Leadership development as boundary work

*Inspired moments and longitudinal efforts*

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Thesis submitted for the degree of Philosophiae Doctor (PhD)

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UNIVERSITY OF OSLO
February 2014
Summary of the study

Leadership development has gained great interest internationally. There are a variety of approaches to leadership development of school leaders. Leadership development in interprofessional settings is among the trends. This thesis examines how leadership development evolves in an interprofessional team. The interprofessional team was situated in a Norwegian context, and consisted of principals, administrators and researchers. The team was formed to support the principals in three schools in leading a local school improvement project aimed at increasing students’ expertise of approaching academic texts in different subjects with specific learning strategies. The study is based on artifacts, audio and video data. In particular the study examines how school data trigger and structure the departure point for professional development in an interprofessional team. The study also examines how and to what extent professionals from schools, a municipality, and a university develop a shared understanding of the collaboration. In addition the study examines how leadership development evolves when principals, administrators, and researchers jointly analyze different challenges in a school improvement project over two years of collaboration. Third-generation Cultural Historical Activity Theory (CHAT) is chosen as a point of departure for creating an analytic framework for the study. The study includes three sub-studies. The overall findings suggest that how leadership development evolves in the interprofessional team can be characterized as: a struggle with ill-defined purposes of the collaboration; horizontal dynamics across professions and working contexts; explorative work, mediated and structured by tools. The findings also suggest that the dimensions of time and space influenced the boundary work in the team. The implication of the study is to pay attention to the role of tools, tensions and any ill-defined purposes when adjusting programs and designing opportunities for school leaders to develop their expertise in the future.
Acknowledgements

Many thanks:

To the National Graduate School in Education (NATED)
for approving my application and funding my research project.

To the participants in the team being studied
who gave glances of what matters in everyday practices in schools and in an educational administration and made the research project possible.

To my supervisors professor Andreas Lund and professor Jorunn Møller.
I have no words to explain my gratitude to you for being such excellent supervisors! Your energy on the project, your critical comments, your suggestions, and your encouragement have been invaluable in the work and completion of my thesis.

To Professor Sten Ludvigsen and Associate Professor Eli Ottesen
for constructive comments on, respectively, the middle and the final evaluation of my doctoral work.

To my late colleague Charles Hammersvik
for explorative approaches to connecting leadership development to core activities in schools in the developmental part of the study, as well as for collecting audio- and video data.

To my colleagues in Curriculum Studies, Leadership and Educational Governance (CLEG) and the research group for studies on workplace learning in the knowledge society (FALK)
for inspiring seminars and workshops.

To the leaders of and the PhD candidates at NATED and,
in particular, to Track 3,
for exciting lectures, seminars, workshops and social events across Norway and abroad.
To Dean and Professor Margaret Grogan and Dean and Professor Scott Thomas and NATED
for making it possible for me to be an Exchange Visiting Scholar twice at Claremont Graduate University in Los Angeles.

To the Department of Teacher Education and School Research
for being such an very interesting workplace.

To all my colleagues in "Utdanningsledelse"
for creating a stimulating academic and social community in which to pursue master’s degree program in educational leadership and for sharing research.

To my friends and PhD colleagues, Kirsten, Kristin, Tine, Sølvi and Anne Berit
for having fun and for the sharing the ups and downs of steep learning curves.

To my friends and family, for support and endurance!

To my dear Håkon
for your encouragement and for your patience in living with the project at home
for four years!
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PART I: Extended Abstract
1. Introduction

There is evolving recognition that the preparation and the development of school leaders might make a difference to leadership practice (Crow, 2006). A variety of approaches to the preparation and the development of school leaders have been documented internationally (Lumby, Crow, & Pashiardis, 2008; Young, Crow, Murphy, & Ogawa, 2009). Leadership development in interprofessional settings is among the more recent trends. This thesis examines how leadership development evolves in an interprofessional team. The interprofessional team was situated in a Norwegian context and consisted of principals, administrators, and researchers (the author included). The team was formed to support the principals in leading a local school improvement project aimed at increasing students’ expertise in approaching academic texts in different subjects with specific learning strategies as well as being leaders for professional and organizational learning. A main activity of the team was to explore different problem-spaces (e.g., building a culture for feedback from staff, leading staff meetings, understanding learning situations in classrooms, and evaluating the project) when serving as leaders of organizational, professional, and student learning. Different problem-spaces in the pilot schools, as well as theory and research, served as a departure for the common exploration of the team. Since the collaborative work of the team aimed at supporting the principals when leading the local project, I consider the team an informal setting for leadership development. The present study is based on artifacts, audio and video data collected from ten team workshops over two years.

Chapter 1 presents the rationale behind the study and the empirical setting in its context. The introduction also presents, in brief, the design of the study and the data corpus, the aims, and the research questions. Moreover, the introduction accounts for the analytic framework, and finally, the structure of the thesis is presented.

1.1 The rationale of the study

The importance of school leadership1 has gained acknowledgement internationally. School leadership is considered important when implementing reforms, and school leadership is

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1 “School leadership” in this thesis refers to leadership activities in which formal leaders of schools participate.
considered vital for school improvement and student outcomes. In particular, the role of being educational and instructional leaders has been underpinned the recent decades (Hallinger, 2003b; Robinson, 2006). Leading through promoting and participating in teacher learning and development is documented as having a strong effect on student results but little is known about how leaders learn to engage in teachers’ work (Robinson, Lloyd, & Rowe, 2008).

The need for a specific education in school leadership is now recognized internationally. Many countries have formal education and requirements for one to become a school leader, and in many countries, school leaders are offered possibilities for further professional development via programs, networks, teams, etc. (Lumby et al., 2008; Young et al., 2009).

The preparation of aspiring school leaders and the development of school leaders have been researched for decades (Bush & Jackson, 2002; Chin, 2003; Hallinger, 2003a). The research literature on the preparation and development of school leaders has enriched our knowledge of the variety of organized programs and how school leaders perceive program participation. Despite the substantial research that has been conducted on the preparation and development of school leaders, scholars have contended that our knowledge of how aspiring and practicing leaders learn to do their jobs remains limited (Crow, Lumby, & Pashiardis, 2008). Rather than examining how aspiring school leaders learn to do their jobs, the present study focuses on leadership development in an interprofessional team of experienced school leaders, administrators, and researchers. The study aims to document how leadership development evolves in an interprofessional team during a two-year period. By examining how leadership development evolves in situ, it is possible to document aspects of leadership development that may not be documented through interviews and surveys.

This thesis argues that an empirical examination of how leadership development evolves in an interprofessional team is vital for adjusting programs and designing opportunities for school leaders to develop their expertise in the future.

According to Earl and Fullan (2003), previously the decisions about education were based on the best judgments of the individuals in authority, and data about the schools and the students played almost no part in the decision-making. Over the past several decades, accountability has become the watchword of education, and data about the schools are used for the purposes of both accountability and improvement. The use of cases, simulations,
authentic situations, etc., in leadership development is one of several trends in the leadership development of school leaders (Huber, 2011). Different types of school data\(^2\) were also subject to analysis in the team.

Educational research has focused on understanding learning and development within a particular area of expertise or practice, but there is also a trend of moving across practices to seek knowledge (Akkerman & Bakker, 2011a, 2011b). This is also the case with the team. The participants were from schools, an educational administration in a municipality, and a university. Interprofessional settings are an aspect of school leaders’ practices in schools. Schools are, e.g., collaborating with health services to facilitate good conditions for students (Edwards, 2009, 2012; Edwards, Lunt, & Stamou, 2010). Schools may collaborate with various workplaces to facilitate vocational training for high school students (Tuomi-Gröhn & Engestrom, 2003). Schools are also collaborating with colleges and universities in mentoring teacher students (Edwards, 2010; Edwards & Mutton, 2007; Ellis, 2008; Tsui & Law, 2007). District and university collaborations in leadership preparation programs have become increasingly common in the U.S. (Crow, Arnold, Reed & Shoho, 2012; Young & Grogan, 2008). This is also the case in Norway (Blossing, Hagen, Nyen, & Söderström, 2010). However, one cannot take for granted that professionals from different contexts manage to develop a shared understanding of the collaboration.

Many researchers are concerned with causal relationships between factors such as leadership, leadership development, school development and student learning (Firestone & Riehl, 2005; Hallinger & Heck, 2010; Leithwood & Jantzi, 2008; Mulford & Silins, 2003; Simkins, Coldwell, Close, & Morgan, 2009). The present study does not aim to document similar causal relationships, but it is concerned with how leadership development evolves when principals, administrators, and researchers jointly analyze different challenges in a process.

The next section accounts very briefly for the team as the site of research as well as the context of the team being examined. In particular the section accounts for the contextual levels of the study.

\(^2\) “School data” in this thesis refers to student results, observations notes, video clips, evaluation reports, etc.
1.2 The empirical setting in its context

Several educational reforms have been implemented in recent decades in Norway. In 2006, the reform called “Knowledge Promotion” was initiated to improve students’ knowledge and skills. Better-qualified school leaders, teachers, and teacher educators, in addition to new curricula in all subjects, were some of the objectives of the reform. The Norwegian Directorate for Education and Training \(^3\) launched a school improvement program closely connected to the curriculum reform. The program was called “Knowledge Promotion—From word to deed.” The local educational authorities in the municipalities\(^4\) were supposed to enhance their ability to carry out school improvement projects in collaboration with external partners to obtain better learning outcomes and learning conditions for students (Blossing et al., 2010). It was left to the interacting professional practices to determine how to collaborate and what to collaborate on. The schools were to use a survey to identify the strengths and weaknesses in the schools as a point of departure for designing local projects and applying for grants.

The present study examines how leadership development evolves in an interprofessional team in one of the 100 projects of the aforementioned program. This particular project aimed at enhancing student capacity in reading factual texts. Teaching the teachers and school leaders how to teach learning strategies was one of the aims stated in the application for funding. Researchers from a university college and an expert on learning strategies were invited to teach how to approach factual texts with learning strategies to the teachers. In addition to focusing on learning strategies, this project aimed at “stimulating professional and organizational learning” both within and across the primary and lower secondary schools in the project. A colleague and I from the Department of Teacher Education and School Research at the University of Oslo were invited by the educational administration in the municipality to assist in the local project to stimulate professional and organizational learning. When it came to the contribution from the university, the application was not very precise beyond that of “stimulating professional and organizational learning.” “Shadowing and mirroring” (observing and giving feedback) were mentioned as a measure, as well as organizing professional learning communities among the teachers. After negotiating how to collaborate, about what, and on which arena, principals at three pilot

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\(^3\) “The Norwegian Directorate for Education” is hereafter referred to as “the Directorate.”

\(^4\) Norway is divided into 20 counties and 428 geographical administrative/political areas called “municipalities”. Municipalities are the lowest administrative level in Norway. Municipalities are responsible for a number of basic tasks, such as the operation of primary schools and kindergartens.
schools in the local project, administrators from the educational authority in the municipality, and the researchers agreed to form a team. Figure 1 illustrates the contextual levels of the team.

![Diagram of contextual levels]

**Figure 1.** Contextual levels

Usually, the team met physically outside the schools, in the building of the local administration. Analyzing different problem-spaces in teacher and leadership practices when trying to implement the local project became a main activity of the team. Different problem-spaces related, to e.g., opening up classroom practices and authentic learning situations in classroom, were presented as narratives and tools such as logs from the principals and from field notes from observations and video clips collected by the researchers at the pilot schools. The researchers also presented theory as well as reports from research that was deemed relevant to the situations being examined. Guided by questions from the researchers, the local project was discussed in the context of the situations, theory, and research being presented.

The members of the team met regularly for two years in 10 workshops. The team consisted of Eileen, a leader from the educational administration in the municipality, and Sara and Peter, held the same position; Tony, a principal from a lower secondary school;

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5 The three pilot schools were supposed to gain some experience in ways of working before the other schools in the municipality joined the project.

6 Pseudonyms replace the true names of the team members.
Annie, a principal from a small primary school; Billy, a principal from a medium-sized primary school; and the researchers, Casper and Rachel (the author of the present thesis), from the Department of Teacher Education and School Research at the University of Oslo. All the participants have experience as teachers and leaders. Most of the participants had formal education in educational leadership.

My colleague and I obtained permission to collect audio and video data from the ten workshops of the team. The next section accounts very briefly for the approaches chosen to examine how leadership development evolves in this particular team.

1.3 The design of the study and the data corpus

I have chosen a qualitative research strategy for my study to examine how leadership development evolves in an interprofessional team because a qualitative approach allows analysis of how leadership development evolves in situ over time. As the study was conducted over a two-year period, it has characteristics of a longitudinal design. Empirical data from audio and video recordings were gleaned from all 10 workshops that were arranged. Since several tools were introduced to the team (often by the researchers) as a point of departure for common exploration, the tools have been included in the data corpus to provide a more complete picture of how leadership development evolved in this particular team. To obtain a nuanced picture of how leadership development evolved in the team, the data have been analyzed within and across timescales, i.e., within episodes when the team was working with different problem-spaces, within the trajectory of the team during two years of collaboration, and across episodes.

1.4 Aims and research questions

This thesis aims to enrich our knowledge about the leadership development of school leaders as a phenomenon by empirically examining how leadership development evolves in an interprofessional team.
The main purpose of the overall study is guided by the following research questions:

1. How do school data trigger and structure the departure point for professional development in an interprofessional team?

2. How and to what extent do professionals from schools, an educational authority in a municipality, and a university develop a shared understanding of the collaboration?

3. How does leadership development evolve when principals, administrators, and researchers jointly analyze different challenges in a school improvement project over two years of collaboration?

The three research questions, which are examined in the three sub-studies (hereafter called Study 1, Study 2, and Study 3) are focusing on the different aspects of how leadership evolves in an interprofessional team during two years of collaboration.

In Study 1, special attention is given to school data as the departure point for the professional development of principals. As mentioned, the team analyzed problem-spaces in the local project. In this study, we meet the team when they are trying to make sense of a teacher’s practice. Video clips from first grade were examined and discussed. The analysis demonstrates how the tools, as well as the talk and tensions (disagreement) mediate collective engagement in teaching, learning, and the use of professional concepts by staff.

