had been selected for further analysis, it was carefully transcribed in accordance with the adopted transcription conventions (see Appendix F).

As explained above, the term 'meaningful episodes' implied an assessment made in view of the imminent significance attached to particular episodes of classroom discourse in relationship to the entire data corpus. A meaningful episode might then become a key episode when it had the potential "to make explicit a theoretical 'loading'" (Erickson, 1986, p. 108). A number of meaningful episodes became *key episodes* as they, in one way or another, had an impending potential to shed light on the research questions of this study through their connection with the theoretical framework and the analytical constructs that had come forward in the course of the research process (see Figure 1 next paragraph).

The primary analytical construct 'learning discourse', and a subset of related constructs, such as 'educational discourse', 'academic discourse', 'discourse pattern',

'dialogue' and 'participation', were central devices guiding the identification, selection and analysis of key episodes in the present study. The selected key episodes were regarded as having the potential to reveal underlying social, cultural and discursive practices of classroom discourse.
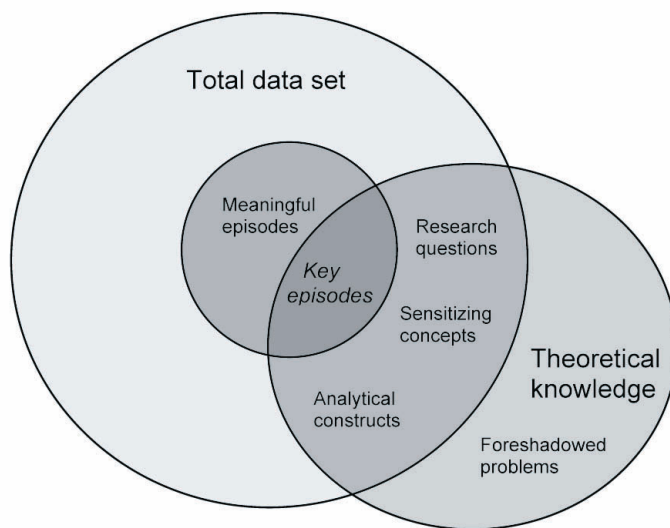

Figure 1. Model of generation key episodes

The handling of the selected key episodes was based on the ethnographic procedure for the selection and analysis of 'key incidents' or 'key events' (Erickson, 1977; Green & Bloome, 1997):

> … the ethnographer identifies key events or incidents (e.g., recurrent events and events that have sustaining influence); describes these events or incidents in functional and relational terms; explores links to other incidents, events, phenomena, or theoretical constructs, places the events in relation to other events or to wider social contexts; and then constructs a description so that others may see what members of a social group need to know, produce, understand, interpret, and produce to participate in appropriate ways. (Green & Bloome, 1997, p. 186)

Once a potential key episode was identified and selected, various items of the total data set – such as transcripts of the lesson involved and of other relevant lessons, field notes, interviews and school documents – were further investigated in order to reveal *key linkages* (Erickson, 1986, p. 147). The search for key linkages involved tracing patterns within the data set at hand

and looking for links at different levels of the various data sources. The different links were related to topical interests, including subject matter, activity, participants, discourse patterns, national curriculum or theoretical constructs, such as 'dialogue' or 'scaffolding'. By doing so, different kinds of data could be triangulated concerning various dimensions of the classroom episode under study.

Furthermore, the use of key linkages in qualitative data analysis helps to connect different pieces of data as well as facilitates the move from the concrete level of empirical data to a conceptual level. In qualitative research, there is thus an inherent dialectic, that is, a moving back and forth, between the empirical and the theoretical as well as between data collection and data analysis, shaping the research process.

The selection of key episodes and the exploration of key linkages allow a focused, though contextualized, analysis of classroom discourse. A key episode both reflects and is reflected on in the light of its particular social and cultural discursive context, it forms a *pars pro toto*, that is, in which the part stands for the whole:

> The qualitative researcher's ability to pull out from field notes a key incident, link it to other incidents, phenomena, and theoretical constructs, and write it up so others can see the generic in the particular, the universal in the concrete, the relation between part and whole (or at least between part and some level of context) may be the most important thing he does. (Erickson, 1977, p. 61)

Classroom ethnography is to be seen as situated inquiry (Green & Bloome, 1997). The knowledge developed in and through classroom discourse is constituted *in situ* by the participants involved. However, the discourse gets shaped by prior understandings, beliefs and experiences teachers and pupils resort to in the discourse. Ethnography allows researchers to connect situated, institutionalized discourse with social and cultural practices (Duranti, 1997). In the present study, the selected key episodes are discourse episodes that have essential qualities to empirically demonstrate inferred social, cultural and educational practices underlying the discourse in the classroom under study.

The nine key episodes of classroom discourse I have identified and analyzed in the three papers included in this study are not intended to be comprehensive – neither alone nor collected (see 4.4 for overview of papers and key episodes). My intention is rather to demonstrate how the various discursive practices employed in a particular classroom community jointly produce the discourse that constitutes and mediates classroom knowledge.

4 Summary of papers

4.1 Summary of paper I

Classroom discourse as educational practice: Exploring pupil participation and engagement

The background for writing this paper is that current educational approaches and, consequently, curricula emphasize the importance of pupils' active participation in classroom discourse to support learning in general, and language learning in particular. Also in Norway, the last national curricula emphasize active pupil participation as well as the use of classroom discourse as a tool for working and learning in most subjects, though especially in language arts lessons. However, even if curricula stress pupil participation in classroom discourse, they fail to describe *what* kind of participation is referred to and *how* it can be encouraged and sustained.

The present paper explores classroom discourse as it occurs in the language arts lessons of the Norwegian multiethnic third grade class under study. It is based on qualitative analysis of discourse episodes, using transcribed audio and video recordings, field notes, interviews and teaching materials. The intention of the paper is to gain better understanding of the intricate dynamics of classroom discourse as educational practice. It pays special attention to which discourse dimensions and qualities may enhance pupils' participation and engagement in learning activities.

The paper examines and compares the educational discourse in two parallel, but separate, language arts lessons where rhyming is introduced to two different groups of pupils: a Norwegian as a first language (NL1) group and a Norwegian as a second language (NL2) group. Two discourse episodes are analyzed and compared concerning social-interactional, instructional and emotional-motivational dimensions of discourse. The analysis displays how participation structures, instructional strategies and affective qualities of the discourse jointly create the participatory framework affording opportunities for participation and knowledge construction in and through discourse. The investigation of the communicative interaction in the two lessons reveals that otherwise comparable discourse formats of teacher-led, whole class instruction (i.e., IRE and IRF successively) constitute educational practices that differ markedly in terms of pupil participation and involvement.

The study employs a comprehensive sociocultural framework, comprising an expanded metaphor of scaffolding that also includes emotional support, such as praise and encouragement. Paying attention to affective dimensions of teacher-pupil relationships is

particularly important in participative learning environments where interactions are considered so essential. The analysis of the affective qualities of the instructional moves in the episodes suggests that pupils' engagement in educational discourse depends not merely on *what* teachers do but also *how* it is done. The way the teacher follows up pupil contributions, for instance, an implicit rejection by ignoring the answer, a dejected 'no', an encouraging nod, a confirming 'yes', or an overt praise, may be crucial for the pupils' further engagement in the discourse.

As to learning in and through discourse, it is thus not merely pupils' participation in discourse that counts; just as important is *the quality* of the communicative interaction through which learning is mediated. It is suggested that certain discursive scaffolding devices may increase *the quality* of educational discourse. Special emphasis is given to: (1) joint attention and joint involvement, (2) dialogic question and answer practices, and (3) emotional support and inclusion.

Two metaphors for learning (cf. Sfard, 1998b) are applied as a framework for interpreting the different kinds of educational practice observed in the two lessons, that is, the *acquisition* metaphor and the *participation* metaphor. While the emphasis in the NL1 lesson is primarily on evaluation of individual pupils' acquisition of knowledge, the emphasis in the NL2 lesson is above all on joint participation and collaborative knowledge construction. The findings indicate that the participation metaphor has the potential to advance a more inclusive and dialogic educational practice, allowing pupils – regardless of linguistic and cultural backgrounds – to participate in the process of knowledge construction, which is vital to teaching and learning in multiethnic classrooms.

4.2   Summary of paper II

Discourse and learning in a Norwegian multiethnic classroom: Developing shared understanding through classroom discourse

The aim of this paper is to explore how classroom discourse as a mediator of learning can bring about the development of shared knowledge in classrooms where pupils have diverse linguistic and cultural backgrounds. Four discourse episodes, taken from a variety of content lessons and NL2 lessons, illustrating various misunderstandings between teachers and pupils, are analyzed and compared. The paper is based on qualitative analysis of discourse excerpts, using transcribed audio recordings, field notes, interviews and teaching materials.

The language teachers and pupils use in classroom discourse draws on multiple (e.g., cultural, social and discursive) frames of reference, based on the participants' prior experiences and understandings. The challenge of school learning, particularly for minority pupils, is to *frame*, that is, to interpret, apply, create and share, the appropriate contextual frames to the language used in educational discourse. For the purpose of analyzing the misunderstandings in the selected episodes, a four-level framing model is employed relating to the following discursive levels: word, genre, discourse and cultural 'grammar' (such as cultural background knowledge and ground rules). The analysis of the discourse shows that the emerging misunderstandings are composite, that is, related to various embedded levels of framing the language used.

The analytical findings indicate that misunderstandings in classroom discourse frequently originate from a discrepancy between what is assumed to be shared knowledge and the different cultural *funds of knowledge* (Rosebery, McIntyre & Gonzaléz, 2001) minority pupils make use of. The results draw attention to the fact that successful participation in educational discourse not only requires linguistic and cognitive competence, but also demands cultural background knowledge. Norwegian cultural knowledge, such as knowledge of Christian religious ceremonies, children's songs and books, and various kinds of wild flowers and fish, for instance, which Norwegian educational discourse often draws on, is not common knowledge for all pupils. Disregarding the cultural dimensions of the language used in the classroom may lead to misunderstandings as well as it may exclude pupils from participating in classroom discourse.

Furthermore, the study elaborates on how the topical content, the multiple reference frames and the particular forms of discourse used, jointly create the framework within which development of shared understanding in and through discourse occurs or fails to occur. It becomes apparent that various discourse patterns, creating different premises for pupil participation, afford different ways of dealing with misunderstandings.

The results show that dialogically organized classroom discourse (cf. Nystrand, 1997), making way for pupils' own understandings and experiences, opens up for bridging between new and prior knowledge, meaning negotiation and reinterpretation in the development of shared understanding. Moreover, a dialogic and participative approach, encouraging pupils to contribute in the process of knowledge construction, contributes to diversity and equity in heterogeneous classrooms. The findings suggest that the diversity of linguistic and cultural backgrounds in multiethnic classrooms requires that the dialogic function of discourse is reinforced.

4.3   Summary of paper III

The mediation of mathematical knowledge in and through discourse: A situated and sociocultural approach

Contemporary reforms in mathematics education, in Norway as in many other countries, have led to a shift in the mathematics curriculum from an emphasis on individual and silent learning activities to more social and discursive ones. This paper investigates what current discursive and participatory approaches to mathematics instruction may imply for teaching and learning mathematics in classrooms with heterogeneous pupil populations.