Study 2 aims to contribute to our understanding of how and to what extent the participants from three schools, an educational authority in a municipality, and a university develop a shared understanding of the collaboration. The focus in this study is the horizontal dynamics of the team. We meet the team when they are trying to develop a shared understanding of how to collaborate and about what to collaborate on. The analysis demonstrates how coming to terms with ill-defined objects was a prerequisite for developing a shared focus.

Study 3 aims to contribute to our understanding of how the dimensions of time and space influence interprofessional development. In this study, we meet the team when the team is concerned with how to evaluate the local project with reliable and valid methods. The participants’ work and objectives reflect different timescales (moments in time and longitudinal trajectories) and different spaces (school, municipality, and university). The

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7 The research questions in the Extended Abstract are slightly adjusted to the aims of the three articles in which the three sub-studies are presented.
analysis shows how such temporal and spatial dimensions influence the team’s efforts in achieving its goals.

Although the present study consists of three sub-studies, I have chosen one theory as the point of departure for creating the analytic framework for the overall study.

1.5 The analytic framework

I have selected third-generation Cultural Historical Activity Theory (CHAT) (Engeström, 1987) as the foundation for creating an analytic framework for the overall study. Third-generation CHAT is grounded in Vygotsky’s (1978, 1986) and Leontév’s (1978, 1981) work. Engeström (1987) has developed their work further. Third-generation CHAT was selected as the theoretical framework for the entire thesis, because this framework enables one to examine zones in which different working contexts, such as schools, municipalities and universities, come into contact. Moreover, third-generation CHAT allows an analysis of how the collaborative work is directed and motivated in terms of objects. Including objects in the analysis makes it possible to examine the collaborative work in the team in situ and the potential of such work rather than the beliefs of the participants about the collaborative work. The objects connect individual actions to collective activity. The study is grounded in the presumption that tensions and contradictions might occur in developmental work. Tensions and contradictions might produce collapses, but they might also trigger expansive processes of learning. Thus, it was important to choose an analytic framework that pays attention, not only to shared negotiations, but also to the role of tensions. CHAT is regarded as fruitful when studying not only the interactions among the participants in the team but also the interactions with tools. In addition, third-generation CHAT offers the opportunity to examine developmental processes within different lengths of time and the intersection of different timescales to obtain a nuanced picture.

The table below shows the relationship between the overall aim of the thesis and the focuses of the three sub-studies.
Table 1

The Relationship between the Study and the Sub-Studies

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<th>STUDY 1</th>
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<th>STUDY 3</th>
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<td>How do school data trigger and structure the departure point for professional development in an interprofessional team?</td>
<td>How and to what extent do professionals from schools, an educational authority in a municipality, and a university develop a shared understanding of the collaboration?</td>
<td>How does leadership development evolve when principals, administrators, and researchers jointly analyze different challenges in a school improvement project over two years of collaboration?</td>
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<td>Horizontal dynamics</td>
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<td>Audio data, video data, and artifacts</td>
<td>Audio data and video data</td>
<td>Audio data, video data, and artifacts</td>
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The next section explains how the study is outlined to account for both the overall study and the three mentioned research questions.

1.6 Outline of the thesis

The thesis has a two-part structure. Part I of the Extended Abstract includes six chapters. Following the introduction, Chapter 2 reviews research from the literature on leadership development and research on evolving processes of development from other fields of inquiry. Chapter 3 explains how the analytic framework for the present study is grounded in third-generation CHAT and how the analytic framework is used to examine
mediation, horizontal dynamics, and temporal and spatial dimensions of collaborative work in the team. In Chapter 4, the methodology is presented. This chapter accounts for and problematizes the design, the methods of data collection, the systemization of the data, the analysis, the credibility of the study, ethical factors, and the role of the researcher. Chapter 5 summarizes and discusses the findings in a broader perspective before presenting the conclusion in Chapter 6.

Part II consists of the three articles, which appear chronologically in accordance with the order I worked on them during the PhD period:

**Article 1:**

**Article 2:**

**Article 3:**

The next chapter presents relevant research on both leadership development and evolving processes of development from other fields of inquiry to explicate what we know from recent research.
2. Relevant research

First, the chapter contextualizes leadership development historically through references to research on the preparation and development of school leaders from the 1950s to the present. Second, since research on leadership development deals only to a small degree with how leadership development evolves in interprofessional settings, the review chapter presents relevant research on evolving processes of development from other fields of inquiry. Finally, the chapter summarizes what we know from research on leadership development and evolving processes of development, before positioning the study.

The aim of the review chapter is not to give a broad and exhaustive overview but to present relevant literature that helps to illuminate aspects of the study and to create a foundation for the discussion in Chapter 5.

The chapter is structured as follows: Section 2.1 contextualizes the study historically from the 1950s until 2000. During this period, the research was heavily dominated by research from the U.S. Section 2.2 focuses on research on leadership development since 2000. During this period, the research field also included studies from many other countries. In Section 2.3, relevant research on evolving processes of development from other fields of inquiry is presented. The review chapter is summarized and the present study is positioned in Section 2.4.

2.1 Leadership development beginning in the 1950s

The U.S. was somewhat of a pioneer in terms of educating administrators. We know from the research on the education of administrators that behaviorist theories of learning shaped both the pedagogy and the content being taught to students in the early phase (Taylor, Cordeiro, & Chrispeels, 2009). Students were taught to interpret findings from empirical research and to generate empirical research themselves using case study strategies (Chin, 2003). The researchers focused on individual leaders’ personalities, abilities, and behaviors to develop theories on the effectiveness of different traits. The traits tradition was

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8 The chapter reviews research on both the preparation and the development of school leaders since both research fields are relevant to the present study.

9 Research on the education of administrators was conducted prior to the 1950s in the U.S., but beginning in the 1950s, attempts were made to improve the research (Taylor et al., 2009).
criticized for its lack of attention to what leaders do, and researchers began to examine leadership as a set of behaviors. The purpose of the research was to develop taxonomies to show the effectiveness of different individual styles of behaviors (Spillane, Halverson, & Diamond, 2004). The period from 1947 to mid-1980s is called “the behavioral science era” (Murphy, 1998).

We know from the research, especially in the U.S., that the role of principals changed dramatically beginning in the 1980s (Hallinger, 2003a). Principals went from being responsible for maintaining stability to becoming responsible for leading change processes in their schools, which were often initiated by educational reforms. Questions were raised about the school leaders’ competencies with regard to leading the change processes required for implementing educational reforms (Ferrandino, 2001; Grogan & Andrews, 2002). Because it was considered important that leaders be able to resonate constructively with their practical experience, the preparation programs were expected to help leaders reflect on their own practices (Chin, 2003). As mentioned, examining one’s own practices was also central in the team being studied. Once having been offered exclusively by universities, leadership development also began to be offered at principal-led centers and by providers other than state governments. The U.S. was one of the few countries that required pre-service preparation or certification to receive an administrative position in schools in the 1980s (Hallinger, 2003a). While there were requirements for pre-service preparation or certification in the U.S., neither the U.S. nor other countries had requirements for further leadership development.

Since the mid-1980s, there has been significant criticism of the program content at universities due to the lack of connection between theory and the practice of school administration and leadership in the U.S. (Chin, 2003). Scholars argued that there was a need for more relevant teaching methods (Taylor et al., 2009). A range of private foundations began to support leadership programs and experiment with cohort groups of students, collaborations between districts, and curricula across courses. Experimentation with problem-based learning (PBL), simulations, and various apprenticeships took place, and efforts to connect the preparation of school leaders to the practice of school leadership were also carried out (Chin, 2003). Other countries began to educate school leaders in the 1980s (Hallinger, 2003a). Many Asian countries established administrative training centers during the 1980s. Several universities in Asian countries began to offer master’s degree programs in educational leadership and administration.
Beginning in the 1990s, the use of pedagogical techniques, such as case methods; PBL; simulations; and different modes of action research, expanded and became common (Taylor et al., 2009). During this period, different versions of participatory research were designed in which school leaders were given the opportunity to explain problems and dilemmas in everyday practices (Erasmus & Westhuizen, 1996; Limerick & Crowther, 1996; Møller, 1996; Thody & Ciystal, 1996). Explaining problems and dilemmas in everyday practices was also an important dimension in the collaboration of the team being studied in the present study as well.

Many scholars have criticized the positivistic research approaches to educational administration since the 1980s. Greenfield (Greenfield & Ribbins, 1993) argued that quantitative research approaches were not capable of addressing major themes, such as those related to values, will, and ethics. Thus, he suggested a qualitative and phenomenological approach as an alternative to making sense of complicated processes of social interactions from individuals’ perspectives. Scholars with traditions such as critical theory, post-modernism, and value theories engaged in criticizing positivistic research approaches (Chin, 2003). Murphy (1998) called the period beginning in 1985 “the dialectic era in preparation.”

It seems that research on leadership development is often based on rational, abstract, and causal relationships in theoretical models, which were developed to explain the effects of leadership development but also, beginning in the 1980s to make sense of complicated processes from individuals’ perspectives. The review of literature from the 1950s reveals that a recurring issue has been making leadership development relevant by experimenting with and introducing a variety of pedagogical approaches. Once offered only at universities, leadership development was also conducted at principal-led centers. The next section deals with research on leadership development from 2000 until today.

2.2 Leadership development from 2000

What we know from interviews, surveys, and the analysis of documents is that many countries in North America, Europe, Asia, Australia, and New Zealand offer extensive and comprehensive programs in the preparation and the development of school leaders (Hallinger, 2003a; Huber, 2010). National authorities as well as foundations, international agencies, and various associations all initiate programs. Some countries have large
mandatory programs for educating new school leaders. One example is England. The National College for School Leadership (the National College) was established to address the preparation of all aspiring school leaders. England also offers in-service programs to educate those who are already working as school leaders (Bolam, 2004). Another example is Canada’s province of Ontario, which has aimed to improve leadership on a large scale (Leithwood, Reid, Pedwell, & Connor, 2011). The question raised was, “What does it take to improve leadership on a large scale?”

The quality of leadership development has become a central concern of policymakers (Huber, 2010). Politicization has been a trend in recent years (Lumby, Pashiardis, & Crow, 2008). Politicians are calling for both a variety of ways of carrying out leadership development and assessments of school leadership programs.

A range of theoretical models has been developed in recent decades to explain the causal relationships between leadership and learning and between leadership development and leadership (Firestone & Richl, 2005; Hallinger & Heck, 2010; Leithwood & Jantzi, 2008; Mulford & Silins, 2003; Simkins et al., 2009). We know from this research that measuring such relationships is complex. It is considered problematic that evaluation is often restricted to measuring participants’ satisfaction and how participants think the programs contribute to their work in their own school contexts without measuring the impact of the programs in terms of student performance (Leithwood & Levin, 2005). Only recently have scholars engaged in documenting the implementation and the effects of leadership development and preparation over time (Orr, 2006). Still, there is sparse documentation of the processes in which leadership development takes place.

In parallel with the studies aimed at evaluating programs and explaining causal aspects in order to develop theory for practice, there is also a large body of studies attempting to explain and compare leadership development for descriptive and analytic purposes. Within the group of descriptive and analytic studies, we find studies about “the nature of leadership development” (Bush, 2009; Bush & Glover, 2004). The body of descriptive and analytic studies focuses on a range of different aspects of leadership development, such as the kind of leadership development in which school leaders participate; mentoring, supervision, and internships; recruitment; evaluation; socialization; different phases or stages of leadership development as well the curriculum and pedagogy.

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10 The National College merged with the Teaching Agency in 2013 and is now called the National College for Teaching and Leadership. It is not mandatory to attend the National College for Teaching and Leadership to be appointed as a principal in the U.K.
Since 2000, a number of cross-national studies have been conducted on different aspects of leadership development. Møller and Schratz’s (2008) study is one example. Based on an analysis of documents, Møller and Schratz found that leadership training and development are positioned differently according to centralization vs. decentralization as well as political vs. professional power over programs in Europe. When it comes to professional content, they found that the trend went from stimulating individual learning to stimulating more participative methods of learning in the programs.

Another study that sought to analyze, compare and discuss programs across countries was Huber’s (2004, 2010, 2011) cross-country study of leadership programs in 15 countries. Based on surveys, Huber identified a range of trends in school leader programs. Among the trends relevant to the present study are those concerning the way in which leadership development is organized, as well as those concerning the foci and the pedagogy. Huber identified that designing the programs in partnerships among universities, professional organizations, school boards, and schools in the regions is common. Combining course-based learning at colleges and universities with experience-based learning in workshops and at the workplaces was also identified in the study. There is a tendency to extend short courses into extensive programs stretched out over time and to distinguish between different phases in school leaders’ careers when designing opportunities to learn. Local and regional providers of leadership programs are often responsible for organizing the programs, while the central authorities qualify the programs. When it comes to the foci, there are trends toward focusing on the schools’ core purposes for student learning, team development, and improving each individual school that students attend. Connecting theory and practice is identified as common in the pedagogy of the programs. Reflecting on and exercising communication are a training focused on in peer-assisted learning, peer coaching, critical partnership, mentoring, etc. Schools are used as “clinical faculties”, where students shadow principals. There is also a trend toward increased explicitness concerning the aims and objects of the programs.

The present study is an example of collaboration that occurred over two years among schools, local educational authorities, and universities, and as such, its approach to leadership development is in line with widespread trends. However, less attention has so far been given to the processes involved in such collaborations.
In contrast to the U.S., Scandinavian countries were late in offering formal education to school leaders. Since the late 1960s, the national authority has been involved in the training of school leaders in Sweden, and since the 1970s, national and regional authorities have encouraged in-service training in Norway. During the last ten years, both universities and university colleges have started to offer master’s degree programs in educational leadership. Although the research on leadership development of school leaders in Norway is limited, there are some exceptions.

In a school leader survey from 2005, evaluation practices and management in Norwegian schools were examined (Møller, Sivesind, Aas, & Skedsmo, 2006). The findings suggest that personal reflection on one’s own practice was perceived as the most important source for learning and development. Conversations and discussions with colleagues and observations from colleagues were a close second. The study revealed high scores for the following sources of learning: conferences, continuing education, school visits, reading literature, and personal reflection on one’s own practice.

The Teaching and Learning International Survey (TALIS) reported that the culture for feedback seems to be weak in Norwegian lower secondary schools (Vibe, Aamodt, & Carlsten, 2009). TALIS confirmed that the administrative functions that fall under the principal’s role have received increased attention and consumed more time and resources than instructional issues. Observing instruction in classrooms and monitoring students’ work are activities that occur particularly rarely among Norwegian principals. Norwegian principals spend a somewhat lower proportion of their time on teaching-related tasks than the TALIS average.

In the international project Revisiting Successful School Principals, the findings from Norwegian schools suggested that sharing experiences is still important. The collegiums of principals in municipalities are considered important settings for sharing experience. The knowledge base for principals seems to be personal and contextual. Previous professional experiences are considered important when leading schools (Møller, 2011).

Causal, comparative, descriptive and analytic purposes were purposes of research on leadership development beginning in 2000. Studies with descriptive and analytic purposes have documented that aspiring and practicing school leaders are offered opportunities to learn in different arenas, with different tools, often over extended periods of time. The way the team is organized, the foci, and the pedagogy reflect some of the trends documented in the literature on leadership development when it comes to collaboration across working
contexts, including tools and being stretched over time as well as aiming at connecting theory and practice. However, none of the studies mentioned above pay attention to what may be characterized as the dynamics in boundary settings, mediation, and the temporal and spatial dimensions of collaborative work, which are in focus when examining how leadership development evolves in an interprofessional team. The next section presents research that I find relevant in this respect.

2.3 Research on evolving processes of development

This section presents research that focuses on evolving processes of development. The section reports on research on dynamics in boundary settings, mediation, and temporal and spatial dimensions of development.

2.3.1 Research on the dynamics of boundary settings

The interest in boundaries and the zone in which professionals collaborate across professions, positions, and work contexts has expanded in the last decade. The interest in this phenomenon is explained in the context of increasing specialization and networking in the knowledge society and the potential for learning that boundary spaces or boundary zones create (Akkerman & Bakker, 2011a; 2011b). Boundary settings have gained researchers’ interest not least because of the potential for learning and development in such settings. The concept of boundary crossing is used differently in the literature. The concept refers to the physical movement of individuals crossing the borders of working contexts to work and develop new experiences. Teacher students from teacher colleges and universities cross the boundaries of schools to gain experiences in teaching. Boundary crossing refers not only to the movement of crossing boundaries but also to some qualitative processes of collaboration related to work on shared objects, which in turn are conducive to expansive processes in the interacting activity systems (Engeström, 2003, 1987).

Based on three cases, Engeström, Engeström, and Kärkkäinen (1995) examined the horizontal aspect of expertise in interprofessional settings. The cases were taken from a large set of prolonged field observations, videotaped interactions, and interviews. The data were collected from Finnish and American schools, medical centers, factories, and banks between 1993 and 1994. The study showed the diversity of boundary crossing. Case 1
demonstrated how difficult it was to cross boundaries by just having meetings without identifying concrete problems. Case 2 demonstrated that interacting practices do not have to achieve mutual interpretations of situations to be fruitful. Case 3 demonstrated that boundary crossing might be a mutual process of problem solving in which roles may change or be reversed. The three cases revealed the demanding aspects of boundary crossing. Based on the findings, Engeström et al. (1995) argued that it is questionable whether any expertise was displayed in the three cases. Further, they argued that, when analyzing the data from a horizontal perspective positioned within CHAT, there is a need for other criteria to determine what counts as expertise. Expertise in seeking and providing help to find information and tools seems to be an important aspect of horizontal expertise.

Edwards (2009, 2010, 2011, 2012) found that relational expertise, relational agency, and common knowledge are mediating resources in interprofessional work when collaborating over time. “Relational expertise” is, according to Edwards (2011), based on “the confident engagement with the knowledge that underpins one’s own specialist practice, as well as the capacity to recognize and respond to what others might offer in local systems of distributed expertise” (p. 33). “Relational agency” occurs in a two-stage process i.e., constantly dynamic. The first stage occurs when

(i) working with other to expand “the object of activity” or task being worked on by recognizing the motives and the resources that other brings to bear as they, too, interpret it; and:

(ii) aligning one’s own responses to the newly enhanced interpretations with the responses being made by the other professionals while acting on the expanded object. (Edwards, 2010, p. 14)

Edwards’ conceptualization of relational agency is relevant because the team worked on several objects, which were expanded through the process. Whether relational agency characterizes the collaborative work is an empirical question. It is also an empirical question whether there are indications that the team develops what Edwards called “common knowledge.” The concept is explained in the following way:

Common knowledge is seen as comprising the motives that take forward each contributing practice. It is woven into continuously contestable organizational narratives. These mediate interactions across practice boundaries and give strategic direction to activities in and across services, which are in process of integration. (Edwards, 2012, p. 22)
The processes of engaging with relational expertise and relational agency might trigger horizontal dynamics that promote the development of common knowledge in boundary settings. Edwards (2010) argued that expertise might be distributed in interprofessional boundary work.

Edwards and Kinti (2013) examined the revelation and negotiation of professional expertise at boundaries by observing the process of interprofessional collaboration in sessions when working with the care of children. The data were generated from Developmental Work Research (DWR) sessions\(^\text{11}\) and analyzed with CHAT using a longitudinal approach. Edwards and Kinti aimed at examining the revealing and negotiation of professional expertise at organizational boundaries. They found that when collaborating on complex tasks, activities are kept together with longer-term, relatively open-ended and indeterminate goals, such as children’s well-being. Further, Edwards and Kinti argued that such collaborative situations require personal expertise “to recognize and work with the resources that others can offer” (p. 128). The case study exemplifies how a boundary zone opens up for knowledge flow and productive interdependences when working with shared objects (p. 131). They also underpin problematic aspects of such work. Based on the findings, they argued, rather than seeing professional collaboration as a neutral space, the participants considered the zone to be a place of struggle, as well as a place where learning took place.

In their review of 184 studies within education, Akkerman and Bakker (2011a, 2011b) were particularly interested in identifying mechanisms (also called types) of learning through boundary crossing. They found four mechanisms of learning in boundary settings. The four mechanisms are conceptualized as identification, coordination, reflection, and transformation. The unit of analysis varied in the reviewed articles between individual responses and social interactions. Some of the examples of manifestations of the mechanisms are transferable to the team being studied. Translations are mentioned as one example of coordination in boundary spaces. Reflection is typically identified as perspective making when persons make their own perspective explicit, and perspective taking when persons take others’ perspectives. Studies categorized as focusing on transformation are considered to focus on the effects of interventions, often after some kind of confrontation. Many CHAT studies are typically identified within this category. Work on shared problem

\(^{11}\)“DWR sessions” refer to specific sessions in which different tools are introduced to trigger processes of learning (cf. Edwards, 2010; Engeström, 2007b).
spaces was often recognized as a response to confrontation. Akkerman and Bakker conceptualized crossing boundaries and creating something new as hybridization.

*Boundary crossing* is a central aspect of collaborative work in boundary zones. Engeström (2003) stated that boundary crossing is a two-sided interaction. He explained further that:

If only one party attempts to cross a boundary but receive no response, the action is incomplete and cannot be categorized as boundary crossing. To be expansive, such actions need to be characterized by mutual engagement and commitment to change in practices. Moreover, whether or not a boundary crossing action is expansive can ultimately only be determined in the broader context of transformation in the activity systems involved. (Engeström, 2003, p. 3-4)

In the quotation above, Engeström presents the criteria for what characterizes boundary crossing. He is also presenting what is required to determine whether boundary crossing becomes expansive. It is not enough to examine the boundary zone in which activity systems interact. Any transformation of boundary crossing must be examined in the interacting activity systems, which, in the present study, would be the schools, the educational administration in the municipality, and the university.

The referred studies provide interesting knowledge about the expertise needed in horizontal settings to develop shared knowledge, the importance of appropriate tools when collaborating across boundaries, and what may characterize boundary crossing and expansive learning. Since several tools were introduced to the team being studied, the next section presents studies that are concerned with tool mediation in boundary settings.

2.3.2 Research on tool mediation in boundary settings

As mentioned previously, the team reported on in the present study examined situations and implications of leadership from different types of school data, i.e., notes from observations, video clips, evaluation reports, etc. The different types of school data are examples of tools that were introduced to mediate the processes of learning. Introducing different types of mirrors from work practices is also common in so-called Change

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12 Videotaped work episodes, photographs, stories, interviews, performance statistics, etc. from the workplace are presented as mirrors for examination (Engeström, 2007b).
Laboratories. Tools such as “the expansive learning circle” and “the model of an activity system” (Engeström, 1987) are introduced for analysis, in addition to mirror data. The processes are subject to analysis by professionals from the working practices as well as by researchers. Although the present study is not designed as a Change Laboratory, the present study uses different types of mirror data from the schools as authentic evidence of practice as a point of departure for analysis.

One study that addressed the mediation role of tools in Change Laboratories, was conducted by Kerosuo and Engeström (2003). The study examined tool-creation and the implementation of the tools in collaboration between primary care and a specialized hospital in Finland when working in a Change Laboratory. In the project, a “care calendar,” a “care agreement,” and a “care map” were implemented in the care of chronically ill patients with multiple diseases to avoid fragmentation, care with overlaps, gaps, etc. During six meetings, the members presented cases from their experimentation with the tools. The analysis is based on interviews with the patients and observation of the learning processes in the Change Laboratory. The findings suggest that the care calendar and the care map were appropriate tools, while the care agreement as a tool was met with resistance. Later, the care agreement as a tool was subjected to further elaborations during the process of implementation.

Another study that examined boundary crossing was conducted by Lambert (2003). Lambert videotaped and analyzed 11 Learning Studios in the field of vocational teacher education in Finland. The Learning Studios included representatives from teacher education institutes, teachers and students of vocational training in which the student teachers worked, and representatives from employer organizations. She found that successful boundary crossing depended on having appropriate tools. In Lambert’s project, forms, knowledge repositories, and graphic models played an important role in the collaboration (Engeström & Sannino, 2010).

The aforementioned studies are considered relevant to the current study when discussing tool mediation in leadership development. The studies remind us that interprofessional work depends on having appropriate tools. In other words, one cannot take for granted that tools mediate the productive processes of learning.

Temporality and spatiality are issues in the present study. The next section addresses research dealing with time and space in developmental processes.

13“Change Laboratories” are organized by researchers in DWR sessions to produce changes in different types of organizations (Engeström & Sannino, 2010).
2.3.3 Research on temporal and spatial dimensions of development

Many occasions and events have been created to promote learning and development. The team under study was formed to support the principals in being leaders for learning during a two-year period. When studying how leadership development evolves in an interprofessional team, what we know from research on the temporal and spatial dimensions of developmental processes becomes relevant.

Lemke (2000) listed a range of representative timescales at different levels within education. He is mentioning a multi-level curriculum, a semester, a unit, a school day, a lesson sequence, and an episode. In traditional leadership development at a university, there might be recurring temporal patterns of semesters, seminar days, sessions, etc. In new activities, there may be no pre-structured temporal patterns. There was no script for the tripartite collaboration in the team under study. Nevertheless, eventually, the characteristic pattern of the team became to collaborate in workshops of two to three hours every sixth week, each organized with two to three sessions of different lengths (depending on the issue being worked on).

Development within certain timescales is not isolated but interrelated. There is always a higher level of timescale that constitutes developmental processes in lower-level timescales (Lemke, 2001).

Sociocultural approaches to learning and development are not just about social interaction but are also about the role of longer timescale constancies and how they constrain, afford, and intrude upon moment-to-moment activity. (Lemke, 2001, p. 19)

To understand activity on a certain level, it might be necessary to look at the level above and below it. Changes on one timescale may produce changes on a lower level. The gradual changes of evaluation policy in a national educational system may, e.g., produce changes in how teachers evaluate students’ work. To understand the interactions in the team, we need to look at development within the schools, the municipality, and the university.

Time also unfolds spatially. When studying how time unfolds from an ontogenetic level, it is possible to examine how individual trajectories unfold during a period, and when studying how time unfolds from a micro level, it is possible to study interactions among people, for example, in a team. Examining the trajectories of development from a socio-
genetic perspective means widening the unit of analysis to, e.g., the school system in one specific country. Studying a school system may take more than a lifetime. The present study examines how leadership development evolved in an interprofessional team by examining interactions in the team on a micro level stretched over two years from a trajectory level. Roth (2001) showed how it might be possible to switch between different levels of zooming, i.e., between zooming on utterances to individuals, a group of students, or a whole class. In this way, he adopted what he called “a dynamic unit of analysis.” He showed empirically how individual trajectories, the trajectory of a classroom community, and the trajectory of situated activity intersect moments of practices. Aas (2009) showed how tensions intersected five times during the discussions of reading instruction in a local school improvement project. She showed how development on a socio-genetic level (in the educational system), development on a micro-genetic level (in the interactions in teams), and on an ontogenetic level (individual, teachers, and leaders) intersects in discussions of reading instruction. The findings suggest that contradictions in the educational system related to reading instruction are transformed into tensions in the schools.

Artifacts have their own trajectories, which may link long-term processes and short-term events (Lemke, 2000; Ludvigsen, Rasmussen, Krange, Moen, & Middleton, 2011). Ludvigsen et al. (2011) showed how different artifacts intersect during students’ problem finding and how the students’ creation of common objects brings together different timescales. The application for funding for the local project was developed and revised over a year. When the team refers to the application in an episode, the timescales of the team and the artifact intersect.

The studies referred to above are relevant when studying development in leadership development across timescales. The studies provide knowledge about how timescales at higher levels may constitute development at lower levels and how short timescales and long-term timescales may intersect and produce changes. In addition, the studies show how tools with their own timescales intersect with moments of practice, thus connecting short and long timescales.
2.4 Summarizing the review and the need of further research

The research on leadership from the 1950s has contributed with relevant knowledge about how leadership development is organized, as well as its purposes, the providers, the pedagogy, and the foci. Such knowledge is important for contextualizing the present study historically, as well as contextualizing the present study in today’s trends.