The aim of the paper is to explore how teachers and pupils of a multiethnic classroom, that is, pupils with diverse linguistic and cultural backgrounds, collaborate and communicate to develop shared mathematical understanding by means of discourse. The paper is based on qualitative analysis of transcripts of authentic classroom discourse, using transcribed audio and video recordings, mathematics workbooks, field notes and interviews.

The analysis, based on excerpts of mathematical discussions in different classroom settings, focuses on three corresponding levels of mediation: participatory appropriation, guided participation, and apprenticeship (cf. Rogoff, 1995). It is disclosed that mediation of mathematical knowledge in and through discourse may make intricate discursive as well as participatory demands on pupils, particularly minority pupils**.** The results make evident how processes of *mathematizing*, that is, transforming everyday situations into mathematical statements, may be problematic when the everyday phenomena to be interpreted are not familiar to the pupils.

Furthermore, the analysis shows that mediation of mathematical concepts often relies on *bridging* between everyday concepts and new mathematical concepts to be learned. Language minority pupils, who are not familiar with the 'everyday' concepts used, are forced to learn the mathematical concepts by explicit instruction. This kind of *language-based* learning, through explicit statements and definitions, is more cognitively demanding and requires a good command of the language of instruction.

The findings suggest that to support pupils' problem solving and facilitate their appropriation of mathematical language and discourse, pupils need assistance *and* guidance from more skilled others, through guided participation and apprenticeship in mathematical discourse and practice. The analysis of the observed discourse indicates that it is of decisive importance that teachers are able to enhance pupil participation through dialogic and substantively engaging inquiry. However, it becomes obvious that the implementation of a

participatory approach to mathematics teaching and learning demands consideration of whether or not the earlier, established repertoires for participating in practices (cf. Gutiérrez, & Rogoff, 2003) that teachers and pupils turn to in classroom interaction, are consistent with the repertoires inquiry-based instruction calls for.

The results imply that in order to make mathematical discourse and practice into effective contexts for learning, new roles for both pupils and teachers are demanded. Discourse-based mathematics instruction requires that teachers and pupils jointly contribute to the process of knowledge construction, which happens only occasionally in the discourse observed in the classroom. The need to appropriate mathematical discourse as a discourse of teaching and learning concerns, thus, teachers as well as pupils.

The findings indicate that, if reforms introducing discourse-based mathematics education, that is to say *talking to learn,* do not deal with the issue of *learning to talk*, that is, allowing all pupils despite diverse linguistic and cultural backgrounds to appropriate the academic forms of language and discourse required in mathematics, the discursive approach may become a selection tool in the education system.

4.4   Overview of the three papers

Table 2. Overview of the three papers presented in the thesis *Learning discourse*

Paper	I	II	III
Title	*Classroom discourse as educational practice:* Exploring pupil participation and engagement	*Discourse and learning in a Norwegian multiethnic classroom:* Developing shared understanding through classroom discourse.	*The mediation of mathematical knowledge in and through discourse:* A situated and sociocultural approach
Research question	Which dimensions and qualities of discourse may encourage pupils' participation and engagement in educational discourse?	How can classroom discourse as a mediator of learning bring about the development of shared knowledge in classrooms where pupils have diverse linguistic and cultural backgrounds?	How can pupils of a multiethnic classroom learn to make use of and appropriate academic forms of discourse, such as the language and discourse of mathematics?
Topic Three different senses of *Learning discourse*	*1. Learning about discourse* The paper examines the specific nature of classroom discourse as educational practice, with a particular focus on dimensions and qualities encouraging active pupil participation.	*2. A discourse of learning* The paper explores the critical role discourse plays as a mediator of learning in the multiethnic classroom. It focuses additionally on the situated and culturally based nature of language as a mediational means.	*3. Learning to make use of discourse* The paper investigates how pupils in a multiethnic classroom collaborate and communicate in discourse-based mathematics instruction as well as learn to make use of mathematical discourse.
Subject areas	*Language arts lessons:* Rhyming instruction to a Norwegian as a first language (NL1) and a Norwegian as a second language (NL2) group of pupils.	*Subject matter lessons,* specifically Christian and Religious Education (CRE) and Science and the Environment, as well as a *Norwegian* as a second language (NL2) lesson.	*Mathematics* teaching in various classroom settings: individual pupil instruction, group teaching, peer tutoring and whole-class discourse.
Key episodes	1. Does anybody know what rhyme is? 2. When the last letters are alike, it rhymes.	1. John the Baptist 2. The harebell 3. A fishing trip 4. A holiday trip	1. Counting chanterelles and penny buns 2. Even and uneven numbers 3. Ten-friends

5   Discussion

5.1   Introduction

This thesis explores the mediational role of classroom discourse in the development of knowledge and understanding in the multiethnic classroom from a sociocultural and dialogic perspective. A view of human learning and development as inherently sociocultural entails calling attention to the social and cultural context both of the learner and of what is being learned. Additionally, the dialogic approach emphasizes the dialogic and discursive nature of the teaching-learning process.

A particular strength of this study is its ethnographic design, which allows in-depth analysis of classroom interaction in addition to investigating contextual and cultural dimensions of the language and discourse used in the classroom. Besides the close observation of naturally occurring classroom events, the study pays attention to the social, cultural and discursive nature of classroom learning, that is to say, offers a comprehensive analysis responsive to the various levels of context in which learning activities are situated.

5.2   Discussion of the main findings

The title of the thesis, *Learning discourse,* reflects its focal theme, being the fundamental role discourse plays in mediating as well as constituting classroom learning. While all three papers included in the thesis are related to discourse and learning in the multiethnic classroom, the analytical focus of the papers differs.

The results and understandings outlined from each paper may, both separately and together, contribute to a better understanding of discourse-based learning in the multiethnic classroom. For the purpose of presenting and discussing the main findings, the discussion is organized around three central themes: (1) the social nature of classroom learning, (2) the cultural nature of classroom learning, and (3) the discursive nature of classroom learning. Even if these three dimensions are discussed one by one here, in actual classroom learning they are intertwined and embedded. Moreover, the selection of these three themes does not imply the disregarding of cognitive dimensions of development and learning, but is a consequence of the analytic priority this study gives to social, cultural and discursive dimensions of classroom learning activities.

5.2.1 *The social nature of classroom learning*

The results of the study give emphasis to the view of classroom learning as a social semiotic process (cf. Halliday, 1993), that is, a process of meaning making that takes place *between* people. The analysis of classroom interaction demonstrates how teachers and pupils depend on each other to create shared meaning in and through discourse, thus, "meaning is inherently relational and is socially constituted through interaction and discourse" (Pontecorvo, 1997, p. 172). Developing knowledge and understanding in the context of the classroom is based on discursive interaction between teachers and pupils, or among pupils, and is thus essentially a social process. The discourse excerpts presented in the three papers, demonstrate how teachers and pupils jointly may develop shared understanding of the various topics under discussion, for instance, rhyming (Paper I), radio controlled cars (Paper II) and even and uneven numbers (Paper III).

Traditionally, the principal discourse mode for exchanging meanings in the classroom has been the 'triadic dialogue' (Lemke, 1990), which consists of three-part sequences of teacher Initiation, pupil Response, and teacher Evaluation (IRE) or teacher Feedback (IRF) (Cazden, 2001; Mehan, 1979; Sinclair & Coulthard, 1975). This traditional pattern of classroom discourse has been criticized as limiting pupil participation, since the teacher does most of the talking. However, Wells (1993) argues for a reevaluation of the IRF sequence as the third move may be converted into a 'Follow-up' move, in which the teacher follows up and extends pupils' answers instead of just evaluating them. This more dialogically oriented, alternative F-move provides for assisted pupil performance and encourages pupils to come with further contributions.

It follows that participating in discourse and acquiring competence in school-based discourses is crucial for pupils' educational achievement (Hicks, 1996). Consequently, contemporary curricula – like the most recent Norwegian curricula – call for educational practices promoting pupils' participation in classroom discourse. Yet, conventional patterns of classroom discourse seem resistant to change. As this study reveals, the traditional, quite 'scripted', IRE-form of teacher-pupil interaction frequently occurred in the research classroom. However, as the analysis of teacher-pupil interaction in this study exposes, the manner in which teachers carried out the third move makes a difference: pupils' participation in traditional, IRE-dominated discourses differs from participation in more dialogic IRF discourses, by way of the quantity as well as the quality of the interaction (Papers I-III).

When used dialogically, as a contingently responsive 'Follow-up', the third move sustains pupils' engagement in the discourse and facilitates joint construction of knowledge.

This became particularly noticeable in the instructional discourse of the two rhyming lessons (Paper I). Still, as the analysis of various discourse episodes demonstrates (particularly in Papers I and II), also the first move is decisive in getting pupils involved. Initiating the discourse with authentic, open-ended questions, instead of display questions, invites pupils to come with their own reflections and contributes to creating a dialogic discourse (Nystrand, 1997).

How particular forms of discourse may be used as mediators of pupil participation and co-construction of knowledge has been a central question in this study. As the analytical findings display, it is not merely *the quantity* of pupil participation that counts, just as important is *the quality* of the discursive interaction through which opportunities for meaning making are created. The different forms of discourse and participation discussed in the papers are not of equal educational value. In the three papers, various forms of discourse involving different ways of assisting pupil performance have been explored and compared, such as IRE- versus IRF-dominated discourse, discursive scaffolding, joint involvement (Paper I), monologic versus dialogic discourse (Paper II), and guided participation and apprenticeship (Paper III).

Besides social interactional and instructional dimensions, Paper I also pays attention to affective aspects of teacher-pupil interaction, which is a neglected area – even in sociocultural research (Cazden, 2001; Chang-Wells & Wells, 1993) with a focus on qualitative dimensions of interaction (as in scaffolding, for instance). The analysis of the discourse excerpts of the two rhyming lessons demonstrates that the teaching approaches used in the NL1 and NL2 lessons substantially differ with regard to their emotional-motivational qualities. The instruction in the NL1 lesson is more emotionally distant than the NL2 instruction, where the teacher displays a close and caring teacher-pupil relationship, which in turn encourages joint involvement and inclusion in the discourse.

Based on the analytical results of comparing IRE- and IRF-dominated discourse frameworks and their impact on pupils' engagement, it is suggested that certain discursive scaffolding strategies may increase the quantity as well as the quality of pupils' interaction in discourse. Consequently, attention is drawn to the use of joint attention and joint involvement, to dialogic question and answer practices, and to emotional-motivational support as mediational devices in discourse-based instruction (Paper I).

However, studying classroom discourse as educational practice calls for examining how discourse may both facilitate active pupil participation *and* provide the pupil guided assistance from more skilled others, especially the teacher, in processes of meaning making.

The findings emphasize the decisive role of the teacher as an 'orchestrator' of the discourse and the need to have a broad instructional repertoire of discourse structures and strategies to create learning environments that are conducive to participation and learning for all pupils.

Still, when current school curricula encourage pupils' participation in learning activities, the vital question is what is meant by 'participation'. As the study demonstrates, pupils' participation in discourse can take quite different forms: observing, answering, reciting, inquiring, computing and singing, for instance. The analysis of the interaction in classroom discourse in a variety of settings shows that various discourse formats allow different forms of pupil participation and performance. The nature of participation in discourse seems very much to depend on the various roles assigned to the participants, pupils as well as teachers, within *the participation system*[25] that different forms of discourse generate. Consequently, pupil participation can neither be viewed nor studied as an isolated phenomenon.