We know, for example, that those who provide leadership development (the providers) began experimenting with field-based work in addition to seminars in the 1950s. Beginning in the 1980s, providers experimented with cohort groups of students, collaborations between districts, and curricula across courses. Since 2000, there has been a trend to expand short courses into extensive programs stretched over time and to distinguish between different phases in school leaders’ careers when designing opportunities to learn. In this context, the present study has similarities when it comes to being stretched over time and including authentic situations.

Beginning in the 1950s, the purpose of research was to uncover the traits, behavior, skills, and styles required of good leaders, while the purpose of research from the 1980s increasingly included leaders’ meaning making. Since 2000, the purpose of research on leadership development was also to uncover the causal, evaluative, descriptive, analytic, and comparative dimensions of leadership development. Increasingly, studies have paid attention to the link between the preparation and development of school leaders and student outcomes.

Leadership preparation/development went from being provided solely by universities to being offered by several providers beginning in the 1980s. Local and regional providers are often responsible for conducting programs, while national authorities typically qualify the programs centrally. The formation of partnerships between universities, professional organizations, school boards, and schools within the regions became a trend in the mid-2000s, and the approach to leadership development in the present study is an example of such a widespread trend.

Despite the existence of substantial knowledge of what kind of leadership development that is offered (about the “what”), some aspects of the leadership development of school leaders lacks attention, which concerns how leadership development evolves in an interprofessional team ("the how").
The first aspect that lacks attention is that one cannot take for granted that what students, educators, faculty members, providers, etc., report in interviews and surveys reflects how leadership development evolves as practice. Individual responses may contribute to our understanding of how leadership development is individually experienced, but it may not produce knowledge about how leadership development evolves, which may require interactional and ethnographic data.

The second aspect is that, since leadership development often takes place in social settings, such as teams, cohort groups, seminar groups, partnerships, etc., there is a need to widen the unit of analysis to include social interaction beyond individual responses to produce knowledge about how leadership development evolves.

The third aspect is that since leadership development takes place in seminars, programs, cohort workshops, teams, etc., the research so far does not, in a sufficient way, reflect that participants might come from different working contexts, professions, and positions when collaborating on tasks, field work, case-studies, and assignments in leadership development. Such settings represent challenges as well as possibilities that differ from settings in which participants are located in the same working contexts, professions, and positions. Consequently, there is a need for a theoretical framework that allows for the explanation of the processes of collaboration, learning, and development when working on shared assignments and tasks in leadership development in inter-contextual and interprofessional settings as well as across positions.

The fourth aspect to take into consideration is that the research literature on leadership development reflects only to a small degree the fact that leadership development is now organized in modules, in workshops, and through shadowing for different lengths of time; thus, longitudinal data and decision making about timescales may be necessary when analyzing the data.

The fifth aspect is that, from the review, we know that, since at least the 1950s, different approaches and tools have been used to make leadership development authentic and relevant. This includes PBL, cases, and simulations, which draw attention to the fifth aspect. There may be a need to include the interactions among the participants and the tools in the unit of analysis, which may require interactional data to document how the tools may mediate professional learning.

Making the research transparent for the research community is an important principle. Showing analyses rather than telling about the results is a sixth aspect that needs attention. Making the analysis transparent may require that the data, or at least examples or
representations of the data, are presented in such a way that the analysis makes sense to the reader and makes it possible for readers to come up with their own interpretations. Reporting on social interactions may require showing transcripts of interactions rather than reporting individual responses from surveys and interviews.

Though there is lack of attention to interprofessional settings in research on leadership development, research from other fields of inquiry provide useful distinctions about the potential and the problems that might arise in such settings. What we know from the research on interprofessional settings is that boundary settings require other expertise that may differ from vertical settings. The introduction of appropriate tools in interprofessional settings seems to be crucial. Developmental processes may occur within short as well as long timescales and in the intersections between the two. Tools have their own timescales. Still, tools may intersect with other timescales.

We know what types of leadership development that are offered to school leaders, but we know less about how leadership development evolves in situ in an interprofessional team. The present study seeks to fill in this gap by examining how leadership development evolves in an interprofessional team based on longitudinal and interactional data. Interprofessional work is, I argue, of particular interest, not least because of the potential for collective learning. When building on the review of the literature, I foreground leadership development as a phenomenon captured in the interactions among school leaders who reflect on classroom practices in workshops. Specifically, I ask how school data trigger and structure the departure point for professional development in an interprofessional team; how and to what extent professionals from schools, an educational authority in a municipality, and a university develop a shared understanding of their collaboration; and how leadership development evolves when principals, administrators, and researchers jointly analyze different challenges in a school improvement project over two years of collaboration. Third-generation CHAT was chosen to examine the mediation, horizontal dynamics, and temporal and spatial dimensions of interprofessional work. The next chapter presents how CHAT may accommodate these needs for theorizing leadership development.
3. Analytic framework

So far, leadership development has to a small degree been examined with third-generation CHAT. Thus, this chapter first discusses how third-generation CHAT has been used to design an analytic framework to study how leadership development evolves in an interprofessional team. Second, the chapter discusses the analytic concepts constituting the analytic framework.

The chapter is structured as follows: Section 3.1 presents the overall analytic framework of the study. Section 3.2 describes how the analytic framework has been used to examine the object orientation of leadership development in all three sub-studies. Section 3.3 deals with how the framework is used to study mediation. Section 3.4 discusses how temporal and spatial dimensions of boundary settings are studied with third-generation CHAT. Finally, Section 3.5 summarizes the analytic framework for the present study, which seeks to examine how leadership development evolves in an interprofessional team over two years.

3.1 The analytic framework of the thesis

The overall analytic framework of the study is grounded in the third generation of CHAT (Engeström, 1987), which was designed to accommodate the need to examine processes of development when at least two activity systems intersect.

In the present study, schools, municipalities, and universities are treated as three different activity systems. The three activity systems are considered to accommodate different societal needs in terms of different historical objects. Generally, schools as activity systems are motivated and directed toward teaching students to be competent citizens in the future, while educational administrations of municipalities are motivated and directed toward the implementation of national reforms as well as accounting for the result of the implementation efforts, etc. Universities as activity systems are generally directed toward generating robust research and research-based teaching as historical objects.

The study examines how leadership development evolves in the team as a boundary zone between the three activity systems. Because the team only existed for two years, the team is not regarded as an activity system. Still, the team worked on objects. The thesis
assumes that there is a dialect relationship between individual actions and social interactions (Lektorsky, 2011). The collaborative work in the team is studied with intermediate concepts. The term *engagement* is used as an intermediate concept in Study 1, while the term *project boundary work* is used as an intermediate concept in Study 2 and Study 3 to examine how leadership development evolved in the team. Both “engagement” and “boundary work” refer to a dialectic relationship between individual (the subject) actions and social interactions of the subjects in relation to objects. “Engagement” and “boundary work” as entities are, similar to activity systems, driven by objects and outcomes (Engeström, 2008; Lektorsky, 2011; Roth, Hwang, Goulart, & Lee, 2005).

Subjects, tools, objects, and outcomes are the nodes in the upper part of an activity system that constitute the building blocks in the analytic framework of the present study. These particular nodes are conceptualized as the “production” part of an activity system (Engeström, 2008). Whether what is being “produced” or accomplished together is being “consumed” or transformed into changes in the three activity systems is an empirical question. The production of engagement is in focus in Study 1. Since the present study does not have data from the interacting activity systems, any transformation could only be documented as indications of transformations in terms of self-reports from the participants in the team, but Study 3 focuses on indications of transformation when searching for episodes conducive to change.

The term *boundary zone* is another theoretical concept that constitutes the analytic framework of the study. The term refers to the team as a so-called “no-man’s land” that is free from prepared routines or rigid patterns (Konkola, 2001). Whether there are elements from the interacting activity systems in the boundary zone and the participants reflect on its structure, attitudes, beliefs, norms, and roles, as Tuomi-Gröhn, Engeström and Young (2003) suggested, is also regarded as an empirical question in the present study.

The study examines how leadership development evolves in a boundary zone with “engagement” and “boundary work” as intermediate concepts. The next three sections explain more in detail how the analytic framework is used in the study. The next section discusses how object orientation has been studied with the help of third-generation CHAT.

### 3.2 Studying object orientation

It is a central aspect of the present study to examine how leadership development evolves in situ. The way in which a situated activity is linked to objects is the “the
cornerstone of CHAT” (Kaptelinin & Miettinen, 2005). Developmental processes are traced by examining toward what leadership development is directed and motivated (as a project object). Identifying the object of an activity is not a simple task. However, as Leontév (1978) argued, no activity is without objects, although the objects might be rather ill-defined (Hyysalo, 2005). While there were agendas for all the workshops, it has not been taken for granted that the agendas conceptualize how leadership development evolved in the team. In other words, it has been necessary to identify the objects in the team to enrich our knowledge about how leadership development evolves in an interprofessional team. Since objects might be constructed and re-constructed, such an approach requires an examination of the changes in object orientation over time or, more precisely, the engagement or the boundary work. Relating individual actions and social interactions to the objects identifies the changes. It has been necessary to pay attention to what people are saying and simultaneously what is being “produced” through social interactions to get a nuanced picture of how leadership development evolves in a team.

When studying the object orientation, it is possible to discover, not only what people are doing, but also why they are doing it when analyzing what motivates activity (Edwards, 2010; Kaptelinin, 2005; Nardi, 2005). Although the participants in the team worked together within the same problem-space, their motives may vary because schools, municipalities, and universities are supposed to accommodate different societal needs. Studying visible actions in the boundary zone when using observational data can identify discrepancies between motives. To document development within the interacting activity systems may not be possible when carrying out a microanalysis (Yamagata-Lynch, 2010). A way of dealing with this problem is to refer to what has been documented historically in other studies (Krane & Ludvigsen, 2009). The present study has, to some degree, referred to developments in the interacting activity systems in the analysis of the sub-studies, which constitute how participants from schools, municipalities, and universities engage in the boundary work.

In the present study, it has been useful to distinguish between situational objects, historical objects (Engeström, 1999b; Jahreie & Ottesen, 2010) and project boundary objects (Hyysalo, 2005). The team interacted, not only with each other and the objects, but also with many tools. The next section discusses how mediation has been studied with the help of CHAT.
3.3 Studying tool mediation

As mentioned in the introduction, the team worked with several tools during its existence. Human interaction with tools has been an issue for years within the three generations of CHAT. Vygotsky (1978, 1986) was concerned with individuals’ handling of tools, and Leontév (1978, 1981) was concerned with the role of tools in an activity. Engeström (1999a) argued that the mediating role of tools should be seen as an integral and inseparable component of human functioning.

Studying the participants’ interactions with tools is considered an important aspect of leadership development in the present study. Thus, the tools are included in the unit of analysis in both Study 1 and Study 3. In Study 1, how the tools mediate professional learning has been a central issue. With reference to Vygotsky (1978), Study 1 refers to both physical tools such as video clips and a common language as a psychological tool (sign) to master thinking and communication in the team. The dialogue is considered an important aspect of the interactions in the team. Vygotsky (1978, 1986) argued that talk is one of the most important tools in human functioning. Referring to both talk and tools might be conceptualized as what Bødker and Andersen (2005) called multi-mediation. When the team was interacting with mirrors and the project plan, they were also simultaneously talking with one other about the tools. This relationship is also captured in Study 1.

In Study 3, which examines temporal and spatial dimensions of the boundary work, the use of tools becomes an issue. Study 3 shows how trajectories of tools intersect episodes of boundary work. It is interesting to know, not only, that leadership development implies interactions with tools, but also that the different uses of tools make it possible to determine the mode of mediation taking place and whether the tools are shared resources between the interacting activity systems (Edwards, 2010; Engeström, 2007a).

Tools are not only mediating processes of development; they may also structure human functioning (Vygotsky, 1978). Vygotsky referred to the structuring role of tools on a mental plane, but third-generation CHAT allows for the analysis of how tools may structure boundary work as collaborative work. This is particularly evident in Study 1, where the researchers used the tools to trigger analysis of classroom practices in the interprofessional team.

Third-generation CHAT offers a conceptual framework for studying how tools are integrated in the boundary work in the team, how tools may mediate the processes of leadership development, and how tools may structure collaboration. The next section
accounts for temporal and spatial dimensions of boundary settings. It discusses among other issues, how the trajectories of tools may intersect here-and-now interactions. The next section highlights the ways in which I regard third-generation CHAT to be fruitful when studying development within and across timescales.

### 3.4 Studying temporal and spatial dimensions of boundary settings

Temporal-spatial dimensions are central aspects of learning and development. In CHAT, time and space are built into the analytic concepts (Ludvigsen et al., 2011). The analytic concepts that are relevant when researching temporal and spatial aspects of boundary work are the different types of objects and tools.

The different types of objects represent different units of time. While the historical objects of schools, municipalities and universities are carriers of development over decades, the boundary object is the carrier of developmental processes for two years. The situational objects are carriers of development within episodes as short units of time. In addition, tools (artifacts) have their own trajectories (Ludvigsen et al., 2011). The tools represent knowledge. These tools are, in different ways, products of knowledge building. The application was, e.g., developed during a year as a result of the experiences and knowledge of teachers, principals, local administrators, national administrators, and researchers who contributed to the production of the application.

The different objects are also part of spatially different entities. Historical objects are nodes in activity systems. Activity systems may involve many people. The boundary work involved only the participants in the team, as did the work on situational objects. Since the participants in the team represent three different activity systems, it is important to pay attention to whether and how the boundary work may reflect developmental processes beyond the border of the team.

Third-generation CHAT has explanatory power for tracing development within and across timescales for several reasons. As mentioned previously, development is traced by following objects. *Expansive learning* was introduced as a theoretical term to analyze the result of boundary crossing when at least two activity systems are interacting (cf. Engeström, 2003). When Engeström and colleagues referred to expansive learning, they often mentioned the longitudinal processes of development occurring over long periods of time.
when workplaces worked on major problems and went through cycles of expansive learning. For this reason, it has not been relevant to use the term “expansive learning” in the present study as a point of departure, since the team was working on a range of situational objects, not historical ones.

The next section summarizes the components of the analytic framework of the present study.

### 3.5 Summarizing the analytic framework of the overall study

Collaborative work is studied with intermediate concepts such as engagement and boundary work with the help of nodes in the model of an activity system (Engeström, 1987). The nodes used to explain how leadership development evolves in an interprofessional team are subjects (participants), tools, objects, and outcomes. These nodes represent what is called “the production” of an activity system, or, this case, the boundary work. From third-generation CHAT, concepts such as boundary object and boundary zone have been useful when studying object orientation in the team. The boundary object indicates what directs and motivates the boundary work, while the boundary zone conceptualizes the zone (the team) in which the schools, the municipality, and the university interacted.

Historical objects, situational objects, and project objects are helpful analytic concepts in determining how leadership development evolves within episodes (related to situational objects) and the trajectory of the team (related to the project boundary object) in the context of schools, municipalities, and universities, which have their own historical objects. The different types of objects represent different units of time, and they are also part of spatially different entities. Since the study examined leadership development, and different tools are introduced to trigger learning, mediation as a theoretical concept was central. Third-generation CHAT has also enabled the study of interactions between the participants as well as the interactions between the participants and the tools. The methodological approaches chosen to study mediation and object orientation are among the issues addressed in the next chapter.
4. The methodology of the study

The aim of the chapter is to discuss the methodology chosen for the present study. The chapter presents how the study was designed, the unit of analysis, the methods used for gathering data, the qualitative aspects of the study, the ethical aspects, and the role of the researcher. The choices taken for the methodology are viewed in the context of using third-generation CHAT as a theoretical framework for the study.

The chapter is structured as follows: in Section 4.1, I explain why the study was designed with ethnographic and an interactional approaches. Section 4.2 describes the data corpus and how the data were systematized and analyzed. Section 4.3 addresses aspects of credibility. Section 4.4 concerns the ethical aspects of the study, and Section 4.5 describes the role of the researcher. Finally, Section 4.6 summarizes the study and its methodology.

4.1 The design of the study

I have chosen a qualitative research strategy to study how leadership development evolves in an interprofessional team, which makes it possible to study “things in their natural settings” (Bryman, 2012). The natural setting of the present study is the collaborative work in the team. The length of the study was identical to the period during in which the team existed. The present study was designed as a longitudinal so-called panel study (Bryman, 2012; Cohen, Manion & Morrison, 2008) because it examines leadership development in a team consisting of the same people over the course of two years. Studying the same group of people over time offers an opportunity to study how leadership development in a team evolves as the team works on objects.

I consider the study to have ethnographic approaches or ethnographic traits (Hammersley & Atkinson, 2010). The study draws on audio and video recordings. Heath and Hindmarsh (2002) used the term “video-ethnography” to refer to a case in which researchers build their analysis of a phenomenon based on video data. Video-ethnography makes it possible to pay attention to “how bodily conduct and material features of the setting, as well as talk, feature in the practical accomplishment of social activities” (Heat & Hindmarsh, 2002, p. 7) and not least “to track the emergence of gesture, to determine where people are looking and what they are looking at, and to recover the ways in which they
orient to and handle objects” (Heat & Hindmarch, 2002, p. 7). The study has an interactional approach since it is grounded in video- and audio data as well as the use of tools.

The study also has a developmental approach. The developmental approach aimed at contributing to the professional development of principals by intervening with different resources, such as school data. Producing development and change is central to action research studies and in many different modes of workplace learning. Rather than following a specific method, the study’s developmental approach was designed during the 2 years of collaboration as an evolving process where the researchers participated in the setting being studied.

As mentioned in Chapter 1 and Chapter 3, the researchers introduced different tools to trigger processes of learning-centered conversations. In other words, it was not taken for granted that the conversations in the team would be learning-centered. The introduction of tools was a result of the evolving nature of the collaboration and the need to trigger processes of learning. Consequently, the study has an intervention approach.

A consequence of using third-generation CHAT as an analytic framework is the resulting timescales for analysis, which were guided by the types of objects being researched. When examining what directs boundary work in the boundary zone, it is relevant to search for the boundary work in the trajectory of the team over two years. In addition to examining the trajectory of the team, what directs episodes is also examined. In studying whether episodes were conducive to change, episodes are seen in the context of the trajectory of the team, making it possible to identify what makes an episode significant. Thus, the study is a multiple-time study since it deals with both long and short timescales (Lemke, 2000, 2001).

Designing a longitudinal panel study made it possible to examine how leadership development evolved in a team consisting of the same participants over two years with an interactional, ethnographic, interventionist approach and a developmental approach. The next section explains how the data were collected and analyzed to generate findings about how leadership development evolved in the team.
4.2 The data corpus and the analysis

To document how leadership development evolves in the team, interaction data were collected. Studying interactions while people are working on objects is central in CHAT. Interaction data were collected during 10 team workshops held from October 2008 to June 2010. The interaction data consists of 23 hours of video data (the first workshop was not video recorded), 25 hours of audio data, and tools (video-clips, mirrors, power points, logs, observation notes, theoretical models, the application for funding, an evaluation report, etc.).

The audio and video data were collected from a video camera and two MP3 players, respectively. The MP3 players were placed in the middle of the table and recorded discursive actions. The video recorder was placed in the corner of the room and was zoomed in on the middle of the table to capture the tool being introduced.

The tools and the audio data are the main data. The video recordings were never meant to be the main source of data. Using the video data as the main source of data would require having a person behind the camera to trace the movements of team members, which would have created another empirical situation. Transcripts of the discursive actions in the team were made based on the audio data. The video data were used, first and foremost, as an additional source to verify who was talking to whom and to verify which tool the team was interacting with, if needed. All physical tools worked with were collected for closer to examination (the bullet points in the power points, what was written in the application for funding, etc.). The tools were included in the unit of analysis when examining mediation in Study 1 and when examining temporal and spatial dimensions in Study 3. Returning to the tools as an analyst to understand the conversations better was vital. This was important because the tools intersected the talk in many situations. Some of the tools (e.g., the application for funding) were used multiple times.

Different forms of summaries, such as summaries of the workshops and the sessions, were made to create an overview of the data corpus. All discursive actions in the team were also coded with the help of the scientific software, HyperResearch. The codes (e.g., nuancing, arguing, problematizing, mirroring what was said, and acknowledging) were empirically generated from the data corpus Extensive coding of discursive actions was a way of getting to know the data and ensuring that I knew what types of actions were present in the boundary zone and how they were distributed across the three interacting activity systems. As the conceptual framework for the study was established, the systematization of
the data was organized in accordance with the conceptual framework, which was centered on the objects.

The interaction data were structured into 34 episodes when working with Study 1. The same 34 episodes were the point of departure for the analyses in Study 2 and Study 3 as well. Each episode included work on a situational object. I identified 34 situational objects altogether, which means that the data corpus consists of 34 episodes (Appendix 1). The trajectory of the team consists of all the episodes and shows how the interactions proceeded chronologically. The episode lengths ranged from 10 minutes to 90 minutes. Criteria for what makes an episode relevant so-called action-relevant episodes (Barab, Hay & Yamagata-Lynch, 2001)—were created for Study 1. In Study 1, only eight episodes met the criteria developed to answer how school data trigger and structure the departure point for professional development in an interprofessional team. All the episodes were found to be relevant in Study 2 and Study 3 as starting points for analysis.

The data were analyzed with the help of interaction analysis (Jordan & Henderson, 1995), which has been characterized as an:

empirical investigation of the interaction of human beings with each other and with objects in their environment. It investigates human activities such as talk, non-verbal interaction, and the use of and technologies, identifying routine practices and problems and resources for their solution. (Jordan & Henderson, 1995, p. 39)

I carried out an interaction analysis of both talk and interactions with tools. Non-verbal communication was added to the excerpts if it was necessary to understand the negotiations.

Since the study is positioned within CHAT, I was concerned, not only what people were saying, as content analysis, but also with what was being “produced” through social interactions when the team was working on objects. Such an approach involved analyzing what was produced from discursive actions and social interactions when working on objects. The ethnographic data makes it possible to describe how leadership development evolves in the team.

I have chosen to collect interaction data, i.e., tools, audio data, and video data from the team to document the interactions between the participants as well as with the tools. The tools and the audio data are the main data. The corpus was organized and analyzed in accordance with the conceptual framework, which was centered on the objects and the tools. The next section describes the efforts made to achieve quality with regard to the study.
4.3 Research credibility

This section concerns the study’s credibility related to reliability, validity, and generalizability. The different strategies that were chosen to strengthen the credibility of the study are described below, as well as factors that may threaten its credibility.

4.3.1 Reliability

Reliability concerns the study’s transparency regarding to whether the research strategy and the data analysis methods are accounted for in a sufficient way (Silverman, 2010). Theoretical transparency has to do with the theoretical stance and the analysis in which the data are grounded are made explicit. The research strategy, the methods for collecting and analyzing the data, and the theoretical framework in which the analysis is grounded are described in the Extended Abstract, as well as in the three sub-studies. It has been a challenge to make transparent the theoretical grounding of the analysis in a way that will make sense to readers who may be unfamiliar with the theoretical approach of the present study. The review processes of the journals in which I have published the articles have been important in this respect.

Reliability concerns the “fit between what the researcher records as data and what actually occurs in the natural setting that is being researched” (Cohen et al., 2008, p. 149). The fact that the interactions were recorded during 10 workshops strengthens the study’s reliability related to what occurred in the team as a natural setting to be examined.

In transcriptions of interaction data, the technical quality of the data becomes vital (Peräkylä, 2004; Silverman, 2010). Recording settings with many participants may pose challenges related to the quality of the recordings. As mentioned in Section 4.2, audio data were collected using two audio recorders to ensure that the quality of the interactions was sufficient to carry out detailed analyses of discursive actions, in addition to video recordings.

The transcription of the discursive actions in the workshops creates a robust point of departure for analyzing how leadership development evolved in the team. Likewise, the inclusion of the tools in the unit of analysis strengthens the reliability of the study because I had the opportunity to return to the tools the participants referred to when analyzing the interactions in the team. Also, I presume that the extensive coding of all actions in the team strengthened the reliability of the study, since such close encounters with raw data made it
possible to calculate the frequency and distribution of the types of action referred to in the analysis (e.g., questioning, theorizing, exemplifying, etc.).

I have presented the analytical framework used in the three sub-studies before presenting the analysis. Thus, readers will be prepared to follow the way in which the excerpts are theorized in the analysis. In addition, feedback from conferences and from research groups, which was elicited when presenting early versions of the analysis, may strengthen the reliability of the study.

The interaction data were transcribed in Norwegian. When presenting excerpts from the total data corpus of the study in the sub-studies, the discursive actions were translated into English. Because it is not possible to generate direct translations, the translations used may weaken the reliability of the sub-studies. To compensate for this threat, the concepts have been carefully selected and discussed with other researchers who know both languages. Four persons (the author included) transcribed the interactions from the 10 workshops. All four persons used the same guidelines.

4.3.2 Validity

*Validity* concerns whether the strategies and methods chosen for analysis are appropriate for examining what is intended, as well as whether the conclusions of the analysis are convincing (Kvale, 2001; Silverman, 2010). In this thesis, the choices to collect interaction data and to carry out interaction analysis grounded in third-generation CHAT were made to strengthen the validity of the study when aiming at studying how leadership development evolves in an interprofessional team. This is because these choices make it possible to examine the interactions in a boundary zone over time, both within and across timescales, when a team is working on objects and making claims based on analysis.

Audio and video data in the present study made it possible to listen to and watch the recordings several times when transcribing the data. The transcripts provided an opportunity to follow how the interlocutors responded to each other’s discursive actions, allowing for “validation through next turn” (Peräkylä, 2004).

To make the conclusions convincing, it has been important to share longer excerpts with the readers of the journals in which the sub-studies are published. I have chosen to publish the studies in journals that accept articles of at least 8,000 words. However, the fact that the article format does not make it possible to present extensive transcripts from the
data may still limit the validity of the study. This makes the selection of excerpts vital. First
and foremost I have chosen excerpts that demonstrate typical aspects of the data, based on a
careful analysis. But I have also pointed out if some actions are atypical of the total data
corpus, for example in Study 1 on page 105. In this way I have aimed at strengthening the
ecological validity of the study (Bryman, 2012) by nuancing in what ways the excerpts from
being presented correspond to how leadership development evolved in the team. Ecological
validity concerns about whether the findings are applicable to the natural settings being
studied.

4.3.3 Generalizability

Generalizability concerns “the extent to which one can extend the account of a
particular situation or population to other persons, times, or settings than those directly
studied” (Maxwell, 2002, p. 52).

In this thesis, I have studied collaborative work in one team in one municipality in
Norway. Thus, the findings might be difficult to generalize to other settings. However, as
Chapter 2 reveals, leadership development in an interprofessional team that is stretched over
time, and which implies interactions between people and tools, is not unique but trends in
leadership development. Thus, the findings of this study are likely to be, at least to some
degree, transferrable to other settings.

One may also argue that it is possible to make analytical generalizations from the
study (Kvale, 2001). In analytic generalizations, “the conclusions of [a qualitative study] are
seen to be generalizable in the context of a particular theoretical debate rather than being
primarily concerned to extend them to a larger collectivity” (Eisenhart, 2009, p. 59). The
claims raised in the three sub-studies are seen as analytic generalizations because the three
sub-studies show typical aspects of how boundary work evolves empirically in the team
over two years of collaboration and how it can be theorized.