The findings of this study thus draw attention to the dual and dialogic character of pupil participation recognizing individual dimensions, that is, pupils as agentive selves, yet emphasizing also pupil participation's social interactive and reciprocal qualities. It is in interaction with others that the individual resources, which pupils resort to in discourse, get their significance. The various classroom episodes depicting teacher-pupil interaction demonstrate how pupils' participation in discourse may take different forms. Paper II, for instance, demonstrates how the two pupils', Nimrat and Ivan's, engagement in classroom discourse varied considerably during different lessons, as their participation depended on the various teachers' responses to pupil contributions. The teachers adopting a transmission oriented, IRE-like teaching approach often overlooked pupils' contributions to the discourse. The teacher Karin, on the other hand, generated a more dialogically organized discourse by means of rephrasing, recontextualizing and expanding pupils' utterances, which advanced pupils' participation and engagement in the discourse (Papers I and II).

As emphasized in Paper II, a dialogically organized discourse is of particular importance in classrooms where pupils have diverse linguistic and cultural backgrounds. The dialogic function of discourse, with 'difference' as a thinking device (Lotman, 1988), provides opportunities for giving minority pupils a voice in processes of joint knowledge construction. Furthermore, dialogic discourse facilitates participants, teachers as well as

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[25] To indicate a more dynamic process of participation, Erickson (1982) preferred the term 'participation structure' to the term 'participant structure' (Philips, 1972). In turn, I would suggest using 'participation system' as the term 'system' better reflects the mutual and interrelated interaction dimension of participation.

pupils, to discern misunderstandings, which then may lead to meaning negotiation and intersubjective understanding (e.g., Paper II, Episodes 3 and 4: 'A fishing trip' and 'A holiday trip').

5.2.2 *The cultural nature of classroom learning*

The findings of this study underline the inherently social as well as cultural nature of learning in the classroom. Cultural dimensions of learning may not only become more evident in classrooms where pupils have diverse ethnic and cultural backgrounds, taking them into account makes a virtue of necessity. Consequently, this study of teaching and learning in the multiethnic classroom pays attention to the culture *of* the classroom as well as to the culture *in* the classroom.

Classrooms are culturally formed institutional settings where knowledge is shared and understandings are constructed by means of distinctive social and discursive practices. Classroom communities have their own, often implicit, norms and rules for participating in discourse and practice, that is a distinct 'culture', the culture *of* the classroom (Gallego & Cole, 2001). Although every classroom may have its own ways of 'doing discourse', the triadic IRE/F (Initiation-Reply-Evaluation/Feedback) pattern has been proven to be the archetypal discourse structure of classrooms (Mehan, 1979). Even if educational reforms have recommended alternative discursive practices, the IRE/F pattern of traditional, teacher-directed discourse is still much used in contemporary classrooms, as observed in the Norwegian classroom under study (cf. Papers I-III). Since it seems to constitute somewhat of a norm, the three-part IRE/F sequence is often referred to as the *unmarked* or *default* pattern of classroom discourse (Cazden, 2001; Wells, 1999).

Yet, some researchers have called attention to the fact that this typical discourse pattern, in which the teacher controls the development of the topic and asks known-answer questions, is not a 'default' discourse pattern for all pupils (Heath, 1983; Philips, 1972). The characteristic IRE/F structure used in classroom discourse is very similar to the conversational style western, middle-class caregivers use with their young children during play and book reading activities (Heath, 1983; Pontecorvo, 1997). In multiethnic classrooms, pupils with diverse sociocultural and linguistic backgrounds may neither be familiar with the traditional structure of classroom discourse nor with the more dialogic forms of discourse promoted by current educational reforms. It is predominant in western-type schools that pupil talk plays a fundamental role in teaching and learning. In other, more traditional, school systems, it is believed that children primarily learn by observing and listening to the teacher (Alexander,

2000; Edwards, 1997). Therefore, cultural-historical aspects of pupil participation should be considered when introducing discursive and participatory approaches to learning, as in, for instance, current mathematics curricula (Paper III). Furthermore, in order to succeed with discourse-based learning, it is of decisive importance that teachers know how to promote and support pupils' active participation in classroom discourse as well as to be aware of the new teacher and pupil roles implied in new discursive practices (Papers I-III).

However, not only pupils' but also teachers' *repertoires of practice* (Gutiérrez & Rogoff, 2003), originating in earlier experiences from participation in specific cultural activities, may have a great impact on joint involvement in classroom activities. Teachers' performance in classrooms is to a large extent based on shared *practical professional knowledge* (Anderson-Levitt, 1987), that is, cultural knowledge resulting from their own experiences of participating in classroom interaction as pupils, as well as from practices transmitted from teachers to teachers. Consequently, the newly graduated teacher Jon (Papers I and II), the bilingual teacher Nasreen (Paper III) educated abroad, and the form teacher Karin (Papers I-III) with long experience from Norwegian education, will in their profession as teachers draw on different repertoires for participating in classroom practices.

Then, there is the culture *in* the classroom to be taken account of, meaning the cultural *funds of knowledge* (Rosebery, McIntyre & Gonzaléz, 2001) that classroom members draw on when mediating and constructing meaning in and through classroom discourse. These funds of knowledge, consisting of practices, understandings, intentions, attitudes and beliefs, result from teachers and pupils' prior experiences as members of various social and ethnic groups.

The various linguistic, social and cultural contexts of minority pupils' everyday experiences represent the frames of reference through which they interpret and respond to what is said in classroom discourse. As the discourse episodes presented in Paper II show, there might arise misunderstandings between teachers and pupils, originating from divergent understandings between what the teacher assumes to be 'common knowledge' (Edwards & Mercer, 1987) and the everyday knowledge and experiences minority pupils bring to the classroom. The study exposes that implicit assumptions of what is taken as shared cultural knowledge and minority pupils' disparate cultural background knowledge time and again impede the construction of shared meaning (Papers II and III). A number of discrepancies between *taken-as-shared* word meanings and pupils' background knowledge were disclosed in the discourse episode of the CRE-lesson ('baptism'), the Science-lesson ('bell-shaped'), and the Mathematics lesson ('chanterelles'), for instance.

As the analysis of various discourse episodes displays, pupils' opportunities for meaning making in and through discourse often depend on the cultural knowledge they have access to as they communicate and collaborate (Papers II and III). In Paper II, attention is drawn to two types of *cultural knowledge* (Gullbekk, 2002), which subsequently are discussed in relation to the epistemology of Vygotsky's (1987) everyday and scientific concepts. First, there is 'culture as knowledge', involving what the child directly experiences and learns in his or her life world, which brings about situated, experience-based, internal notions (like notions as 'baptism' for Christian pupils, and 'Ramadan' for Muslim pupils). Vygotsky (1987) refers to these notions based on everyday experiences as *spontaneous* or *everyday concepts*. Second, there is 'knowledge about culture', which is explicitly taught by means of general statements resulting in 'decontextualized' knowledge (information about Christianity or Islam, for example). The ensuing notions are akin to Vygotsky's *scientific concepts,* which are more abstract concepts. Scientific concepts are primarily mediated through language and discourse in formal educational contexts, as distinct from everyday concepts, which are 'spontaneously' learned through personal experience in everyday contexts. Paraphrasing Shotter (2001), who distinguishes between *withness-writing*, i.e., writing from within 'living moments', and *aboutness-writing*, we may label everyday concepts as 'withness-concepts', that is, learned from within living moments, and scientific concepts as 'aboutness-concepts'.

Even if everyday and scientific concepts are of a different nature, they may have interrelated meanings as scientific concepts frequently build on everyday concepts. This becomes particularly evident in the mathematics lessons (cf. *partall* [pair numbers] the Norwegian term for even numbers, for instance). Teachers may then support pupils' appropriation of scientific concepts by *bridging* between what they already know and the new information to be learned (Rogoff, 1990). An abstraction of everyday concepts and experiences, that is, an experience-based transformation, facilitates pupils' learning of scientific concepts. However, pupils with different everyday experiences may need to be explicitly taught, by means of language, *about* these everyday concepts in order to be able to make meaning (discover the semiotic relationship between harebells and bell-shaped, for instance). This kind of language-based learning is both more cognitively demanding and calls for a good command of the second language.

Successful participation in classroom discourse as a mediator of learning depends on having access to shared funds of cultural knowledge, including rules of participation as well as interpretation concerning educational discourse and practice (cf. *educational ground rules*; Edwards & Mercer, 1987). However, cultural knowledge is usually part of the 'hidden

curriculum' (Cazden, 2001), that is, tacit knowledge that is seldom communicated explicitly. Assumed 'common knowledge' is often related to what the Norwegian national compulsory school curriculum (1999, p. 63) refers to as the "common heritage of knowledge, culture and values" on which general education is based. Yet, as the discourse excerpts disclosed, pupils with different cultural backgrounds may not have direct access to these cultural funds of knowledge and their ensuing notions (e.g., baptism, godmother, fishing trip, bluebell and chanterelles). Becoming 'schooled' thus requires being successfully socialized into specific, culturally based ways of using language and discourse. This brings us over to the next theme, the discursive nature of classroom learning.

5.2.3   *The discursive nature of classroom learning*

The analytical findings of this study give emphasis to the intricate nature of classroom learning, as social and cultural as well as discursive. The semiotic view of learning – learning how to make meaning in socially and culturally appropriate ways – is language and discourse based (Bruner, 1990; Halliday, 1993; Hicks, 1995; Wertsch, 1991). As the discourse episodes in the three papers demonstrate, language and discourse play a crucial role in producing and mediating as well as constituting meaning in the classroom.

However, meaning is not *in* the language, it is in a particular community's *use* of the language. Meaning is made through various forms of language use, that is to say, different discourses: "Discourses are the socially, culturally, historically developed frames in which the members of a group make and understand meaning" (John-Steiner, Panofsky & Smith, 1994, p. 38). Still, discourse-based meaning making is not a deterministic activity; it makes way for negotiation, transformation and change. The meaning produced in and through classroom discourse is the result of a dialectic process, involving more or less stable interpretive frameworks provided by the particular forms of discourse used as well as situated meaning negotiation between discourse participants (e.g., Episode 'Even and uneven numbers' in Paper III). Furthermore, classroom discourse may entail creative pupil responses to the social and cultural meanings constitutive of a particular learning task, which can transform the discourse (e.g., Nimrat's imaginative conversion of the essay topic 'a fishing trip' into a 'space trip' in Paper II).

The dialectics of classroom discursive practices may thus lead to reproducing knowledge as well as transforming it. Following Lotman (1988), the discourse may fulfil a *univocal* or a *dialogic* function (see Paper II). The *univocal* function aims to effectively transmit established meanings. In contrast, the *dialogic* function, involving multiple voices,

allows the generation of new meanings. The discourse episodes presented in Paper II demonstrate how these two functions represented in monologically and dialogically organized discourse respectively, facilitate different ways of pupil participation, deal differently with disparate understandings and produce different kinds of knowledge (cf. Nimrat and Ivan's involvement in the different discourses). The findings confirm the importance of dialogic inquiry in classrooms with heterogeneous pupil populations.