Although the findings of the study are not generalizable in a classical way, the study
might have generative power (Wardekker, 2000). Wardekker argues:

This power depends, among other things, on the balance between results and
investments, the question of whether in other situations the same or at least
recognizable constraints apply, and the way in which the results are made known
to others. (Wardekker, 2000, p. 271)
The horizontal, spatial and temporal dimensions of the collaborative work being documented in the present study should at least be recognizable in other situations in which professionals are collaborating across professions, contexts and settings. As mentioned in Chapter 1, the team was part of a local project, which was one of one hundred projects in the national school improvement program. Since collaboration with externals was among the prerequisites for funding, the team being studied may not be the only collaborative setting in which principals, administrators and researchers struggled to identify the purpose of the collaboration. The next section discusses the ethical aspects of the present study.

4.4 Ethical aspects of the study

I applied for permission to collect data in the team from the Norwegian Social Science Data Service (NSD). The application was approved, and I was given permission to carry out the study. The thesis follows the guidelines for research ethics for social humanities with regard to informed consent, confidentiality, and academic honesty. All participants gave oral and written consent to take part in my research project, according to the guidelines for confirmation. The consent form described the project, the purpose of the study, the methods to be used, and the fact that participation was strictly voluntary. The participants had the opportunity to withdraw from the research at any time.

A challenge in qualitative research is that the project may evolve during the research period. Information regarding the study was provided to the team throughout the project. It was, for example, necessary to explain the purposes of the research and the methods used later in the project. Since all the workshops were recorded, the information provided about the project was available in retrospect to the researcher.

Team members were also told that the name of the school, the name of the municipality, and the names of the participants would be kept anonymous. The names of the participants were replaced with pseudonyms in the transcription of the data, in all three sub-studies, and in the Extended Abstract.

All video recordings were stored in a locked cabinet. The video clips and audiotapes were not shown to anyone except the other researcher who participated in the initial developmental part of the study.

The agency role of the researcher in many CHAT studies leads to additional requirements for ethical dimensions from what is demanded for research positioned within
positivistic and constructivist paradigms (Postholm & Madsen, 2006). The researcher should be ethical with regard to both the purpose and the process of doing research. Postholm and Madsen argued that sensitivity to participants’ feelings regarding participating in research, mutual responsibility for improving practice, and trust and willingness to share knowledge should be ethical codes in CHAT studies. In the present study, it was important for the researcher not only to be a supportive interlocutor but also to challenge the participants to examine their own practices critically, which required the researcher to be sensitive to how the participants experienced the dialogue. The most challenging question was announced to the team in advance, by saying: “Are you ready to answer a challenging question?” The agentive role of the researcher is touched upon in the next section.

4.5 The researcher’s role

The researcher was actively involved in the team as a participant while simultaneously fulfilling the role of researcher (Appendix 2). One may argue that the researcher was both an “insider” and an “outsider” (Merton, 1996). The active role of researchers in many CHAT studies, which involves producing change together with participants, has had epistemological and ethical consequences for these studies.

Yamagata-Lynch (2010) used CHAT terminology when distinguishing between “investigator activity” and “participant activity.” When a researcher acts as a full participant, the participant activity and the investigator activity overlap. As an insider, the researcher was engaged in object-oriented boundary work, and at the same time, the researcher had another agenda related to conducting research. Using CHAT terminology, one may say that the researcher had different motives than the other participants because the researcher was also concerned with gathering data.

The role of the researcher in the team was to lead the workshops in accordance with the agendas previously negotiated among the participants. The researcher led the workshops by raising some main questions and several follow-up questions. The sometimes — provoking questions were meant to trigger critical analysis and developmental processes within the team.

The researcher modeled ways of analyzing situations in teacher and leadership
practices by introducing tools for learning (“mirroring and shadowing”\(^{14}\) and “structured talk”\(^{15}\)). The researcher also presented research and theoretical models and concepts as a departure from the analysis of the local project. In other words, the role of the researcher was to participate in and contribute to critical thinking.

An argument for being a participant in the research site might be to gain first-hand information about the phenomenon being researched. Nevertheless, it is questionable as to what kind of knowledge the researcher might gain privileged access to by approaching leadership development with an interventionist approach. Kvernbekk (2005) argued that observers have access to their own interpretations and assessments of activities; all other aspects are accessible to others as participants or observers. In other words, by being a full member of the team, I was in a position of knowledge about my own experiences, but not about how it was to be a principal and an administrator. However, the study is not designed to produce knowledge about the participants’ experiences as a phenomenological approach. Still, agentive roles in the site of research might create difficulties related to the separation of participation from investigation (Yamagata-Lynch, 2010). In particular, the agentive role of the researcher may influence interpretations of the data, depending on whether the researcher is a \textit{local interpreter} and/or \textit{scientific interpreter}. As Denzin explained:

Local interpreters use experience-near concepts—words and meanings that actually operate in the world studied (Geertz, 1983, p. 57). These individuals seek emic, or contextual, situated understandings. Scientific interpreters frequently use experience-distant terms—words whose meanings lie in the observer’s theory. (Denzin, 1998, p. 325)

With reference to Geertz, Denzin (1998) explained that scientific interpreters produce etic interpretations, or abstract non-contextualized interpretations. The data in the present study are interpreted from both an emic perspective and an etic perspective. Since I was present as a member of the team, and collected observational data from the pilot schools, the interpretations are not context-free. Knowledge of the interacting activity systems has influenced the interpretations. One purpose of this study was to examine how leadership development evolves in the team from an emic approach. At the same time, an additional purpose was to theorize concerning the phenomenon of research with the help of

\(^{14}\) “Mirroring and shadowing” is a method for carrying out observation and providing feedback to a person being shadowed.

\(^{15}\) “Structured talk” is a method for analyzing problems and dilemmas in everyday practice.
third-generation CHAT from an etic approach.

Various strategies have been used to produce valid data analysis, despite the fact that I was a full member of the team being researched. During the research process, I have shifted from an interventionist approach to the field to an analyst approach. The time lag between the collection of data and the analysis of data was one strategy. The second strategy was to record the interactions using a video recorder and audio recorders. The third strategy was to transcribe the discursive actions in the team, and the fourth strategy was to code the discursive actions. The fifth strategy was to apply a comprehensive conceptual framework. Finally, the sub-studies were discussed with national and international colleagues, and the articles were subjected to review processes in international publications.

4.6 Summarizing the methodological approaches

In my study, I am concerned with studying how leadership development evolves in and interprofessional team over two years. The aim of the study was conducive to the methodological choices made for the present study regarding the design of the study, the data corpus, the analysis, the method for qualifying the study, the ethics, and the researcher’s role.

When studying evolving processes of development over two years, it becomes reasonable to design a qualitative and longitudinal panel study. A qualitative approach makes it possible to study natural settings, which, in the case of the present study, is leadership development in the team. Since the team existed for two years, it was relevant to collect longitudinal data. The participants interacted with each other and with tools. Consequentially, I have chosen to collect the tools introduced, along with audio and video data. The tools and audio data constitute the main data sources. Interaction data, which were collected to document social interactions, require methods of analysis that fit the data and the theoretical framework. Study 1 examined engagement in episodes, while the other two studies (Study 2 and Study 3) examined boundary work in episodes as well as the trajectory of the team. As in many other CHAT studies, the interventionist approach to studying interactions implies that the “investigator activity” and “participant activity” overlap (cf. Yamagata-Lynch, 2010). In addition, all the tools worked on were collected.
The study was conducted and carried out in accordance with aspects of credibility related to reliability, validity and aspects of generalization and in accordance with the guidelines for research ethics for social humanities (De Nasjonale Forskningsetiske komiteer, 2006). In addition, it was important to assess the etic and emic aspects (cf. Denzin, 1998) of the study, especially because of the interventionist approach to examining leadership development.

In the next section, the overall findings of the study are presented and discussed.
5. The findings and the discussion

This chapter presents and discusses the overall findings of the study. The chapter is structured as follows: In Section 5.1, the overall findings of the three sub-studies are presented and summarized. The next four sections discuss the findings in the context of relevant research. The following issues are addressed: leadership development as boundary work (Section 5.2), fostering educational leadership (Section 5.3), learning-focused conversations (Section 5.4), and the role of tools in leadership development (Section 5.5). Finally, Section 5.6 summarizes the discussion.

5.1 The overall findings

This thesis aims to examine how leadership development evolves in an interprofessional team as a phenomenon. The following research questions have guided the study:

1. How do school data trigger and structure the departure point for professional development in an interprofessional team?
2. How and to what extent do professionals from schools, an educational authority in a municipality, and a university develop a shared understanding of the collaboration?
3. How does leadership development evolve when principals, administrators, and researchers jointly analyze different problem-spaces in a school improvement project over two years of collaboration?

As explained in Chapter 1, Study 1, Study 2, and Study 3 contribute to the overall aim of the study, as shown in Figure 5.
When looking across the three sub-studies to examine how leadership development evolves in an interprofessional team, the overall findings can be characterized as:

a) A struggle with ill-defined objects
b) Horizontal dynamics
c) Explorative work, mediated and structured by tools
d) The intersection of temporal and spatial forces

A brief description of the overall findings of the study is presented below as a foundation for the discussion of the findings in later sections.

Figure 2. The contributions of the sub-studies to the overall aim of the study.
a) A struggle with ill-defined objects

From the beginning of the collaboration there was no indication that the principals, the administrators, and the researchers would collaborate as equal partners. The labor and responsibilities were distributed in no uncertain terms, using “you” and “we” formulations in which the researchers were told to bring about change and the principals were allocated roles as first observers and next guarantors of implementing mirroring and shadowing in the pilot schools. There was little indication of horizontal dynamics among the three interacting activity systems. The team struggled to identify the problem-space to be worked on, as well as the purpose of the collaboration. Both the situational object and the boundary object of the collaboration were ill-defined. The zone among the activity systems was neither activated nor “populated” in the beginning of the collaboration.

b) Horizontal dynamics

The situational object, which seemed messy and mystical at the beginning of the first workshop, emerged as the participants began recognizing what was said by others and sharing ideas, arguments, and suggestions. The here-and-now negotiation of why many teachers were skeptical of opening up their practices generated a great deal of activity before the subsequent workshops. This negotiation accommodated the participants’ need for new introductions to the staff in the three pilot schools about shadowing and mirroring as well as shadowing both the principals and the teachers. After articulating their needs and what was at stake in the collaboration, the participants in the team discussed a range of possibilities before stating that the purpose of the team should be to provide a main arena for collaboration among the principals, administrators, and researchers. Various motives for the collaboration were identified among the representatives from the schools, municipality, and university, reflecting the different historical objects of the three interacting activity systems. Horizontal dynamics did not imply agreement. Disagreements (tensions) were identified in the team. The disagreements seemed to mediate nuances, extensions, and clarifications, for example, related to, for example, the use of professional language in the pilot schools.

c) Explorative work, mediated and structured by tools

The team explored several problem-spaces in the pilot schools in terms of situational objects. Many tools were introduced to the team. Some of the tools were conceptualized as school data. School data and talk in the team seemed to mediate engagement in pedagogical
issues related to reading, teaching, student learning, the professional development of teachers, and the quality of learning and teaching. The school data and the teams’ discussion mediated analysis beyond the practice being studied because the participants transferred what was being talked about to other contexts. Strings of actions, such as asking questions, bringing in new perspectives, drawing attention to tools, and suggesting definitions were directed against the situational object of the engagement, for example, understanding a teaching practice in the first grade. The strings of actions did not always seem to be directed towards the same object. The way in which the tools were used seemed crucial for the processes of learning in the team. The school data did not automatically mediate the analysis of the situations in the contexts of learning theory and leadership implications. External facilitation seemed crucial for structuring the talk, anchoring the analysis of the school’s core activities theoretically, and highlighting practical implications for leadership. The findings suggest that the researchers’ questions had a structuring role in the collaborative work of the team. Trajectories of artifacts seemed to intersect episodes. The findings also suggest that the participants used different resources to make sense of the objects being worked on, i.e., theory, research, and experiences. The different resources were found to reflect the historical objects of the interacting activity systems. Sometimes, the resources brought to bear were picked up immediately, sometimes later, and sometimes not at all. The findings also suggested that the tools were used for different purposes; as “where to go” tools, as “what” tools, and as “how” tools.

d) The intersection of temporal and spatial forces in the boundary work

When examining the “black box” of leadership development, two types of forces—temporal and spatial—became apparent in the boundary work,. The findings suggest that the dimensions of time and space influenced the boundary work in the team. The participants’ work and goals reflected different timescales (episodes and longitudinal trajectories) and different spaces (schools, municipality, and university). Temporal and spatial forces influenced the team’s efforts to achieve its goals. Temporal forces were manifested as longitudinal trajectories of school-, municipality-, and university- intersected episodes of collaborative practice in the team. Collaborative work in some episodes became conducive to how the principals chose to approach situations differently than before in their schools. Spatial forces were manifested as perspective making and perspective taking, which reflected the different purposes of schools, municipalities, and universities and as
incremental expansions of the foci of the boundary work. Questioning existing practice, trying out new approaches, and analyzing and evaluating new approaches seemed to be crucial. The findings also suggest that the trajectories of the tools intersected the boundary work.

In looking across the findings of how leadership evolves in an interprofessional team, the following themes emerged for further discussion: leadership development as boundary work, the fostering of educational leadership, learning-focused conversations, and the role of tools in leadership development.

5.2 Leadership development as boundary work

A premise for obtaining funding was involving external expertise in the local project. Involving external expertise was a strategy developed by the national authorities to trigger learning processes across schools, municipalities and universities, and other external institutions. However, there was no script for how to collaborate in this tripartite association. Despite all the good intentions of the national educational authority, the findings of Study 2 suggest that such tripartite collaboration is by no means easy to carry out in practice. The situational object and the boundary object were both ill-defined in the first workshop. This situation is typical of those in which organizations must redesign themselves and nobody knows exactly what is to be learned (Engeström & Sannino, 2010). Taking into account that the project was supposed to be measured against a wide range of goals in the application for funding, it is not surprising that the team struggled to identify how to collaborate and what to do, as well as where to do it. A range of measures was listed in the application for funding: increasing the students’ expertise in approaching factual texts with learning strategies, developing the culture for learning among the teachers within and across schools, developing expertise in carrying out shadowing and mirroring, and developing the principals’ competencies as leaders for learning. Ill-defined objects or endpoints in short-lived projects and in school–university partnerships have been documented in other studies (cf. Hyysalo, 2005; Tsui & Law, 2007), but the present study shows empirically how the collaborative work was ill-defined in an educational setting and how the collaborative work became more manageable as the objects became identifiable.

In the first workshop, the analysis in Study 2 shows that the way in which the roles were indexed, by using “you” and “we,” enforced a distribution of labor. The indexations of
roles may reflect the New Public Management (NPM) discourse that has been expanding into public sectors in Norway recent decades as well as in many other countries. In NPM logics, a distinction is made between the customers and the providers, which might be productive in commercial and vertical settings, but might not help in identifying common objects in horizontal settings. What characterizes the processes in which ill-defined objects become identifiable is the important knowledge gained when adjusting and designing new opportunities for school leaders to learn, not least because struggling with ill-defined objects is a time-consuming endeavor that may not always move the collaborative work forward.

The findings suggest that the objects emerged gradually as the participants began to extend and respond to what the others were saying and began sharing ideas, arguments, and suggestions. Making one’s own perspective explicit and taking others’ perspectives into consideration, became typical actions in the collaborative work in the team. Perspective making and perspective taking have also been documented by Boland and Tenkasis’ (1995), but Study 3 showed empirically how spatial forces were manifested as perspective making and perspective taking in the team as a social setting. When perspective making and perspective taking characterize boundary zones, one may argue that the boundary zone has become a “polyphony” (Bakhtin, 1984) or “multi-voiced” (Engeström, 2003).

An advantage of interprofessional and multi-voiced work might be that the participants do not need to be proficient in the same domains of knowledge. It can even be an advantage to have different expertise. The big question is still whether the participants are able to respond to and take forward the resources that are brought to bear by the other participants (cf. Edwards, 2010). As argued in Study 3, the team members did not always respond to each other’s contributions. Sometimes, theory and research seemed to be resources for the researchers rather than “common knowledge”, where each contributing practice took forward what was said, giving strategic direction to activities (cf. Edwards, 2012). One explanation for this finding might be that the time given to present theory and research activities was limited, in contrast with what could be the case in leadership programs at universities where lectures on theory and research, curricula, assignments, etc. are core activities. Although the researchers in the team referred to theory and research, the participants did not have the same opportunity to prepare for using theory and research as resources to analyze different problem-spaces in the local project similar to the researchers. To build common knowledge, there is a need to build structures that allow knowledge to flow across practices (cf. Edwards, 2010). It is not clear whether the structures for knowledge flow were sufficient in the team when it came to sharing theoretical knowledge.
While informal and horizontal settings for leadership development may not have the same scaffolding structures as vertical settings, informal settings for leadership development may offer other advantages. In an informal setting, the threshold to clarify any questions may be lower than in vertical settings with fewer people and closer relationships. Study 3 shows, for example, how one of the participants indirectly requested the researchers to clarify whether the way in which the questions were raised to the students was problematic. In a similar way, the researchers had the opportunity to ask several questions to clear up details about the practice of leadership, teaching, and student learning in the pilot schools. In this way one may say that the situation created an opportunity for knowledge and experiences to flow from schools to the university (cf. Edwards, 2010).

As already mentioned, boundary crossing refers to situations in which the interacting agents are mutually engaged and committed to changing the interacting practices (cf. Engeström, 2003). The three sub-studies have showed how the team was concerned with exploring problem-spaces in the pilot schools, but the sub-studies have not, in similar ways, showed that the team was concerned about changing the university or the municipality as activity systems. Thus, it might be more likely to conceptualize the collaborative work as boundary work than as boundary crossing.

5.3 Fostering educational leadership?

The importance of instructional and educational leadership has been underscored in recent decades (cf. Hallinger, 2003b; Robinson, 2006). The leadership development of school leaders is generally aimed at enhancing school leaders’ capacity as leaders for learning and administration. The team was formed, not to increase the principals’ capacity to be leaders for learning in general, but to increase their capacity as leaders of the local project in their schools.

Being the head of a school means being a leader in a range of activities in which learning is supposed to occur, such as teacher teams, staff meetings, project groups, and observation of teacher practices. Teachers and leaders may also participate in teams and networks outside schools. In the first two workshops, the team struggled to decide on how, on what, and where to collaborate, about The local project consisted of a range of activities in different arenas for students, teachers, and school leaders within and across schools. The collaborative work in the team was one of several activities in the local project. The struggle
with identifying the objects of the collaboration could be perceived as a struggle to connect the different activities in what is called a “learning system” (Wadel, 1997), which refers to the systems established in organizations to make sure that the members in the organization have opportunities to acquire the information and the knowledge needed for the renewal of the organization. To develop learning systems is central to educational leadership. The team struggled to build a system out of the shadowing and mirroring of individual teachers, organizational learning in staff meetings, and learning in the interprofessional team. As reported in Study 2, the team made several appointments for shadowing and mirroring in the pilot schools in Workshop 1 in addition to deciding that the team should be the main arena of reflection for the team. Fullan (1992) argued that staff development would not have an impact if it consisted of discrete and unconnected projects. As McBeath and Townsend (2011) argued, “in learning-led schools, student learning is inseparable from professional learning and the culture is one in which learning flows across boundaries of role and status” (p. 1634). McBeath and Townsend’s argument is reasonable, but the present study has shown that it is demanding and time consuming to create a learning system.

The team not only struggled to design a learning system, as Study 2 documented; the team also had to cope with teachers who were not comfortable with opening up their practices to colleagues. This emerged as a problem-space to be worked on. This problem-space indicates a weak culture for feedback within the pilot schools. However, when framing a weak culture for feedback in a historical context, the result might not be surprising. Berg (1995) found that, for a long time, the teachers in Scandinavia have had individual autonomy. As reported in Study 2, despite the fact that many of the teachers were skeptical of being shadowed, neither the principals nor the administrators gave up on their efforts to implement shadowing and mirroring. Instead, the participants in the team shared ideas about how to cope with the situation and how to proceed. The finding may reflect that the teachers were not used to being observed (cf. Vibe et al. 2009). The finding may also indicate that the “zones of influences” (Berg, 2000) between principals and teachers have changed. Since the 1990s, the expectations of principals have changed from being “the first among equals” to being the manager of a school (cf. Møller & Schratz, 2008). Principals are the employers of teachers and the “torchbearers of educational change” (Pashiardis, 2001). However, the principals in the present study were not alone in being torchbearers of educational change when implementing the local project. The researchers and the administrators accompanied the principals all through the project period.

The team worked on several problem-spaces in the schools, but the negotiations took
place in the team, which was located outside the schools. Thus, the various problem-spaces could not be solved in the team. It is a question whether the processes of development was transformed into any changes in the schools. Such an approach would require additional and longitudinal data from the pilot schools. Still, it is relevant to ask whether the collaborative work in the team could be regarded as fostering educational leadership. This topic was touched upon in different ways in Study 1 and Study 3, which will be accounted for below.

In Study 1, it was assumed that that the result of the team´s engagement was that the principals developed an increased collective awareness for the pedagogical questions related to, for example, the meaning of a central concept in the local project, the connections between what happens in one arena in relation to another arena, instrumental learning, and the role of tools in learning processes. For example, the team discussed whether pictures could be regarded as factual texts. The participants brought in different aspects and the administrator finally concluded that images could be regarded as factual texts. The process of clarifying the concept might indicate that the team was in the process of developing what Middleton (2010) calls a new “departure.” Departures indicate when new perspectives or positions arise in a conversation. It is when one of the principals argues that there is “a job to do” regarding the use of images that there are indications of new actions to be taken in the schools when it comes to underlining the importance of using pictures, valuing the use of pictures in teaching, using pictures in adapted teaching, and using pictures more strategically. Middleton (2010) calls a similar phenomenon “development”.

Studying whether pictures could be regarded as factual texts might be considered a detail and beyond the scope of a principal’s work. However, the closer school leaders get to core activities in schools, the more likely they are to have a positive impact on student learning and development (cf. Robinson et al., 2008). Thus, the collective process of clarifying whether pictures might be regarded as factual texts seems important when leading the local project as a principal, not least because the concept is central to the schools’ improvement project on reading.

Another way of identifying whether the collaborative work had produced any new approaches to problem-spaces in the local project was to trace issues across episodes and to look for action-oriented talk. As argued in Study 3, it became visible that some episodes were conducive to how certain issues were approached by the principals in the pilot schools: The analysis showed that it is crucial to question existing practice, try out new approaches, and analyze and evaluate new approaches, which could be characterized as what Engeström (1999b) calls a “miniature circle of expansive learning.” Miniature circles of expansive
learning in developmental work within short collaborations are regarded as potentially expansive because we do not know whether they produce changes in the interacting activity systems.

Although the design of the study does not allow an analysis of if the boundary work generated any changes in the schools, the analysis reveals indications of new perspectives on the use of pictures and new perspectives on evaluation as well as the potential of expansive learning. Thus, it is reasonable to argue that the collaborative work fostered educational leadership.

5.4 Learning-focused conversations

Although scholars have begun to examine evidence-focused conversations among teachers and leaders (Earl & Timperley, 2009; Little & Curry, 2009), little is known about how school data from classroom practice may trigger and structure professional learning in an interprofessional team, which was the focus of Study 1.

As shown in the review chapter, examining authentic situations, cases, specific problems, etc. is among the methods used in the preparation and development of school leaders. Study 1 showed empirically how the team was engaged in examining video clips from grade one as a collective process. The team collectively interpreted what the video clips meant. This is what Earl and Timperley (2009) call “evidence-informed conversations.” The concept is explained as “an iterative process of asking questions, examining evidence and thinking about what the evidence means in the particular context” (Earl & Timperley, 2009, p. 3).

The findings from Study 1 showed, not only, how the participants interpret what the video clips meant in a particular practice, but also how the video clips triggered analysis beyond the practices being examined. Many scholars have focused on “translations” as one mechanism/type of learning that takes place in boundary zones (Akkerman & Bakker, 2011a; 2011b). The present study exemplifies what translations look like in a boundary setting.

One cannot take for granted that the selection of data makes sense to participants from different contexts, positions, and professions. Whether the selection of data is relevant and the participants are able to translate the situation to other contexts is an empirical question. The selection of relevant data is one of the qualities of productive, evidence-
informed conversations (Earl & Timperley, 2009). The principals in the team being studied were from both primary and lower secondary schools. Consequently, when choosing specific situations for analysis, translations were needed in order for meaning making to extend beyond the setting in which it was initially constructed and negotiated.

What the video clips did not automatically mediate was the connection between what was seen in the video-clips and its implications for leadership. It was reasonable to assume that the implications of leadership were important, since the collaborative work was supposed to support the principals in serving as leaders of the local project. The researchers requested the implications of leadership. This reflects the distribution of labor in the team and the specific role of the researchers in the boundary work.

Another finding is that the principals used everyday language when collectively interpreting authentic learning situations in the first grade. Theory on learning was not activated as a knowledge base in this situation. The situation may reflect that the school leaders had not had the opportunity to prepare for analyzing learning situations within a theoretical framework. Alternatively, the findings may indicate that there is no distinct basis of leadership, at least in the case of Norwegian school leaders (Møller, Prøitz, Aasen, 2009; Møller, Vedøy, Presthus, & Skedsmo, 2009). Previous experiences as teachers are considered important knowledge for Norwegian principals. Other researchers have supported similar arguments (Earl & Timperley, 2009; Little & Curry, 2009).

Researchers have argued that principals need “content knowledge” when leading schools. Content knowledge refers to the integration of pedagogical and curricular knowledge with administrative decision-making (Robinson, 2006; Spillane & Louis, 2002). The argument is that it is necessary for school leaders to have an understanding of the knowledge required for teachers to teach well in order for the principals to perform essential school improvement functions. To be in possession of pedagogical and curricular knowledge does not necessarily imply that school leaders are able to use such knowledge when interpreting authentic situations. As shown in Study 1, the principals in the team were engaged in interpreting the learning situation, but the findings suggested that theory seemed not to be activated as a knowledge base when interpreting the situation. An unarticulated distribution of labor in the team might be one of the reasons. The time lag from when the principals were exposed to theory during their education might be another explanation. An alternative explanation might be that the principals were not used to analyzing situations in the context of theory. It might be argued that, since principals are leaders for learning, they should be able to analyze situations in which learning is supposed to occur, not least in
order to make decisions about the conditions for learning among students and staff. Whether principals should be able to analyze learning situations theoretically is a relevant question when planning and evaluating the leadership development of school leaders. If so, it may not be sufficient to lecture on theories of learning. Practical situations in which the participants examine and theorize learning might be necessary to active learning theory as a knowledge base for school leaders. The next section discusses the connection between leadership development and everyday practices in schools.

5.5 The role of tools in leadership development

As mentioned in the introduction, in order to obtain funding for the local project, it was necessary to invite external experts to contribute to the project. The local educational authorities in the municipalities were supposed to enhance their ability to carry out school improvement projects in collaboration with external partners to achieve better learning outcomes and learning conditions for students. The evaluation report of the program that the local project was funded by was based on case studies from a few chosen projects and survey materials. The findings of the report suggest that tripartite cooperation does not seem to have influenced the teaching. In most cases, the external support has not been very close to the schools. Thus, the report raises questions about whether external expertise should be a prerequisite to securing funding in programs initiated by the Directorate in the future (Blossing et al., 2010). The findings of the mentioned report, reflect a recurring debate about universities’ and colleges’ ability to connect leadership development to practice (Chin, 2003; Taylor et al., 2009)

The lack of connection between theory and practice has been criticized for years (cf. Chin, 2003). As mentioned in the review chapter, many attempts have been made to introduce practice-oriented pedagogies. Experiments have been conducted since the 1980s to connect the preparation of school leaders to practice. Since the 1990s, problem-based learning (PBL), simulations and different modes of action research in which practitioners were offered opportunities to explain problems and dilemmas, have become common (e.g. Taylor et al., 2009; Møller, 1996). There is, however, little empirical evidence for the ways in which the different methods may mediate learning and guide programs in the future (Taylor et al., 2009).