As the various discourse episodes presented in the three papers demonstrate, 'classroom discourse' is not one thing, but a set of *different*, though related, varieties of language and discourse. Yet, different discourse practices represent more than different ways of using language; they also involve different ways of making sense of the world, and different ways of knowing, including complicity with particular norms and values. Becoming educated involves being *enculturated* into specific, discipline-based ways of using language. In order to succeed in school, pupils need to appropriate the discourse that counts as knowing within particular disciplines, that is, *academic discourse*. Academic discourse consists of various forms of discipline-based language and discourse, such as genre and register as well as scientific concepts. The analysis of a number of discourse episodes in Papers II and III discloses that pupils, particularly pupils with diverse linguistic and cultural backgrounds, may experience difficulties in getting access to the academic knowledge and the particular forms of discourse that define disciplines.

As mentioned earlier (see 5.2.2), scientific concepts often build on everyday concepts. Pupils' appropriation of scientific concepts may then be supported by *bridging* between known and new information (Rogoff, 1990). However, when the relevant 'everyday' concepts are not familiar to pupils (e.g., concepts like 'bell-shaped' and 'even numbers' [*partall*]), their appropriation of scientific concepts may be impeded (Papers II and III). Moreover, as shown in Paper III, learning mathematics not only entails being able 'to convert' everyday concepts into mathematical ones, it also involves transforming everyday situations into mathematical statements, and vice versa, that is, *mathematization* (Jaworski, 1994; Voigt, 1994). Knowing how to mathematize is of particular importance in connection with word problems asking for a mathematization of empirical 'real-world' phenomena. However, mathematizing may become problematic when the everyday phenomena to be interpreted are not familiar to the pupils. This is well illustrated by the discourse episode in which Ivan has difficulties solving the word problem that asks to add up 'mushrooms' while mushrooms as penny buns and chanterelles appear to be unknown to him (Paper III).

The challenge of classroom learning is to *frame*, meaning to interpret, apply, create and share the appropriate contextual frames to the language used in classroom discourse. The analysis of classroom episodes in Paper II shows that the emerging misunderstandings can be related to various embedded 'framing levels', such as the word, the genre/register, the discourse, and the cultural grammar level. 'Cultural grammar' involves the tool-kit of shared cultural knowledge, including *educational ground rules* (Edwards & Mercer, 1987), as well as background knowledge, to produce and interpret the language used in discourse in culturally appropriate ways. The findings of this study emphasize the importance of making explicit the taken-as-shared premises classroom knowledge builds on. In discourse-based teaching and learning, especially in linguistically and culturally diverse classrooms, the teacher has a central role in establishing shared contextual foundations for the development of classroom knowledge by achieving *intersubjectivity* (Rommetveit, 1992) regarding the conceptual and discursive frameworks to be applied.

As the discourse episodes demonstrate, even pupils of a third grade class are expected to participate in school-based activities representing particular discursive practices, such as essay presentations, rhyming sessions and definitional tasks (Papers I-II). In addition, they must be able to 'talk' science and mathematics (Papers II-III). These school-based forms of discourse are *not* natural discourses, they have to be 'learned', that is, appropriated, in accordance with particular, discipline-based, academic practices. Providing all pupils with equal access to educational resources by means of facility in school-based discourses is crucial for their educational achievement (Gee, 1996, 2004; Hicks, 1995).

Pupils with a 'western middle-class' background, who have acquired prototypes of academic discourse during their primary socialization, have ready access to these early versions of academic language and discourse in school (Gee, 1996). Children with different backgrounds, on the other hand, may find that their primary discourses are neither consonant with nor valued in schooled discourse. Not bringing prototypes of academic discourse practices to school causes 'the fourth-grade slump', according to Gee (2004). In order to be able to succeed in school, all pupils thus need opportunities for acquiring the academic, though very culture specific, discourses that are considered most facilitative of classroom learning. To facilitate pupils' appropriation of the language and discourse that count as knowing within the various disciplines, they need guidance from others who already master the discourse through guided participation and apprenticeship in classroom discourse and practice.

The findings of this study indicate that if educational reforms advocating discourse-based learning – *talking to learn* – do not deal with the issue of *learning to talk*, the discursive approach may engender educational inequality.

5.3   Methodological reflections

It is through making use of a qualitative research design and methodology, as well as applying a cultural psychology oriented perspective, that the findings of the present study have emerged. While quantitative research is particularly suited to establishing the *recurrence* of events or objects, qualitative approaches explore the particular *occurrence* of meaningful phenomena with reference to the various contexts in which they are situated (Bruhn Jensen, 2002). However, it is at the level of *methodology*, defined as "a theoretically informed plan of action in relation to an empirical field" (ibid, p. 258), that the differences between qualitative and quantitative research become more evident. It is thus important to choose a research methodology that is consonant with the research topic, the research questions, the objectives of the study and the object of analysis. Consequently, an ethnographic case study methodology was chosen to study classroom discourse as a mediator of learning and reasoning in the multiethnic classroom from an interpretive and contextual, rather than an experimental and causal, point of view.

As ethnography does not represent a consistent and clearly described methodology, it can assume a variety of forms (Alvesson & Sköldberg, 2000). The ethnographically oriented research approach applied in this study has been described in Chapter 3. Yet, research methodology refers not only to the specific research method used to collect and analyze data, but also to the research process as a whole. A critical part of the qualitative research process is *reflection* or *reflexivity*[26], drawing attention to the intricate relationship between knowledge and the different processes of knowledge development, as well as the context in which this knowledge development occurs. Reflexive qualitative research affords perspectives for careful interpretation and the development of perceptive conclusions (ibid.).

The particular strength of an ethnographic approach is that it makes it possible to study actual classroom practice *in situ*. Yet, going into classrooms and finding out 'what goes on' is not a clearly defined means of doing research. As the present study demonstrates, opening up the 'black box' (Long, 1980) of the classroom to study how teachers and pupils go about

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[26] While 'reflective' research reflects on a specific method or a particular level of interpretation, 'reflexive' research involves reflection concerning several themes and aspects, or across several levels of interpretation (Alvesson & Sköldberg, 2000).

teaching and learning involves dealing with comprehensive and abundant data of different kinds. The ensuing processes of structuring and interpreting the data collected, as well as presenting the findings, may have many pitfalls. Consequently, the analytical procedures applied require critical reflection throughout the research process.

This discourse-oriented study of classroom learning focuses on data in the form of language, that is, language based on observational notes, audio recordings, interviews and documents. These data are not immediately accessible for analysis, but need *processing,* which is an activity that requires several reflective, empirically as well as theoretically informed, choices. What is generated as *data* is affected by what the researcher can treat as 'writable' and 'readable' (Miles & Huberman, 1994). Choosing an appropriate methodological approach is essential for obtaining reliable and valid data. In Chapter 3 (in particular 3.6 Analysis), I have accounted for several methodological choices, for instance, the procedures for data reduction[27] and the selection of key episodes. Still, I will briefly address a few more methodological issues concerning the qualitative research methodology applied in this study, these being, issues of *reliability, validity* and *generalizability*.

In the past, issues of reliability, validity and generalizability were essentially reserved for quantitative research methodologies. However, the ideal of ensuring reliable methods and valid conclusions is just as relevant for qualitative as quantitative research, and during the last two decades, increasing attention has been paid to these issues concerning findings obtained with qualitative methods (Flick, 2006). While some researchers argue that the criteria of assessment derived from quantitative research traditions are not compatible with the character of qualitative research, and hence ignore them, other researchers have been looking for qualitative equivalents.

5.3.1   *Reliability*

'Reliability' refers to the *consistency* of the research results as well as to the extent to which the obtained results can be replicated or reproduced by other researchers (Flick, 2006; Kvale, 1996; Silverman, 2000). However, consistency defined as ensuring that particular data and results can be duplicated under identical conditions is less suitable as a reliability criterion in naturalistic research. As both people's interactions and the settings in which they occur will vary over time, no ethnographic study can be replicated exactly, regardless of method and design employed. Yet, in qualitative research, "the question then is not whether findings will

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[27] *Data reduction* refers to the process of selecting, focusing, simplifying, abstracting and transforming the data that appear in written-up field notes or transcriptions (Miles & Huberman, 1994, p. 10).

be found again but *whether the results are consistent with the data collected"* (Merriam, 1998, p. 206). In ethnographic research, a central basis for assessing the reliability of the collected data is the quality of the recording and documenting processes, as well as the credibility of the succeeding interpretations (Flick, 2006). In order to increase the reliability of data and interpretations in qualitative research, Flick reformulates the criterion of reliability as *procedural reliability* (2006, p. 370), which entails the dependability of data and procedures by means of a detailed explication and documentation of the research process as a whole. In the present study, criteria for procedural reliability, such as retrievable data (e.g., audio and video recordings) as well as the transparency of procedures and results, have been taken into account to the greatest possible extent.

In order to enhance the reliability as well as the validity (see 5.3.2) of the data and analysis, several researchers recommend the use of *triangulation*, that is, making use of and comparing different data sources (i.e., data triangulation), different methods (i.e., methodological triangulation), different researchers (i.e., investigator triangulation) or different analytical perspectives (i.e., theoretical triangulation) (van Lier, 1988; Willig, 2001). In this study, the different kinds of data arising from observational notes, transcribed audio and video recordings, as well as interviews with teachers and pupils, allowed triangulation between different data, which brought about a deeper and broader understanding of the phenomena under investigation. Furthermore, the collaboration with Dutch as well as Norwegian researchers in the initial joint project facilitated triangulation of perspectives due to the international and multidisciplinary composition of the research team. In addition, the international cooperation afforded an outsider perspective on the Norwegian classroom, which led to insights that might not have been achieved with a 'mononational' approach. The combination of various data types, methods, theories and researchers in the comparative case study lead to *multiple triangulation*, which facilitated a comprehensive and contextual inquiry as well as ensuring greater (internal) validity, an issue of verification that will be discussed next.

5.3.2 *Validity*

'Validity' concerns the *trustworthiness* of the knowledge produced. It entails both questioning whether the study investigates what it is intended to investigate, and whether the study actually represents the social phenomena to which it refers (Kvale, 1996; Silverman, 2000). However, one may differentiate between two types of validity: internal and external validity.

Internal validity refers to the extent to which inferences about a causal relationship can be drawn between variables. In qualitative research, where the focus is on comprehensive understanding rather than explaining causal relationships between aspects of the phenomenon under study, the notion of internal validity requires reconceptualization. It may then be described as follows: "internal validity seeks to demonstrate that the explanation of a particular event, issue or set of data, which a piece of research provides can actually be sustained by the data" (Cohen, Manion & Morrison, 2000, p. 107). For instance, in ethnographic research, such as that conducted in the present study, internal validity may be enhanced through the use of participant researchers, of several different researchers, and of multiple triangulation. In addition, the use of mechanical means to record and store authentic data can provide descriptive and interpretive validity that in turn contributes to greater internal validity.

External validity concerns the degree to which research findings can be generalized or transferred, that is, whether the results of one study can be applied to wider populations, cases or situations similar to the one in which the initial study occurred (Cohen, Manion & Morrison, 2000; Silverman, 2000). One may distinguish between research that focuses on generalization from sample to a larger population, that is, *empirical* or *statistical generalization*, and research focusing on *theoretical* or *analytical generalization* (Bruhn Jensen, 2002; Yin, 1994). Undoubtedly, it is this latter type of external validity which is relevant for qualitative research: "Analytical generalization involves a reasoned judgement about the extent to which the findings from one study can be used as a guide to what might occur in another situation" (Kvale, 1996, p. 233). As generalizability, in the sense of *transferability* or *comparability,* is a central methodological issue concerning qualitative and ethnographic research, it will be discussed further below.

5.3.3   *Generalizability*

A dilemma within ethnographic research focusing on one case, like in the present study of one classroom, is the question whether the conclusions drawn may have a wider relevance. Obviously, statistical generalization is not possible for a case study. However, an ethnographic study of one classroom may achieve transferability or comparability through contextualization and 'thick descriptions' (Geertz, 1973) of the interactions, activities and practices examined (Cohen, Manion & Morrison, 2000; Kvale, 1996; van Lier, 1988; Walford, 2001).

Comprehensive and rich descriptions of the classroom under discussion may allow readers both to determine whether the findings 'make sense' and to make informed conclusions about the *applicability* or *relevance* of the findings to similar situations. However, in order to know whether one can transfer particular outcomes from one classroom study to another, one needs to know as much about the second classroom as the first (Walford, 2001). The same applies to ethnographic case studies that compare different classrooms. In the joint Dutch-Norwegian research project that the present study emerges from, much effort was put into selecting classrooms that were 'comparable' with respect to characteristics of the participants and the settings (cf. ensuring 'ecological validity').

Yet, producing generalizable knowledge is not a primary goal for ethnographic classroom research (Erickson, 1986; van Lier, 1988). As considerations of context are central in this interpretive kind of research, the particular will be just as relevant as the general:

> Classroom research as context-based analysis can therefore not have as its primary aim the immediate generalizability of findings. The first concern must be to analyse the data *as they are*, rather than to compare them to other data to see how similar they are (van Lier, 1988, p. 2).

Priority is thus given to *understanding* the classroom under study in its uniqueness. Yet, the fact that classroom research also is research in contextually defined, that is, institutional, settings, will facilitate comparing different classrooms in certain respects. The detailed exploration of a single classroom may generate insights into classroom processes that bring about, refine or test theoretical formulations and hypotheses. Consequently, several researchers call attention to the theory-building potential of ethnographic study (e.g., Erickson, 1977, 1986; van Lier, 1988; Hammersley & Atkinson, 1995).

Erickson (1986) emphasizes that the general lies in the particular, that is to say, that an in-depth study of one classroom incident (see 'key incidents', Chapter 3) can tell us about more general phenomena:

> Each instance of a classroom is seen as its own unique system, which nonetheless displays universal properties of teaching. These properties are manifested in the concrete, however, not in the abstract (p. 130).

As a single case study does not represent a 'sample', one cannot apply findings to other, unexplored cases in any direct sense; "However, case studies can be used to develop or refine

theory, and this means that case study research can give rise to explanations which *potentially* apply to new cases" (Willig, 2001, p. 82).

In this thesis, efforts have been made to allow readers to gain insight into the different processes of developing classroom knowledge as well as the context in which it occurred. Besides providing rich descriptions of 'what goes on' in the multiethnic classroom, comprehensive information concerning research design and methodology has been provided. By means of presenting and interpreting authentic discourse episodes as well as accounting for the empirical and theoretical grounding of the arguments in the analysis, readers may judge the probability of the findings.

Priority is given to understanding the 'how and why' of the classroom under research. However, the selected key episodes are regarded as having the potential to reveal underlying social, cultural and institutional practices of classroom discourse, that is, practices that possibly will concern other classrooms as well. The extent to which the particular issues and findings of the present study may then be applicable to other classrooms, has to be evaluated in relation to the specific characteristics of the classrooms concerned. Hence, conclusions about applicability or relevance require reflexive awareness of the conditions for comparability.

6   Concluding remarks and implications

In this concluding chapter, a number of significant themes and results outlined from the present study will be called attention to, accompanied by some reflections on implications for educational practice and research.

The aim of this thesis is to explore the mediational role of classroom discourse in the development of knowledge and understanding in the multiethnic classroom. It describes and examines both the way discourse is used and constructed in various classroom contexts, and analyzes the role of language and discourse in the development of shared understanding. Special attention has been paid to the impact of pupils' diverse linguistic and cultural backgrounds on their opportunities for participation and joint meaning making in and through classroom discourse.

The study demonstrates the fundamental role that language and discourse play in classroom learning, both to coordinate joint activity, and to develop shared understanding

through negotiation of meaning. Furthermore, the analysis of the discourse episodes reveals that classroom discourse is a dynamic and complex mediator, involving several discourse dimensions (e.g., social interactional, instructional and affective), several discourse formats (e.g., IRE/F and dialogue) and several forms of discourse (e.g., discourses of mathematics and science). The discourse is not only shaped by the immediate classroom context, but also by the various practices, understandings and beliefs teachers and pupils draw on in their meaning making. This makes discourse-based classroom teaching and learning a multi-layered and multi-faceted process that from time to time may be complicated to relate to, for teachers as well pupils.

What stands out as particularly salient in this study is that its results show that classroom learning in and through discourse frequently makes intricate participatory as well as discursive demands on pupils, especially language minority pupils. Yet, merely explaining the difficulties minority pupils experience in classroom discourse in terms of 'language problems' does not take into account the complexity of discourse as mediational means. A particular strength of the study is that its methodology allows a focus on intricate dimensions of classroom mediation in and through discourse. The dialogically based sociocultural framework applied, allows drawing attention to aspects of discourse-based learning beyond linguistics and individual cognitive processing. Moreover, the ethnographic research approach facilitates paying attention to interpersonal aspects of teacher-pupil interaction as well as to embedded levels of the various social, cultural and discursive contexts in which interactions and classrooms are situated. It is through this particular research design and methodology that the analytical themes and findings of the present study have been generated.

In order to become a discourse of teaching and learning, classroom discourse needs special qualities concerning both form and content (Papers I-III). Moreover, the study demonstrates that classroom discourse is *not* one particular discourse; it is a composite discourse involving *various* forms of language and discourse. To be able to learn discipline-related content matter, pupils have to acquire different academic varieties of classroom language (Papers II and III). Consequently, in order to succeed in school, language minority pupils do not merely need to learn another language, they need to learn *several* varieties of that language, that is, learn the various forms of discourse that count as knowing in a school setting.

The question is then, how pupils may learn the essential school-based forms of discourse. These discourses are not acquired by explicit teaching; they are appropriated through participation in the discursive practices of the classroom community. However, as

the findings of the study indicate, the term 'participation' requires further definition. The question is not so much *whether* pupils should participate in discourse, but rather *how*.

Learning the 'discourses of learning', through participation in discourse, may easily prove to be a vicious circle as one has to master the discourse to a certain extent to be able to participate. Participation in classroom discourse is thus both *process* and *product* of learning discourse. Pupils who have acquired prototypes of schooled discourse before they enter school will have an initial advantage in employing the discursive tools of classroom learning. They will keep the lead if steps are not taken to include all pupils in the discourse. Hence, pupils who are in the process of learning a new discourse depend on participation *and* guidance from others who have already mastered the discourse, that is, teachers or peers. Guided participation and apprenticeship (i.e., peripheral participation) in actual classroom discourse can support pupils' appropriation of new forms of language and discourse (Papers I and III).

Consequently, the study draws attention to the reciprocal and dialogic character of pupil participation. Even if pupils enter the discourse with individual resources and repertoires, their participation and performance in discourse gets shaped in interaction with the other participants (Papers I-III). Further, the analysis of discourse episodes demonstrates that to create opportunities for shared meaning making, it is not merely pupils' participation in discourse that counts; just as important is *the quality* of the discursive interaction through which meaning is mediated, negotiated and constructed. A number of discursive scaffolding devices have been suggested to increase the quantity as well as the quality of pupils' interaction in discourse. These include establishing joint attention and joint involvement, engendering dialogue, and providing emotional-motivational support (Paper I).

The findings of this study emphasize the crucial role of the teacher in generating rich and inclusive contexts for participation and learning, by taking into consideration both form and content in the orchestration of the discourse. Yet, forms and practices of classroom discourse, as well as subject matter content, are not neutral – neither culturally nor socially. Successful participation in classroom discourse depends on having access to shared cultural funds of knowledge, including rules of participation and interpretation. As cultural knowledge usually is tacit knowledge, it is rarely communicated explicitly. Not imparting the 'hidden curriculum', involving knowledge concerning the culture *of* as well as *in* the classroom, may explain why pupils from diverse cultural backgrounds repeatedly experience difficulties in getting substantively engaged in classroom discourse (Papers II and III).

A fundamental condition for sharing and developing classroom knowledge in and through discourse is achieving a certain mutuality of perspectives, that is, *intersubjectivity,* between the participants of the discourse. Especially in classrooms where pupils have diverse linguistic and cultural backgrounds, pupils' involvement in classroom discourse may be promoted by making explicit the interpretive premises for the subject matter content under discussion. The confusion a number of pupils experienced in the mathematics lessons, as a result of ambiguous mathematical terms and difficulties with *mathematization* of unfamiliar everyday situations, proves the importance of establishing shared premises for problem solving (Paper III). The results of this study suggest that the diversity of pupil backgrounds in heterogeneous classrooms requires that the dialogic function of the discourse is reinforced as dialogic inquiry makes way for pupils' different funds of knowledge and experiences in the development of shared understanding. Moreover, a responsive and dialogic approach, encouraging pupils to actively participate in the process of knowledge construction, can contribute to diversity as well as equity in multiethnic classrooms.

In conclusion, even if current curricula encourage discourse-based approaches to classroom learning, classroom discourse seems often to be taken for granted. This lack of reflection on discourse as a mediator of learning may bring about a serious incoherence between what it is believed classroom discourse might achieve, and what actually is achieved. As classroom discourse plays a central role in contemporary classroom teaching and learning, facility in school-based discourses proves to be decisive for pupils' educational achievement. It is thus of vital importance that teachers understand the character, problems and potentialities of the various discourses used in the classroom. A better understanding, as well as a greater awareness of *how* classroom knowledge is 'talked into being', can contribute to making classrooms better places for development and learning for *all* pupils, regardless of their social, cultural and linguistic background.

Classroom studies that pay attention to contextual, cultural and dialogic dimensions of discourse and learning, as the present study does, can not only contribute to an increased understanding of the teaching-learning processes in today's diverse and multiethnic classrooms, they also may offer prospects for the future:

> The emerging view of dynamic and dialectical relations among culture, context and cognition has broadened and deepened our understanding of student learning. It has also shown that what currently *is* does not necessarily limit what *can* be, offering both hope and approaches for change. (Jacob, 1992, p. 326)

Even if there are still many significant issues to be resolved in the field of classroom research, there remains a need for further inquiries on discourse-based teaching and learning especially in relation to today's linguistically and culturally diverse pupil populations. The intent to afford all pupils equal access to educational discourse calls for further research on classroom discourse in general, and academic discourse in particular. Much work remains to be done on improving our understanding of wider sociocultural issues which affect pupils' involvement in classroom discourse, as well as on identifying ways in which existing classroom practices may be challenged and transformed to enhance educational equity. Interdisciplinary cooperation and closer collaboration between educational researchers and educators may strengthen the multifaceted field of classroom research in facing the challenges that lie ahead.

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APPENDICES   A - H

APPENDIX A

Overview of pupils' ethnolinguistic backgrounds

Table 3. Language majority and language minority pupils in 3A

Pupils with Norwegian as their first language		Pupils with Norwegian as their second language	
Boys	**Girls**	**Boys**	**Girls**
1. Jonas 2. Michael 3. Stian 4. Tomas	1. Charlotte 2. Ida 3. Ka (Kanjana) 4. Maria 5. Mette 6. Silje 7. Veronica	1. Ahmed 2. Ali 3. Asif 4. Ivan 5. Mustafa 6. Sandip	1. Ayse 2. Fatima 3. Flora 4. Nimrat 5. Noora 6. Sona 7. Zahra

Table 4. Language minority pupils listed according to their mother tongue

Mother tongues	Language minority pupils
Albanian	Flora
Arabic	Ahmed (Iraqi background) Mustafa (Iraqi background) Zahra (Moroccan/Iraqi background)
Croatian	Ivan
Hindi	Sandip
Mandingo	Sona
Panjabi	Nimrat (Indian Punjabi background)
Somali	Noora
Turkish	Ayse
Urdu	Ali Asif Fatima

Overview of teaching staff and teaching periods

Table 5. Overview of teaching staff and teaching periods (number of periods per week)

Karin *Form teacher*	Norwegian (NL2) (6), Mathematics (4), Social Studies (2), Arts and Crafts (2), Music (1), School's and pupil's options (1)
Jon *Co-teacher*	Norwegian (NL1) (7), Physical Education (2), Science and Environment (2), English (1), Free Activities (1)
Tore	Christian, Religious & Ethical Education (CRE) (2)
Nasreen	Bilingual teacher (Norwegian-Urdu): Mathematics (3), Urdu (2), Optional (1)
Hassan	Bilingual teacher (Norwegian-Somali): Norwegian-Somali tuition (3)
Kine	Teaching assistant (10)
Annette Eskil Niklas	Substitute teachers (stand in when necessary)

APPENDIX C

Timetable Class 3A

Table 6. Timetable

Monday	
08.50 – 09.35	Norwegian: NL1 (Jon) / NL2 (Karin)
09.35 – 10.20	Norwegian: NL1 (Jon) / NL2 (Karin)
10.20 – 10.45	Break
10.45 – 11.30	Mathematics (Karin)
11.30 – 12.15	Science and the Environment (Jon)
12.15 – 12.45	Break
12.45 – 13.30	Science and the Environment (Jon, Nasreen)
13.30 – 14.15	Free Activities (Jon, Hassan)

Tuesday	
08.50 – 09.35	Mathematics (Karin, Nasreen)
09.35 – 10.20	Mathematics (Karin, Nasreen)
10.20 – 10.45	Break
10.45 – 11.30	Arts and Crafts (Karin)
11.30 – 12.15	Arts and Crafts (Karin)
12.15 – 12.45	Break
12.45 – 13.30	Urdu (Nasreen)

Wednesday	
08.50 – 09.35	English (Jon)
09.35 – 10.20	Christian Knowledge and Religious and Ethical Education (Tore)
10.20 – 10.45	Break
10.45 – 11.30	Social Studies (Karin)
11.30 – 12.15	Norwegian: NL1 (Jon) / NL2 (Karin)
12.15 – 12.45	Break
12.45 – 13.30	Norwegian: NL1 (Jon) / NL2 (Karin)

Thursday	
08.50 – 09.35	Mathematics (Karin, Nasreen)
09.35 – 10.20	Physical Education (Jon)
10.20 – 11.05	Physical Education (Jon)
11.05 – 11.30	Break
11.30 – 12.15	Music (Karin)
12.15 – 12.45	Break
12.45 – 13.30	School's and Pupil's Options (Karin, Hassan)

Friday	
08.50 – 09.35	Norwegian: NL1 (Jon) / NL2 (Karin)
09.35 – 10.20	Norwegian: NL1 (Jon) / NL2 (Karin)
10.20 – 10.45	Break
10.45 – 11.30	Norwegian (Jon)
11.30 – 12.15	Social Studies (Karin)
12.15 – 12.45	Break
12.45 – 13.30	Christian Knowledge and Religious and Ethical Education (Tore)

Class 3A: Layout and seating plan regular classroom

Regular classroom

					* position video recorder

Seating plan 4–8 October 1999

The seating plan was subjected to change; both pupils and desks were moved around periodically.

Class 3A: Layout and seating plan Norwegian as a second language (NL2) - classroom

NL2 - classroom
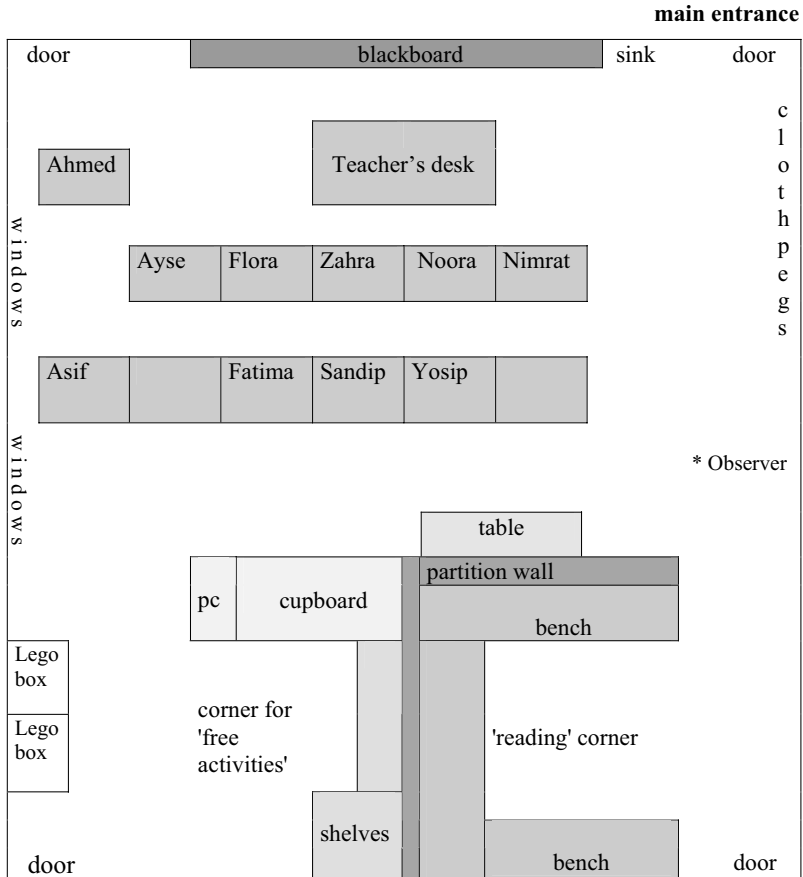
main entrance

| door | blackboard | sink | door |

Ahmed

Teacher's desk

c
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p
e
g
s

w
i
n
d
o
w
s

| Ayse | Flora | Zahra | Noora | Nimrat |

| Asif | | Fatima | Sandip | Yosip | |

w
i
n
d
o
w
s

* Observer

table

| pc | cupboard |

partition wall

bench

Lego box

Lego box

corner for 'free activities'

'reading' corner

shelves

bench

| door | | door |

Seating plan 4–8 October 1999

The seating plan was subjected to change; both pupils and desks were moved around periodically.

APPENDIX F

Transcription conventions

The papers included in this thesis present excerpts of classroom discourse, together with additional information enclosed in parentheses (e.g., concerning what teachers and pupils were doing while they were talking to each other). The aim has been to present the sequences of talk as accurately as possible, using a number of transcription conventions, but at the same time ensuring that they remain easily readable. Therefore, the normal written uses of capital letters and periods to mark the start and end of sentences have been maintained.

Transcription conventions

Symbol	Explanation
Teacher	indicates teacher's utterances
Pupil(s)	indicate(s) unidentified pupil(s)' utterances
.., ...	indicate short pauses
xxx	indicate unintelligible speech items
[text]	brackets indicate the translation of the preceding term(s)
wo:rd	colons indicate lengthening of the preceding sound
;word	semicolons indicate stressing of the succeeding sound
text	the use of italics in excerpts indicate texts somebody is reading or singing
(text)	parentheses indicate additional information
eight	numbers are spelled out in the dialogues of the cited transcripts, but are written as numerals in additional information

Norwegian transcripts[28] of the discourse episodes presented in the three papers

Paper I -   Classroom discourse as educational practice: Exploring pupil participation and engagement

Excerpt I-1:   Does anybody know what rhyme is?

1. Lærer: Er det noen som vet hva rim er for noe?
2. Michael: Ja. Det .. er noe som…rimer.
3. Elev: Ja…rimer.
4. Lærer: Hva gjør det for noe da?
5. Michael: xxx som et dikt.
6. Lærer: Er det noen som kan forklare hvorfor et rim er et rim?
                Hvis jeg sier..eh..er det noe som rimer på 'kø.. kø', hvis jeg sier for eksempel 'jeg sitter i kø'… (Sona rekker opp hånden)
7. Lærer: Sona?
8. Sona: Nø, nø.
9. Lærer: Ja. Hørte du det Michael?
10. Lærer: Hvis jeg sier 'himmelen er klar og blå', kan dere lage en setning som rimer på det?
11. Michael: Ja. Himmelen er ;ikke klar og blå (noen elever ler og gjentar svaret hans).
12. Elev: Himmelen er ;ikke klar og blå.
13. Ida: Det rimer ikke da xxx (klassen blir urolig).
14. Elev: Himmelen er blå xxx storetå (noen elever ler høyt).
15. Silje: Hva sa du igjen? (henvender seg til læreren).
16. Lærer: Himmelen er klar og blå.
17. Elev: Plutselig så blir den helt grå.
18. Lærer: Bra. Det rimte xxx (barna ler og roper i bakgrunnen).
19. Lærer: Hvis jeg sier, 'himmelen er klar og høy'.
20. Elev: Møy, gøy...veldig gøy
21. Lærer: Bra.

Så skal hver elev lese høyt ett av de ni versene i 'Rim og vers' (side 30). De første to versene er:

Himmelen er klar og blå.   Himmelen er klar og høy.
Nesen din har fregner på.   Jeg er glad i syltetøy.

Silje: (improviserer) Himmelen er klar og høy og Jon vil ikke ha på seg tøy.
Lærer: .. og Jon liker ikke støy.

---

[28] See Appendix F for transcription conventions.

<u>Excerpt I-2:</u> When the last letters area like, it rhymes

1. Lærer: Hvordan visste dere det? (interessert stemme).
2. Nimrat: For det er bilder der.
3. Lærer: For det er bilder … ja.
4. Ahmed: Jeg kan det utenat.
5. Lærer: Og du kan det utenat.
6. Lærer: Og du da, Zahra?
7. Zahra: Vi kan høre det når vi .. synger det.
8   Lærer: Ja (bekreftende stemme). (Nimrat rekker opp hånden)
9. Lærer: Nimrat?
10. Nimrat: Jeg vet det da hvis du sier 'pølse' xxx og sånt, da vet jeg at det er
                gris, ikke sant? For det står en [sic.] bilde av en gris der óg.
11. Lærer: Så, noen ser på bildene, noen kan det utenat og noen hører hva det kommer til å bli ...
12. Lærer: Først så var det noe med nat:ten. (skriver 'natten' på tavlen) Hvem er det som går …
                ute om natt:en?
13. Elever: Kat:ten, nat:ten, kat:ten xxx (rimordene gjentas spontant).
14. Lærer: Nat:ten, kat:ten (skriver nå 'katten'– ved siden av 'natten' – på tavlen).
15   Elever: Nat:ten, kat:ten (elevene leser og gjentar ordene, så fortsetter de å rime).
16. Elever: xxx nå er det musa, lille musa … pus:a, mus:a, hus:a, mus:a .. katten vil spise musen
                xxx (elevene har det gøy og ler høyt).
17. Lærer: Dette er å rime.
18. Elever: Rime, mime (svarer spontant med å rime).
19. Lærer: Når de siste bokstavene er like, så rimer det.

**Paper II -   Discourse and learning in a Norwegian multiethnic classroom: Developing
                shared understanding through classroom discourse**

<u>Excerpt II-1:   John the Baptist</u>

Lærer: (leser) *Johannes døper folk* (overskrift). *I Det nye testamente star det fortalt om en
            mann som heter Johannes. /…/ Johannes forkynte at folk skulle vende om til Gud. De
            skulle la seg døpe for å få tilgivelse for syndene sine. /…/*
Lærer: Skjønner dere hva jeg prater om?
Elever: Ja.
Lærer: Dere skjønner hva jeg sier alt sammen?
Elever: Ja.
Lærer: Det var ikke vanskelige ord, eller?
Elever: Nei.
Lærer: (leser) */…/ Da Jesus var blitt døpt, gikk han opp av vannet. Plutselig åpnet himmelen
            seg. Jesus så Guds Ånd komme ned over seg som en due. En stemme fra himmelen sa:
            "Dette er min sønn, den elskede, som jeg har behag i."*
Lærer: Vet dere hva det er å døpe?
Elev: Ja.
Lærer: Kan dere forklare meg hva det er å døpe?
            Kan dere forklare meg hva det er å døpe noen?
            (Silje and Michael rekker opp hånden) Silje.
Silje: Noen får xx vann på hodet... fordi de skal tro på Gud og sånn... og dra til himmelen
Lærer: Kjempefint!
Lærer: (leser) *Johannes blir tatt til fange ...* (læreren blir avbrutt)
Silje: Det er ikke alle som blir døpt. Det er mange som bare blir barnevelsigna.
Elev: Jeg er ikke blitt døpt.

Lærer:	Det er sikkert mange her som ikke er blitt døpt.
Elev:	Ikke jeg heller.
Elev:	Ikke jeg.
Elev:	Jeg er barnevelsigna.
Lærer:	Husker dere noe av hva jeg sa om Johannes?
	Hva jeg leste om Johannes?
	Hva gjorde Johannes? (ingen svarer)
	Hva var liksom jobben til Johannes? Ikke akkurat jobben hans, men hva han gjorde.
Silje:	Han døpte folk ... og fortalte om Gud til andre folk.
Lærer:	Helt riktig.
Elev:	Hva skal vi tegne?
Elev:	Jeg skal tegne at han ble døpt.
Elever:	Det skal jeg og. xxx...jeg og.
Lærer:	xxx kjempefint.
Nimrat:	Når han blir drept?
Elev:	Døpt.
Lærer:	Døpt. xxx Dø:pt .. ikke è::', men 'ø::'..
Nimrat:	Døpt?
Lærer:	Yes (svarer på engelsk).
Nimrat:	Døpt? Jeg vet ikke hva 'døpt' betyr, jeg.
	(Læreren går nå til Nimrat for å forklare hva 'å døpe' betyr)
Lærer:	Å døpe xx små dråper med vann xxx.

Excerpt II-2: The harebell

Lærer:	Det er et bilde av dem øverst på arket. Noen få blomster, lange skaft og blomstene er klokkeformet, det er derfor de blir kalt blåklokker.
Ivan:	Er de klokker?
Lærer:	Ja, de ser ut som klokker, du ser de som henger her (peker på svart-hvit tegningen på arket).
Ivan:	Det synes ikke jeg! (uttrykker sterk uenighet, mens han samtidig kaster et blikk på den runde, fargerike Ikea-klokken på veggen).
Lærer:	(læreren ignorerer Ivans kommentar og fortsetter) xxx og de er blå og er cirka to centimeter lange … så lange omtrent (angir avstanden med fingrene sine).
Lærer:	Nå står det fire spørsmål her og de kan dere svare på, når dere leser det som står her. Nå har jeg allerede sagt alle svarene. Da svarer dere på arket og hvis du lurer på noe, kan dere lese mer eller spørre meg.

Excerpt II-3: A fishing trip

Lærer:	Nimrat, hva skal vi ta, ferie eller fisketur?
Nimrat:	Fisketur.
Lærer:	(leser) *Det var en gang en gutt som bodde i en robåt. Han bodde helt aleine. En dag var det så kjedelig i robåten og han slo på tv-en* (læreren hopper over eventuelle skrivefeil).
Elever:	xx tv-en? (er overrasket og ler)
Lærer:	(leser) *Så gikk telefonen. Han tok telefonen. Det var.. sjefen! Han måtte til ..* også har du skrevet?.. *Planet Tre.*
Nimrat:	Ja.

Lærer:	Hva mener du med det?
Nimrat:	Jeg skrev som om det var i himmelen.
Lærer:	Ja, ja! Ja, men det er det. En annen planet?
Nimrat:	Ja.
Lærer:	Ja. Denne gutten må til en annen planet, Planet Tre.
Lærer:	(leser) *På Planet Tre var det en katt som hadde rømt fra huset* (Ahmed ler i bakgrunnen). *Han snakket til katten. Da fulgte katten med hjem. Da han kom hjem, fikk han gullmedalje av sjefen…og snipp, snapp, snute så var eventyret ute!*
Ahmed:	Du kan ikke fly.
Lærer:	Alt er lov når man forteller historier. Da finnes det katter på Planet Tre for eksempel…

Excerpt II-4: A holiday trip

Lærer:	Ivan? Da er det ferie eller fisk … hva skal vi ta?
Ivan:	Ferie.
Lærer:	(leser) *Jeg reiste med fly til Kroatia. Jeg var hos Bestefar og Bestemor. Jeg var i bryllup hos tanta mi. Det var gøy. Etterpå gikk vi til en park og så kjørte jeg bil.*
Lærer:	Da spør jeg, som jeg spurte Noora, det kan ikke være en ordentlig bil du kjørte?
Ivan:	Jeg kjørte.
Lærer:	Du satt på? Du styrte ikke?
Ivan:	Jo!
Lærer:	Hva slags bil da?
Ivan:	xx der satt jeg xx i sånne biler som jeg og søstera mi kjørte...og etterpå kræsja vi med noen.
Lærer:	Nettopp. Men var dette i en slags lekepark da?
Elev:	Sånn har jeg også vært i.
Lærer:	Var det i Kroatia?
	(Nimrat rekker opp hånden) Ja, Nimrat?
Nimrat:	Det er sånne biler som det er i Tusenfryd. Der har jeg også kjørt.
Elev:	Jeg og.
Nimrat:	Det er sånne lekebiler som du kan sitte på og kjører.
Elever:	Der har jeg vært xxx (flere barn sier noe samtidig).
Ahmed:	Jeg også, både i Tusenfryd og i Syria
Lærer:	Kaller dere det for 'radiobil'?
Elev:	Ja det er radiobil xx med en lang …
Lærer:	Med en lang stang som går opp i taket?
Elev:	Ja.
Lærer:	Det er radio bil, en 'radiostyrt bil' altså, den stangen bak på bilen går opp i taket og får strøm…det er innmari morsom, er det ikke det?
Elever:	xxx (barna snakker opp i munnen til hverandre).

Paper III - The mediation of mathematical knowledge in and through discourse: A situated and sociocultural approach

Excerpt III-1: Counting chanterelles and penny buns

Ivan: Nasreen[29], jeg skjønner ikke hva man skal gjøre her (lav stemme).
Lærer: Her er det. Jeg fant ni .. reis deg opp .. kan du lese det? Jeg ..
Ivan: (leser) *.. fant ni ka..kan-ta-rel-ler..* (Ivan har problemer med å lese ordet og læreren leser nå sammen med ham) *og åtte stei:nsopp, sopp, sa Maria. Maria fant .. sopp i alt.*
Lærer: Hvor mange fant hun i alt? Nå skal du legge de sammen.
Ivan: Åtte?
Lærer: Nei, først var det den. Den er også sopp. Ni pluss åtte.
Ivan: Å:åh (intonasjonen viser forståelse).
Lærer: Ja, det er også sopp. Den heter sopp den også (Ivan begynner nå å regne ved hjelp av en kuleramme som han fikk utlevert tidligere i timen).
Ivan: Ferdig.
Lærer: Du er ferdig?
Ivan: Sytten!

Excerpt III-2: Even and uneven numbers

Charlotte/Ka: (Spør læreren i kor) Hva skal vi gjøre her?
Lærer: Da, oddetall og partall. Oddetall det er sånn at det som er ikke par. Partall, det er for eksempel to, det som er par det er partall. To, en og en, det er to, ikke sant? Det er par. En og en, det er par, ikke sant? Det er like par, det er likt. Da skal dere sette (xxx). Det var feil (peker på Ka's arbeidsbok). Sytten. Der skal du ha odde tall. Oddetall, det som er ikke paret. For eksempel, en og en det er to det er par, ikke sant? To og to, er det par?
Ka: Ja? (lav og nølende stemme).
Lærer: Mm.. (bekrefter og fortsetter). Finnes det noe par for tre?
             (Ida som sitter foran Charlotte, snur seg og hører på lærerens forklaring. Så slutter hun seg til diskusjonen).
Ida: Fem og tre er ikke par.
Lærer: Nei.
Ida: Det er oddetall.
Lærer: Det er oddetall. Fem har ikke par; det er oddetall (xxx). Da skal dere fargelegge oddetall, alt opp i den boksen, den røde boksen.
Ida: Er ikke fem partall da?
Lærer: Fem, hvis du har fem hvordan kan det være partall? Hvis du lager par i disse to og disse to, da er den alene. Det er ikke noe par der. Ikke sant?
Ida: Hvis du har fem kroner og det skal deles likt..
Lærer: Ja..
Ida: .. da får du to kroner og femti øre hver.
Lærer: Ja, femti øre og femti øre, men det er ikke kroner. Du må ha kroner der også. Da må du ha én krone til der og én krone til der, så er de par også, ikke sant?
Lærer: (henvender seg til Ka og Charlotte igjen) Skjønner du det? Der, der har du tre, er det partall eller oddetall? Tre? Er det vanskelig? Det synes jeg også det er vanskelig.

Ida: Det er ikke partall.
Lærer: Nei. Det er oddetall. Da kan du fargelegge det rødt. Fem. Putt opp i rødboksen.

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[29] Nasreen er den tospråklige (norsk-urdu) læreren som også underviser klassen i matematikk.

Charlotte:	Skal jeg fargelegge det nå?
Lærer:	Det kan du gjøre etterpå. Nå har du åtte, er åtte en (sic) partall eller oddetall? Ka, kanskje vet det? (Ka svarer ikke) åtte, er det partall eller oddetall? Kan åtte deles? De som deles, det er partall. De som kan ikke deles, det er oddetall.
Ka:	Oddetall (xxx)?
Lærer:	(Peker på Charlottes arbeidsbok) Den var feil Charlotte. Har du bare sett på Ka? (med litt latter i stemmen).
Charlotte:	Nei.
Lærer:	Det er partall, vet du. En og en det er partall. Den kan du farge blå.

Excerpt III-3: Ten-friends

Lærer:	Neste vers, nå skal jeg pusse ut litt, jeg pusser ut det ett-tallet.
Silje:	Og ni-tallet.
Lærer:	Og skriver to, og så må jeg ta vekk ni-tallet. Ja, hva skal jeg sette da, Silje?
Silje:	Åtte ... og det andre ni-tallet (også andre elever slutter seg til).
Lærer:	Åtte, og så må jeg ta bort en og ni der. To, åtte.
Lærer:	(synger) *Jeg heter to og jeg leter og jeg leter, etter en venn mon tro hva jeg [sic] heter. To heter jeg her..* (læreren blir avbrutt og oppdager at hun sa feil).
Elever:	Åtte der.
Lærer:	To og to blir fire det.
Elever:	Ja.
Lærer:	OK, om igjen da. (synger) *Jeg heter to og jeg leter og jeg leter etter en venn mon tro hva han heter. Åtte heter jeg og her har du meg, jeg er tiervenn med deg. To og åtte til sammen er vi ti, vi er tiervenner vi.*
Lærer:	Nå vil jeg at en skal komme frem og pusse ut da, og sette på noe nytt. (Læreren trekker nå en navnelapp fra en liten tinnkopp og leser navnet på eleven som skal komme frem) Fatima, vil du det? Ja?
Lærer:	Det kunne ha vært en null da, men det er så ensomt da. Ja (xxx) hvis det bare er ti. Ja. Eller har du andre forslag?
Sona:	(Visker bort '10' og skriver '4' istedenfor).
Lærer:	Kom det en firer der, ja. Da må det bli en sekser der .. mm (bekreftende).. (gjentar) og en sekser.
Lærer:	Og da slutter faktisk sangen der.
Elever:	(roper høyt) Ja!
Lærer:	For da har vi hatt en og ni, så har vi hatt to og åtte, tre og sju, fire og seks (mens hun skriver tallparene på tavlen).
Michael:	(avbryter læreren) Hva med tiern?
Lærer:	Og femmern plus .. (føyer til '5+5' til tallrekken på tavlen)
Michael:	Femmern?
Lærer:	Fem, ja. Kunne det ha vært ..
Silje:	Ti og null.
Veronica:	Jeg vil ta den (uttrykker et ønske om å skrive tallparet på tavlen).
Silje:	Nei, jeg tar den, Veronica.
Lærer:	Ti og null ville dere ha hatt da?
Elever:	Nei .. Ja!
Lærer:	Ti plus (xxx). Er det jeg heter null eller jeg heter ti?
Michael:	Jeg heter null.
Elever:	Jeg heter null. Jeg heter ti (xxx).
Lærer:	Javel (skriver '0 + 10' på tavlen).

Summary of my visits to the research school 1999-2000

Spring 1999: Pilot project

When	Who	Whom	Why	What & whom
19.2.99	Lutine/Astri	Principal *Ekelund*	Presentation	Presenting the research project
22.3	Lutine/Astri	Form teacher 3B	Introduction	Introducing pilot project: form teacher Tora
	Easter Holidays			
12.4	Lutine	Class 3B	Introduction	Introducing the pilot project to the pupils
14.4	Lutine	Class 3B	Observation	Regular class 3B
15.4	Lutine	3B pull-out class	Observation	Group of pupils with special educat. needs
19.4	Lutine	NL2-class (3A/3B)	Observation	Pull-out lessons NL2
22.4	Lutine	Class 3B	Observation	Regular class 3B
22.4	Lutine/Astri	3B-Pupils' parents	Introduction	Parent-teacher meeting Class 3B
3.5	Lutine	Class 3A	Observation	Regular class 3A
5.5	Lutine	Class 2A	Observation	Class 2A - Form teacher: Karin
18.5	Lutine/Astri	Staff teacher	Discussion	Coordinator for remedial/special teaching
7.6	Project delegation	Vice-principal	Presentation	Participants of meeting Norw.-Neth. Project
11.6	Lutine	Pupils 3B	Interviewing	
14.6	Lutine	Pupils 3B	Interviewing	
15.6	Lutine	Pupils 3B	Interviewing	
18.6	Lutine	Pupils 3B	Interviewing	
21.6	Lutine/Astri	Form teacher 2A	Introduction	Introducing the project to Karin
	Summer Holidays			

Autumn 1999 – Autumn 2000: Main research project

When	Who	Whom	Why	What & whom
25.8.99	Lutine/Astri	Form teacher 4B	Discussion	Evaluate pilot project: Tora (3B> now 4B)
	Lutine/Astri	Form teacher 3A	Discussion	Initiate main project: Karin (2A> now 3A)
31.8	Lutine/Astri	Form teacher 3A	Discussion	Discussing the project design with Karin
1.9	Lutine/Astri	Co-teacher 3A	Introduction	Introducing the project to co-teacher Jon
7.9	Lutine/Astri	Class 4B (3B)	Audio-/video rec.	Trying out the AV-recording equipment
14.9	Lutine/Astri	Class 4B (3B)	Audio-/video rec.	
	Lutine/Astri	3A-Pupils' parents	Introduction	Parent-teacher meeting class 3A
21.9	Lutine	Class 3A	Introduction	Introducing the project to the pupils
23.9	Lutine	Form teacher 3A	Long Interview	Karin
	Autumn Holidays			
4.10	Lutine/Astri	Class 3A	Audio-/video rec.	Day 1- first week after the Autumn Holiday
5.10	Lutine/Astri	Class 3A	Audio-/video rec.	Day 2 (afterwards: discussion with Karin)
6.10	Astri	Class 3A	Audio-/video rec.	Day 3
7.10	Lutine/Astri	Class 3A	Audio-/video rec.	Day 4
8.10	Lutine	Class 3A	Audio-/video rec.	Day 5
12.10	Lutine/Astri	Form teacher 3A	Discussion	Discussing observations in 3A with Karin
20.10	Lutine	Class 3A	Observation	
29.10	Lutine/Astri	Class 3A	Audio-/video rec.	
11.11	Lutine/Astri	Literacy night	Participant obs.	3A-pupils, parents and siblings attending
16.11	Lutine/Astri	Form teacher 3A	Discussion	Discussing observations in 3A with Karin
	Lutine/Astri	Urdu teacher	Discussion	Discussing Urdu instruction with Nasreen
10.12	Lutine	Class 3A	Visit	Collecting pupils' exercise-books
13.12	Lutine/Astri	Class 3A	Audio-/video rec.	Santa Lucia celebration
	Christmas Holidays			

School visits - continued

When	Who	Whom	Why	What & whom
5.1.00	Lutine/Astri	Class 3A	Audio recording	First day after Christmas holiday
12.1	Lutine/Astri	Class 3A	Audiorecording	A: NL2 (audio record) / L: NL1 (observe)
24.1	Lutine/Elena	Class 3A	Audio recording	
25.1	Lutine	Class 3A	Audio recording	Observing 9.30-10.30: sledging [*aking*]
26.1	Lutine	Class 3A	Audio recording	
27.1	Lutine	Class 3A	Participant obs.	Skatingtrip 'Spikersuppa'- ice rink
28.1	Lutine	Class 3A	Audio recording	
8.2	Lutine/Astri	Form teacher 3A	Discussion	Discussing observations in 3A with Karin
18.2	Lutine	Class 3A	Observation	
22.2	Lutine	3B School 'B'	Observation	Visit class 3B of another Oslo school ('B')
	Lutine	3B Form teacher	Discussion	Discuss observations with Caroline ('B')
23.2	Lutine	3B School 'B'	Observation	
24.2	Lutine	3B School 'B'	Observation	
25.2	Lutine	3B School 'B'	Observation	
	Winter Holidays			
6.3	Lutine	3A School 'B'	Observation	First day after the Winter Holiday
9.3	Lutine	Class 3A	Observation	Back to class 3A of the research school
	Lutine	Language project	Observation	The project's Urdu group
21.3	Lutine	Pupils 3A	Interviewing	
22.3	Lutine	Pupils 3A	Interviewing	
23.3	Lutine	Pupils 3A	Interviewing	
24.3	Lutine	Class 3A	Participant obs.	'In the old days'- school project
3.4	Lutine	Pupils 3A	Interviewing	
	Easter Holidays			
26.4	Lutine	Class 3A	Audio recording	First day after the Easter holidays
2.5	Lutine	Pupils 3A	Interviewing	
2.5	Lutine	3A-Pupils' Parents	Participant obs.	Parent-teacher meeting Class 3A
5.5	Lutine	Pupils 3A	Interviewing	
10.5	Lutine	Pupils 3A	Interviewing	
15.5	Lutine	Class 3A	Audio recording	
	Lutine	Class 3A/School	Observation	The school's relay race
19.5	Lutine	Class 3A/School	Participant obs.	Oslo-1000 year's celebration
22.5	Lutine/Astri	Class 3A	Audio recording	Nature & Environment-lessons
23.5	Lutine	Pupils 3A	Interviewing	
25.5	Lutine	Pupils 3A	Interviewing	
26.5	Lutine/Astri	Class 3A	Audio recording	Lutine: NL1-lessons / Astri: NL2-lessons
29.5	Lutine/Astri	Class 3A	Audio recording	Lutine: NL1-lessons / Astri: NL2-lessons
29.5	Lutine/Astri	Class 3A	Audio recording	Nature & Environment-lessons
30.5	Lutine	Pupils 3A	Interviewing	
6.6	Lutine/Elena	Class 3A	Audio recording	Recording Math-lessons (Elena)
	Lutine/Else	Urdu class 3A/4A	Observation	Teacher: Nasreen (3A: Fatima, Asif)
7/6	Lutine	Teacher 3A	Interviewing	Interview Teacher assistant Kine
	Lutine	Class 3A	Observation	
	Lutine	Somali class	Observation	Bilingual teacher (Norw-Somali): Hassan
	Lutine	Teachers' Meeting	Observation	The school staff's 'Joint Consultation'
8.6	Lutine	Co-teacher 3A	Interviewing	Interview Jon
	Lutine	Class 3B	Observe / discuss	Parallell class; discuss with form teacher 3B
14.6	Lutine	Class 3A	Audio recording	
14.6	Lutine/Astri/Elena	3A Summer party	Participant obs.	End-of-term celebration: pupils and family
20.6	Lutine	CRE-teacher	Interviewing	Interview Tore
	Lutine	Grade 3-teachers	Observation	Grade 3-teachers' team meeting
22.6	Lutine/Astri	Class 3A	Visit	Breaking up before summer holidays
	Lutine/Astri	Form teacher	Discussion	Discussing observations in 3A with Karin
	Summer Holidays			

School visits - continued

When	Who	Whom	Why	What & whom
22.8.00	Lutine	Form teacher	Discussion	Karin of Class 4A (the former 3A)
28.8	Lutine	Class 4A (3A)	Audio recording	NL2 lessons with Karin
29.8	Lutine	Class 4A (3A)	Observation	NL2 lessons with Karin
30.8	Lutine	Class 4A (3A)	Audio recording	NL2 lessons with Karin
1.9	Lutine	Class 4A (3A)	Audio recording	NL2 lessons with Karin
26.9	Lutine	Multicult. project	Participant obs.	Sri Lanka- group with Karin
30.10	Lutine/Astri	Bilingual teacher	Interview	Norw.-Urdu teacher Nasreen (handwritten)
1.11	Lutine/Astri	Bilingual teacher	Interview	Nasreen (handwritten notes)
20.11	Lutine/Astri	Bilingual teacher	Interview	Nasreen (handwritten notes)
27.11	Lutine/Astri	School's principal	Interview	Audio recorded interview
20.12	Lutine	Class 4A (3A)	Farewell visit	Leaving the field
	Christmas Holidays			