The present study nuances aspects of tool mediation. Study 1 has documented in
what ways school data may mediate learning. The findings suggested that school data and talk in the team seemed to trigger engagement in pedagogical issues. The findings also suggested that the ways in which the tools were used seemed crucial for the processes of learning in the team. Sequencing the video, mediated attention to a central pedagogic aspect: the risk of organizing activities in a way that leads to an instrumental rather than a reflective understanding, and so the talk focuses on the role of tools in teaching. But the findings also revealed that one tool (a mirror) was met with resistance. A similar finding is documented in Keroueseo and Engeström (2003), who found that one of the introduced tools (the care agreement tool) was met with resistance in a team. Although the tool was met with resistance, the tool was developed further. The mirror that was met with resistance in the team generated an interesting discussion about the use of professional language in schools. Tools may mediate both intended and unintended processes in collaborative work.

Tools do not only mediate different processes; researchers have identified that tools are used for different purposes (Edwards, 2010; Engeström, 2007a). In Study 1, the video clips were used as a typical “who, what, when” tool to examine what was happening in specific situations. Studying teacher and leadership practices from mirrors was a recurring activity in the team. As shown in Study 3, the team referred to the application as a ‘where to go’ tool to adjust practice to the aims of the local project. Further, the team referred to the midway-report of the project as typical “what” tool because it reported the students’ perceptions of their use of learning strategies. After two of the schools had collected new data through observations of how the students approached factual texts, the use of the observation report could be categorized as a ‘how’ tool because it reported how the students approached factual texts.

Grounded in findings in the Learning in and for Interagency Working (LIW) study, Edwards (2010) argued that social workers and teachers found it useful to distinguish between immediate activities and longitudinal intentions. Although Study 3 shows that the team referred to long-term goals in the application as a “where to go” tool to adjust practice to aims of the local project and at the same time to the mid-way report as a typical “what” tool (cf. Engeström, 2007a), the participants did not in similar ways as in the LIW project distinguish between immediate activities and longitudinal intentions.

As argued by Ludvigsen et al. (2011), artifacts have their own trajectories. Study 3 showed how the trajectories of artifacts seemed to intersect episodes of boundary work.

The present study and the referred study have nuanced the role of tools in collaborative work with regard to how tools mediate learning, how they may elicit
rejections, in what ways the tools may be used for different purposes, and how tools with their own trajectories may intersect episodes of collaborative work in leadership development.

5.6 Summarizing the findings and the discussion

How leadership development evolves in an interprofessional team could be characterized as follows: a struggle with the ill-defined objects of the collaboration, horizontal dynamics, explorative work, mediated and structured by tools, and intersections of temporal and spatial forces in the boundary work.

The findings show the ways in which knowledge from the practices of leadership, teaching, and student learning are valuable in the working contexts of administrators and researchers. In accordance with Engeström’s (2003) criteria of boundary-crossing, it might be more accurate to conceptualize the collaborative work as boundary work rather than boundary crossing. Boundary work is supposed to foster educational leadership, since the team worked on several problem spaces involving being educational leaders of school improvement. The team also struggled to connect the different activities in the schools to learning systems (cf. Wadel, 1997).

Although the design of the study does not allow an analysis of transfer of knowledge from the team to the schools, the analysis reveals indications of new perspectives on teacher practices and new approaches, such as evaluation practices in the team. The findings also showed that the conversations in the team were learning focused. However, the use of everyday language among the school leaders indicates a lack of a distinct conceptual basis for school leadership (cf. Møller, 2011).

The present study supports what is documented in the research about boundary settings, arguing that translation is one aspect of boundary work (cf. Akkerman & Bakker, 2011a). The findings support that school data have to be interpreted to produce knowledge, and that the selection of data is vital (cf. Earl & Fullan, 2003; Earl & Timperley, 2009). Also, the present study argues that leaders for learning should be capable of analyzing learning situations, not least when making decisions.

The present study and other studies have documented that tools may mediate different processes in collaborative work. Some tools are met with resistance, but may also
elicit productive processes. The tools may also be used for different purposes.
6. Conclusion

When examining how school data trigger and structure the departure point for professional development in an interprofessional team, the findings of Study 1 suggested, first, that school data seemed to trigger engagement in pedagogical issues related to reading, teaching, student learning, the professional development of teachers, and the quality of learning and teaching. Second, the school data elicited analysis beyond the practice being studied because the participants transferred what was being discussed to other contexts. Third, the ways in which the tools were used seemed crucial for the team’s learning processes. Finally, some school data invoked disagreements that triggered nuances, extensions, and clarifications, but the school data did not automatically result in an analysis of the situations in the context of learning theory and leadership implications. External facilitation seemed crucial for structuring the talk, theoretically anchoring the analysis of the school’s core activities, and highlighting practical implications for leadership.

Study 2 examined how and to what extent professionals from schools, municipalities, and universities develop a shared understanding of their collaboration. First, according to the findings, there was no indication that the principals, administrators, and researchers would collaborate as equal partners at the beginning of the collaboration. The team struggled to identify the problem-space to be worked on here and now, as well as the purpose of the collaboration. Second, after a while, the participants began to recognize what was being said by others and to share ideas, arguments, and suggestions. Although the purpose of the collaboration was ill-defined, the here-and-now negotiation of why many teachers were skeptical about opening up their practice generated a great deal of activity before the next workshop to accommodate the principals’ and teachers’ needs. Third, after the participants had articulated their needs and what was at stake in their working contexts, they continued to discuss a range of possibilities before stating that the team should be the main arena for collaboration between the principals, administrators, and researchers. Finally, various motives were identified among the participants among the schools, municipality, and university, which reflected the different historical objects of the three interacting activity systems.

Study 3 examined how leadership development evolved when principals, administrators, and researchers jointly analyzed different problem-spaces in a school
improvement project over two years of collaboration. The findings suggested, first, that the longitudinal trajectories of the schools, municipality, and university and the tools involved intersected in moments of collaborative practice. Second, perspective making and perspective taking became visible in the team, since the team reflected the different purposes of schools, municipalities, and universities. Third, the foci of the collaborative work gradually expanded over the two years of collaboration. Finally, collaborative work in some episodes became conducive to the principals’ choices to approach situations differently in their schools than the way they used to. Questioning existing practices, trying out new approaches, and analyzing and evaluating new practices seem to have been crucial.

Taken together, Studies 1, 2, and 3 demonstrated that, when examining how leadership development evolves in an interprofessional team, collaborative work could be characterized as a struggle with ill-defined objects. The overall study also showed how horizontal dynamics emerged in the collaborative work. Further, the explorative work in which the participants were involved was documented to be mediated and structured by tools. In addition, the study revealed that temporal and spatial forces sometimes intersected inspired moments, in where moments which became conducive to longitudinal efforts to begin approaching situations in the local school improvement project differently than earlier. As accounted for in Study 3, the researchers questioned existing evaluation practices and the principals tried new ways of collecting data to evaluate the local project.

Since few studies on leadership development use third-generation CHAT as a point of departure for analysis, the present study contributes to the literature on leadership development by demonstrating how third-generation CHAT can be applied to examine how leadership development evolves in an interprofessional team. By applying third-generation CHAT to the analysis, the overall study showed how it is possible to examine a boundary zone where three different work contexts come into contact, specifically schools, the municipality, and a university. The conceptual framework enabled the analysis of individual actions and social interactions in relation to what motivates and directs the collaborative work in terms of objects. The focus on objects in CHAT made it possible to examine whether the team developed a shared understanding of the collaboration. The distinctions between situational objects and project boundary objects directed attention toward the collaborative work when the team was contending with various problem spaces here and now, as well as the developmental work over the two years of the team’s existence. Since leadership development may imply interaction with tools, the study demonstrated how tools might mediate collective professional development. The attention to tensions and
contractions in third-generation CHAT was important because, as shown in the analysis, tensions trigger development.

The methodological contribution of the present study has been to illustrate how leadership development can be studied within and across different units of time, such as episodes and the team’s trajectory. The benefit of approaching leadership development by zooming in and out of different units of time is that this approach makes it possible to come to grips with some of the “hidden” and less examined aspects of leadership development, that is, temporal and spatial forces that may influence interprofessional work. The study demonstrated how to analyze what individuals are saying and at the same time pay attention to what is being accomplished through social interaction. In addition, the study showed how to examine participants’ interactions with various tools.

Several limitations of the study should be mentioned. The study’s scale was relatively small, in that it examined leadership development in only one team, in one municipality in Norway. With the focus on the team, it was not possible to document whether or how boundary work becomes conducive to sustainable and long-term changes, except from the principals’ narratives of developmental processes in the schools they led. Including the researchers in the unit of analysis challenges the data analysis process and may represent a threat when it comes to interpreting the data without any interfering bias. Strategies on how to respond to such a threat are provided in the methodology (Chapter 4).

Since the study showed that one cannot take for granted that leadership development in interprofessional settings fosters work on shared objects, an empirical examination of interprofessional work in situ is needed. It is also necessary to develop tools and strategies that help in identifying shared purposes. These tools can mediate both intended and unintended outcomes. Consequently, the role of tools in collaborative work must be examined. When school data and cases are used as the point of departure for analysis in leadership development, whether the data and cases make sense across contexts, whether the tools trigger learning-centered conversations, how the dimensions of time and space may influence the boundary work and how inspired moments might become conducive to longitudinal efforts in developmental work should be considered.

In this Extended Abstract I have argued that the present study contributed to expanding our knowledge on how leadership development evolves in an interprofessional team with a focus on mediation, ill-defined objects, and horizontal dynamics. The study should also shed light on how inspired moments might become conducive for longitudinal efforts in developmental work. Empirical examinations of how leadership development
evolves are important when adjusting programs and designing opportunities for school leaders to develop their expertise in the future.
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Appendices
Appendix 1: Situational objects and tools

The table below lists the 34 episodes found when analyzing the interactions of the 10 team workshops, as well as the artifacts in use.

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<th>Tool</th>
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<td>2</td>
<td>Deciding when, how, and where to introduce shadowing and mirroring</td>
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<td>25</td>
<td>Teasing out how to push reflective learning</td>
<td>An evaluation report</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Teasing out what kind of evidence the principals have</td>
<td>A model</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Analyzing how practices are shared within the project and how to proceed</td>
<td>The application</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>Analyzing how to understand a fictive case in the context of Vygotsky</td>
<td>A model</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Discussing an evaluation report and the existing evaluation practice</td>
<td>The application</td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>Discussing how to understand the goals in the application and how to collect data</td>
<td>A model</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>Discussing how to collect new data</td>
<td>A model</td>
</tr>
</tbody>
</table>

<sup>16</sup>“A mirror” is a written text describing practices, e.g., how a lesson or a staff meeting proceeds based on observation. The mirror’s focus is agreed upon in advance with the person(s) being observed.

<sup>17</sup>“A video paper” is presented as a power point presentation. The power point has links to video sequences.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>32</td>
<td>Discussing how to understand a model of self-evaluation</td>
</tr>
<tr>
<td>33</td>
<td>Analyzing new evaluation results from two of the schools</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Analyzing the present situation and looking ahead</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 2: The agentive role of the researchers

The table below shows the agentive role of the researchers in the initial and the continuing stages of the study as well as the research process.

<table>
<thead>
<tr>
<th>Time</th>
<th>The researchers actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 1</strong>&lt;br&gt;2008</td>
<td></td>
</tr>
<tr>
<td>January 8-</td>
<td>Commenting on drafts of the application for funding.</td>
</tr>
<tr>
<td>August 13</td>
<td>Participating in a kick-off seminar for the pilot schools.</td>
</tr>
<tr>
<td>September 16</td>
<td>Leading Workshop 1 (discussing how, on what, and where to collaborate)</td>
</tr>
<tr>
<td>October 27</td>
<td>Observing Tony when leading a staff meeting. Producing a written mirror¹⁸.</td>
</tr>
<tr>
<td>November 4</td>
<td>Observing Annie when leading a staff meeting. Producing a written mirror.</td>
</tr>
<tr>
<td>November 4</td>
<td>Video recording Billy when leading a staff meeting. Producing a written mirror and a video paper.</td>
</tr>
<tr>
<td>November 4</td>
<td>Observing a teacher in Grade 10. Producing a written mirror.</td>
</tr>
<tr>
<td><strong>Phase 2</strong>&lt;br&gt;2009</td>
<td></td>
</tr>
<tr>
<td>January 20</td>
<td>Leading Workshop 2.</td>
</tr>
<tr>
<td>February 18</td>
<td>Leading Workshop 3.</td>
</tr>
<tr>
<td>April 1</td>
<td>Leading Workshop 4.</td>
</tr>
<tr>
<td>April 8</td>
<td>Video recording in Grade 1. Producing a written mirror and video clips.</td>
</tr>
<tr>
<td>June 9</td>
<td>Leading Workshop 5.</td>
</tr>
<tr>
<td>September 9</td>
<td>Leading Workshop 6.</td>
</tr>
<tr>
<td>October 7</td>
<td>Leading Workshop 7.</td>
</tr>
<tr>
<td><strong>2010</strong></td>
<td></td>
</tr>
<tr>
<td>January 20</td>
<td>Leading Workshop 8.</td>
</tr>
<tr>
<td>March 3</td>
<td>Leading Workshop 9.</td>
</tr>
<tr>
<td>June 2</td>
<td>Leading Workshop 10.</td>
</tr>
</tbody>
</table>

Phase 1: In this phase the researchers commented on the application for funding, modeled mirroring and shadowing in the pilot schools, and collected most of the school data (tools for analysis in the team). The activities were undertaken in close collaborations with the principals and teachers at the pilot schools, and in mutual agreement with the administrators and the chief executive officer of education. The permission to collect data from the interactions in the team to the research project was obtained orally from the chief executive officer and the team’s participants.
Phase 2: The interaction data from the team in the present research project was systematically collected. The permission to collect data from the interactions in the team to the research project was formalized (the request and consent from the chief executive officer and the participants in the team and NSD).
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Study 2

Article 2:
Study 3

Article 3: