Abstract

This study seeks to understand the phenomenon Lesson Study as a model for continuing professional development for teachers. Our rapidly changing, increasingly complex society demands greater challenges on education today as schools have to prepare their pupils for a future that we can only guess. What teachers need to know and how they develop professionally has changed accordingly. Lesson Study is a classroom based, collaborative, continuing professional development model that focuses on how pupils learn. This study examines Lesson Study; how it is operationalized and characterized, what the affordances and barriers are, to see if this model could be used to help Norwegian teachers develop professionally, such that they can better equip their pupils to meet future challenges.

A case study methodology was used for this study. The study evolved from a pilot project of two lesson study groups, involving ten English teachers from four different lower-secondary schools in Norway. Qualitative interviews, audio and video recordings of teacher collaboration, and written reflection texts were the sources of evidence used in this study.

The study has focused on the learning of teachers, but more specifically, teachers' learning about pupils' learning. Findings in this case study show how lesson study establishes professional learning through explicit and visible teachers' talk; through joint lesson planning, observation and joint evaluation of lessons and pupils' learning. The study supports the claim that LS affords a shift from how teachers teach to how pupils learn. The study also finds that the LS model requires strong support from school leadership to achieve sustainability.

Acknowledgements

The theme for this thesis is how Lesson Study can contribute to a professional learning community in Norway. It has been an exciting and educational journey for me that has given me the opportunity to examine the learning organization of which I am a part.

The study has been carried out in Norway, with Norwegian participants, and consequently, I will humbly thank these participants in their native language and acknowledge others whose contribution has been significant.

Forord

Temaet for denne oppgaven er hvordan Lesson Study kan bidra til kollektiv profesjonell læring i Norge. Det har vært spennende og lærerikt å jobbe med denne oppgaven. Studiet har gitt meg muligheten til å rette et forskende blikk mot egen organisasjon, og min egen praksis.

Jeg vil rette en stor takk til skoleeier i kommunen, spesialrådgiver, og skoleledere- både nåværende og forrige, som har motivert meg i studiene og lagt forholdene til rette for at jeg kunne gjennomføre masterstudiet.

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Beverley Goldshaft

Norway, May 2016

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Chapter 1: Introduction

1.1 Background

Our society is changing rapidly and is becoming increasingly more complex. Technology has changed our economy. Education is now a global affair. "Schools around the world are being asked to educate the most diverse student body in our history to higher academic standards than ever before" (Darling-Hammond, 1999). This creates enormous challenges for schools. How do teachers prepare children, the future generation, to thrive in a society whose form we can only guess? Our increasingly complex, rapidly changing society demands a new approach to teaching. What teachers need to know in order to help pupils has changed accordingly.

First, teachers need to understand subject matter deeply and flexibly so that they can help students create useful cognitive maps, relate ideas to one another, and address misconceptions. Teachers need to see how ideas connect across fields and to everyday life. (Shulman, 1987, in Darling-Hammond, 1999)

In Norway, the Ministry of Education commissioned a report on the competencies that would be needed to meet future society and business requirements, and the changes that need to be made in Norway's educational system in order to meet these requirements (Report commissioned 21.June, 2013). The resulting report was published in June 2015 and underlines the increasing demands on teachers' competencies, knowledge and practice (NOU:8. 2015. The Future School. Subject and competency reforms). It states "Teachers' competence and practice is crucial to pupils' ability to develop the competencies needed for the future*"* (Ludvigsen, 2015:73. Author's translation).

The Ludvigsen Report has been the background for a new White Paper on education, published April 2016, White Paper nr. 28 (2015-2016) *Subject- Specialization-Understanding. Renewal of the Knowledge Promotion.* [1] The paper calls for a renewal of the curricula to better prepare Norwegian children for the future. According to the paper, teachers and pupils are to become more specialized in their area of interest. There is to be a greater emphasis on inter-disciplinary basic skills, reading, writing, numeracy, oral fluency and digital competency. This will create challenges for the school as an organisation, increasing

[1] Meld. Til Storting, nr. 28. Fag-fordypning- Forståelse. Fornyelse av Kunnskapsløftet. 15.04.2016

the need for structured professional collaboration such that 'pockets of specialization' can complement, rather than oppose each other, and the school can develop as a professional learning community.

The increasingly complex and challenging demands on teachers support the need for a focus on teachers' professional learning. Historical views on professional development strategies where 'experts' feed teachers professional knowledge and then the teachers are expected to implement this new knowledge, have had limited effect in the past and are not suitable for future schools.

> Teachers learn best by studying, doing, and reflecting; by collaborating with other teachers; by looking closely at students and their work; and by sharing what they see. This kind of learning cannot occur in college classrooms divorced from practice or in school classrooms divorced from knowledge about how to interpret practice (Darling-Hammond, 1999).

Teachers need a continuing professional development (CPD) that focuses on how pupils learn. This study takes a closer look at Lesson Study, a school-based CPD with an improved pupil learning objective.

The role of the teacher in pupils' learning was quantified in John Hattie's *Visible Learning* (Hattie, 2009). The 500 meta-analyses that formed the base for his research found that teacher-pupil relations and teacher-pupil feedback had significant effects on learning (ibid). Hailed as 'the Holy Grail of education', this publication validated existing efforts to focus on teachers' learning about how pupils learn, and which teaching methods have the best chance of working. His follow-up book *Visible Learning for Teachers. Maximising Impact on Learning* (Hattie, 2012) links the research to practical classroom implementation, casting light on good teaching practice and poorer teaching practice using traditional instructional methods with very little learning impact. Teachers now have the chance to add a well of research-based learning evidence to their own practical experience.

The enlarged well of research-based knowledge of teaching and learning in recent years has given rise to the increasing attention to teachers' continuing professional development (CPD) (Fraser, Kennedy, Reid and McKinney, 2007). The focus on teachers' learning assumes a

positive connection between teachers' continuing professional development and the quality of teaching and pupils' learning. Teacher learning strategies that focus on the impact on pupils' learning are better suited to face the challenges of our rapidly changing society.

The Ministry of Education and Training in Norway started a strategy for lower secondary education in 2012: *Motivation and Mastery for better Learning. Joint effort to improve classroom management, numeracy, reading and writing*.[2] The aim of improved pupils' learning is to be achieved through school-based professional training where external expert coaching and net-based resources form a support network for the development of a collective learning culture. The essence being that teachers' professional development- teachers' learning- will have a direct outcome on pupils' learning, and that learning among teachers occurs when they collaborate and reflect over their own teaching.

This school-based form for teachers' learning, where peer-collaboration and inquiry are central, sets the stage for a continuous professional development strategy. Lesson study may be a pedagogical development method that complies with this strategy. This study aims to reveal key factors for a collaborative, school-based CPD strategy that could be sustainable in Norwegian schools.

1.2. How does Lesson Study *work*?

Lesson Study (LS) is a circular system of research and development where teachers work together to improve instruction. The idea is simple. "If you want to improve instruction, what could be more obvious than collaborating with fellow teachers to plan instruction and examine its impact on students?" (Lewis and Hurd, 2011:3) This aspect of collaboration between teachers has many advantages over individual teacher research. Firstly, the teachers who are not teaching can observe the impact of instruction in the classroom making it easier to focus on how pupils learn. Secondly, discussions in the teacher-research group can challenge the individual teacher, helping them see things in a new light. In addition, teacher collaboration leads to the sharing of successful teaching methods, increasing creativity and spreading pedagogical knowledge.The idea of an ongoing, collaborative, professional development process for teaching is far from new. Lesson study (LS) was first developed in

[2] Melding til Storting 22. Kunnskapsdepartement. English translation from regjering.no.

Japan approximately 140 years ago. It has since gained popularity in western countries, notably the U.S, the UK. and Canada. Popularity for Lesson Study escalated after the release of Stigler and Hiebert's, *The Teaching Gap* in 1999, where the need for a teacher-based, teacher-driven professional development was highlighted:

> Improving something as complex and culturally embedded as teaching requires the efforts of all the players, including students, parents and politicians. But teachers must be the primary driving force behind change. They are best positioned to understand the problems that students face and to generate possible solutions (Stigler and Hiebert, 1999:135).

Lesson Study involves a group of teachers working together on a broad goal and developing lesson plans that are observed, analysed, and revised (see figure 1).

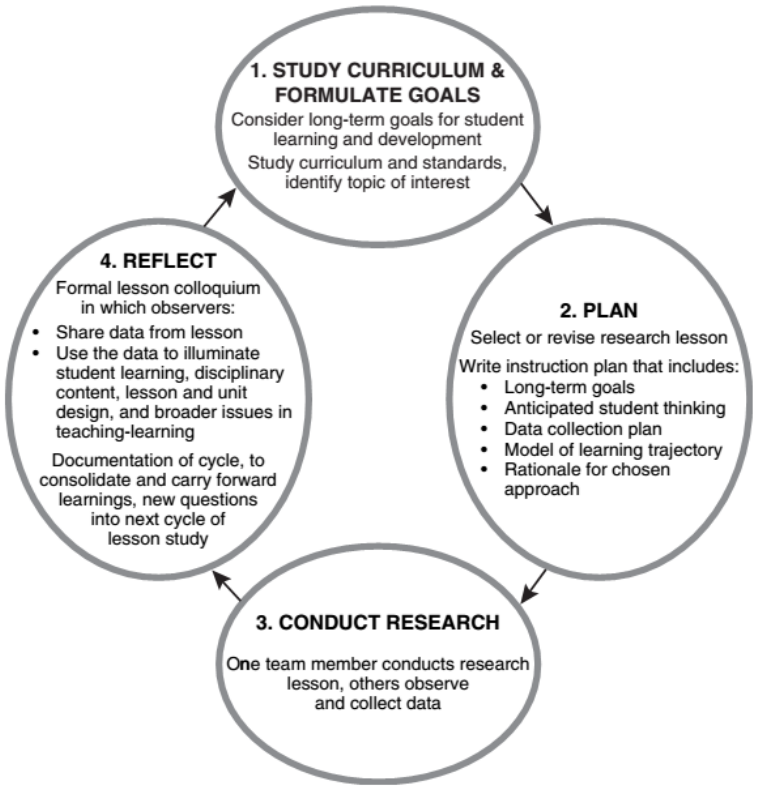


Figure 1: Outline of the lesson study cycle (Lewis et al. 2011: 2).

The basic philosophy of Lesson Study is that evidence of effective classroom practice is proved only in the classroom. The teacher acts as researcher in his/her own classroom, which

should lead to an increased professionalism of teaching practice. The model has the potential to strengthen learning, - enrich teaching activities, and change the learning environment. It has contributed to a professionalization of the teaching culture in Japan and improved the accumulation of pedagogical knowledge (Anani, Keisuke & Lassegard, 2010). The focus on the pupil's visible learning in the classroom rather than the instruction given by the teacher shifts the traditional focus of ***how a teacher teaches***, to ***how a pupil learns***.

However, the collaborative nature of lesson study demands organization on many different levels. Teachers need to work closely for many hours during a lesson study cycle. There is also time required for individual reflection and report writing. Observation of classroom activity will often involve the need for substitute teachers- In order to observe the pupils closely; the teacher must be freed from instruction. The hectic, multi-tasking workday of a typical teacher does not have room for *spontaneous* lesson studies. Before a lesson study can take place it has to be encouraged and supported by the lesson study group's school leadership. In addition, teachers need to learn the lesson study model and its principles. This has to be organized and instigated by the school's leadership.

Lesson study needs organizational support on many levels: on the administrative level, in the form of time, space and economical resources; and on a psychological level. The professional development of teachers is influenced by historical, cultural and social traditions, which form the norms in an organization's culture. Lesson study requires a collaborative approach to professional development. Collaborative lesson planning is a critical factor of lesson study (Lewis 2009). If the teachers do not feel an 'ownership' of the lesson, then they will not be able to focus on the pupil's learning rather than the instruction. Group discussion, reflection and evaluation is also essential in a lesson study. Lesson study needs a collaborative teacher-learning environment. A successful lesson study cycle should improve the collaborative teacher-learning environment, which could improve pupils' learning.

My own interest in Lesson study grew from an article I read in May, 2012, by Anne Grete Danielsen (2012) where she presents Lesson Study as a model for teachers' professional development. This article was enthusiastically discussed in the group of subject-head teachers in my municipality[3]. I was later given the go-ahead the following school year to try out

[3] Faggruppe i kommunen

Lesson Study in my cross-school English teacher network group. This pilot project forms the base for my research.

Lesson study is a collaborative inquiry based model for continuing professional development (Lewis and Hurd, 2011). Collaborative inquiry (CI), in its various forms, has emerged as a dominant structure for educator professional learning in the twenty-first century (Cordingley *et al.* 2005, Nelson and Slavit 2008, in DeLuca, Shulha *et al.*2014). The trickle-down benefits on learning organizations, and ultimately on student learning, depend on the quality of the lesson study content, specifically the quality of collaborative inquiry. My study investigates which critical factors in a lesson study contribute to CI, and which factors detriment it.

1.3 Research questions

At the start of this project in August 2014, only a few Norwegian schools had started projects in Lesson Study. Two schools in Bømlo in Western Norway had carried out lesson study as a part of a research project "Teachers as Students" (TaS), with the University of Stavanger; and a school in Oslo also advertised their use of Lesson Study as the chosen CPD. The book *Lesson Study i Utdanning og Praksis* (Munthe, Helgevold and Bjuland, 2015) was published in May 2015, as an assistant to the TaS project in Stavanger and presents a practical explanation of LS in Norwegian. Nevertheless, despite these pilot projects, Lesson Study is still a relatively unknown professional development method amongst teachers in Norway. There have not, as of yet, been any longitudinal studies done on LS in Norway (Danielsen, 2014).

Japan and Norway have very different cultures, also in the workplace. Can Japanese lesson study be transferred to Norway? Will there need to be a Scandinavian version? In which case, what changes need to be made to suit Norwegian teachers? My study will shed some light on these questions.

In addition to the cultural aspect, I will study the key criteria needed in order for a LS to be considered a success. After all, LS is one of many methods for continuing professional development (CPD), and it is the content in the method that determines its quality. The focus of the level of success will be on teachers' learning as it is assumed that an improvement in the quality of instruction should lead to improved pupil learning. Consequently, my main

research question aims to reveal how Lesson Study could contribute to collaborative professional learning in a Norwegian setting. The research questions below have guided my research and operationalized my main research question: **How could Lesson Study contribute to collaborative professional learning in Norwegian schools?**

(1) What are the affordances and barriers of Lesson Study?
(2) What are the challenges to enacting lesson study with Norwegian teachers?

1.4 Structure

This study will be illustrated using the following headings; teachers' professional learning and development, methodology, results, findings in light of recent research, discussion, conclusions and recommendations. A brief synopsis of each chapter has been included to give the reader an overview of the study.

Chapter 2: Teachers' Professional Learning and Development

In this chapter, I provide the reader with insights into previous research undertaken in this field and present the theories most relevant for my study. I present the international views on professional development, learning theories and educational policies aimed at improving student outcomes. It illustrates the theoretical lens with which I see the data material.

Chapter 3: Methodology

This chapter outlines the various methodologies undertaken by the author in conducting this research. It provides an overview of the pilot project through which lesson study was delivered. It presents the background of the participants, describes the tools and processes used in analysis of the results and describes the steps taken to improve the reliability and validity of the study. The chapter highlights the challenges of researcher as participant, and researcher as facilitator. Finally, the limitations of the study are brought to the attention of the reader.

Chapter 4: Results

The results obtained from the various data sources are described in this chapter. The data collected in this study were qualitative. The common themes which were identified during analysis are presented. The findings of the study are then examined under these themes. Samples of the data collected are used to corroborate the results.

Chapter 5: Presentation of findings in light of research and theory

The presentation of the study's findings and discussion of the results is split into two chapters. In this first chapter, I discuss the results obtained in the study in light of recent international research and the theories presented in chapter 2. This discussion provides a context for the results by comparing and contrasting them with the findings of recent research. This allows the reader to see the similarities and differences between the findings of this investigation and those of previous research. It also reveals the key success factors of lesson study. I also make some suggestions for local implementation of lesson study in this chapter.

Chapter 6: Discussion and Conclusion

The final chapter presents a summary of the main findings of the study and outlines the conclusions that can be drawn from these findings and recent research. Limitations of the lesson study process are acknowledged. It looks to the future and discusses the relevance of lesson study as a method for CPD in Norway. Finally, I make some recommendations for future research.

2.0 Teachers' professional learning and development

> There are only three ways to improve student learning at scale: You can raise the level of the content that students are taught. You can increase the skill and knowledge that teachers bring to the teaching of that content. And you can increase the level of students' active learning of the content. That's it. Everything else is instrumental. That is, everything that's not in the instructional core can only affect student learning and performance by, in some way, influencing what goes on inside the core. Schools don't improve through political and managerial incantation; they improve through the complex and demanding work of teaching and learning.
>
> Richard F. Elmore, 2008, Improving the Instructional Core

Research suggests that professional development is an essential part of improving school performance (Hargreaves, 1994; Bolam, 2000 in Fraser, Kennedy & McKinney, 2007). Recent years have shown an increasing number of initiatives focusing on educators' professional development, together with a growing interest in research on how teachers learn. The increased focus on continuing professional development (CPD) is now acknowledged in many countries worldwide. For example, in Norway, new teaching positions called 'teaching specialists' (*lærerspesialister*) have been created and novice teachers now have mentors to guide them through their first year, in addition to a reduced number of teaching hours (Elstad and Helstad, 2014). This CPD trend may be associated within the wider policy of lifelong learning, as Coolahan (2002) suggests, or as a counter-reaction to the failures of the 'business capital view' of education policy (Hargreaves, 2013, explained below).

Michael Fullan and Andy Hargreaves' recently published book *Professional Capital, Transforming Teaching in Every School,* (2012), introduces the concept of *professional capital* as a view to improving schools worldwide. I intend to explain the concept of professional capital in more detail. I shall then present Argyris and Schön's theories of action to enlighten the difference between the theories we teachers bring to our practice, both those that we express to others – *espoused theories,* and those that we actually use in our practice – *theories-in-use* (Argyris & Schön, 1974). This action theory might be useful for my study

when analysing what the participants talk about during a lesson study and how this talk might deviate from their actions. Professional capital and theories of action are linked up to Stigler and Hierbert's *Closing the Teaching Gap* (2009), an article that discusses teaching as a cultural activity and suggests an approach to teachers' learning based on collaborative inquiry.

I have also included Kennedy's *Models of Continuing Professional Development: a framework for analysis* (Kennedy, 2014) to help me decipher the characteristics of Lesson Study as a CPD, and compare it to other models of CPD. By using DeLuca et al's *Collaborative inquiry as a professional learning structure for educators* (DeLuca et al. 2014), I will examine the key principles of the lesson study model, its similarity to other models of collaborative inquiry and try to find out what, if anything makes it different. I will use Kennedy's models of CPD and DeLuca and colleagues' article to help me generate a more robust understanding of how CI is characterized, enacted and empirically supported.

I discuss the organizational aspects of culture in the workplace when I present Schein and Hofstede's theories on organizational culture. Further, I shall link these theories of organizational culture to the type of leadership style that supports collaborative CPDs and present Robertson's student-centered leadership, particularly her views on the type of leadership needed to lead teachers' professional learning and development and the importance of that leadership on student outcomes.

2.1 A socio-constructivist perspective

Collaborative inquiry (CI), in its various forms, has emerged as a dominant structure for educator professional learning in the twenty-first century (Cordingley et al. 2005, Nelson and Slavit 2008, both in DeLuca, et al.2014). Vygotsky's theory of learning as a social process (Vygotsky, 1975, in Imsen 1999 suggests that all intellectual development and all thought arises from social activity. Language makes it possible for the individual to reflect over their own actions and consequently reflect over himself or herself. Dewey (1916, in Postholm, 2014) states that a learning process involves changes in the person who experiences. In order for learning to take place, the change, which is created through action, must be reflected over, such that the participants in the action can learn something. Dewey emphasises reflection in connection to action and learning (Dewey, 1916 in Postholm, 2014). Planned, focused social interaction among teachers is at the core of collaborative inquiry. This socio-constructivist perspective is the lens through which I shall look at teachers' professional learning and development.

2.2 Professional capital

Fullan and Hargreaves' (2012) ideas are built on years of research and experience with educational reform in, among other countries, Canada and the United Kingdom. The book is an incisive critique of the failing education movements in many countries. The formula is about improving educational standards by honouring and professionalising teaching and teachers. Professional capital is an evidence-based theory that is set to influence global education policy. It is in contrast to the *business capital* view of New Public Management and the consequential steering by the OECD, often evident in Norwegian schools (Sjøberg, 2014).

According to Hargreaves (2013), the Business Capital view assumes that good teaching:

- ✓ is technically simple.
- ✓ is a quick study.
- ✓ can be mastered readily.
- ✓ should be driven by hard performance data.
- ✓ Is about enthusiasm, effort, talent, & results.
- ✓ Is replaceable by online instruction.

The Professional Capital view assumes that good teaching..

- ✓ is technically sophisticated and difficult.
- ✓ requires high levels of education & long training.
- ✓ is perfected through continuous improvement.
- ✓ involves wise judgment informed by evidence and experience.
- ✓ is a collective accomplishment and responsibility. (Hargreaves, 2013)

Lesson study is not directly mentioned in the book, but collaborative inquiry, reflection in and of practice, mentoring, and collective responsibility are essential to the development of professional capital. Lesson study, and other CPDs, fit completely with this view of professional capital. They are no 'quick fix'. Clauset and Murphy (Clauset & Murphy in Fullan & Hargreaves, 2012) suggest that leading a successful inquiry group is very similar to gardening: *it takes care and constant attention if you want results*" (ibid: 32). Lesson study is a method for continuing professional development with collective inquiry at its core (Lewis and Hurd, 2011).

Fullan and Hargreaves (2012) define professional capital (PC) as the product of human capital (HC), social capital (SC) and decisive capital (DC): PC = $\int \{HC, SC + DC\}$

This financial-seeming formula might not appear to have anything to do with learning and teachers' learning. However, Professional Capital has everything to do with learning and teachers' learning. Michael Fullan and Andy Hargreaves' book, *Professional Capital, Transforming Teaching in Every School,* (2012) puts forth education as an investment, not a cost. The book criticizes the failing educational reforms of many countries and states that the only way to move forward is by the professionalization of teaching. There is no 'quick fix' for improving teaching and learning on a sustainable level.

> Countries and communities that invest in professional capital recognize that educational spending is a long term investment in developing human capital from early childhood to adult life, to reap rewards of economic productivity and social cohesion in the next generation (Fullan and Hargreaves, 2012:02).

Professional capital is the capital that teachers need to develop if they are to be at the peak of their effectiveness (ibid:79). It is the product of Human Capital, Social Capital and Decisive Capital. Human capital is the talent and knowledge of the individual. Social capital is the interactions with peers in a group, in the relations between people. Groups, teams and communities are powerful agents of change and development. Human capital must be complemented by social capital (ibid: 3). Teacher collaboration is essential for teachers' professional development and the maximization of professional capital. C. Leana's research findings (in Fulham and Hargreaves, 2012: 3) show that if a highly-motivated, well-educated, good teacher comes to a school where the social capital is low, that teacher's human capital will eventually diminish. If the same teacher comes to a school with a high social capital, that teacher's human capital will develop. To say it another way, teachers learn from each other, and teachers teach better when they are given the chance to learn from each other.

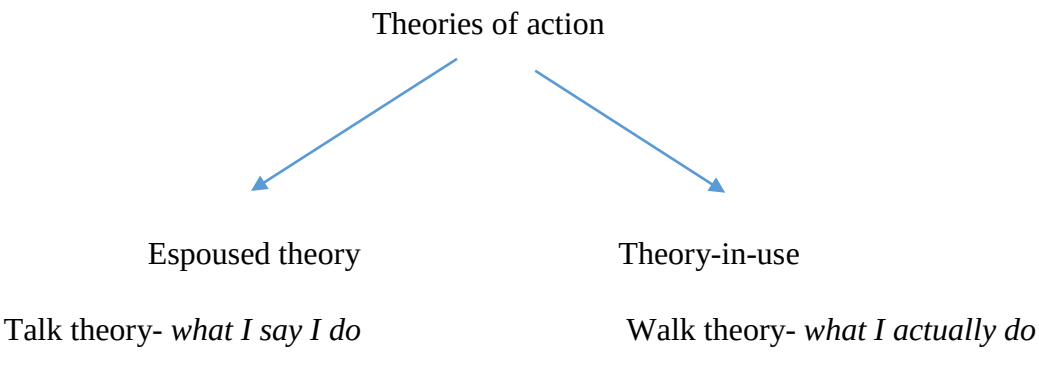
The third form of capital is decisive capital. This capital arises from a teacher becoming a skilled professional. Being professional, according to Fullan and Hargreaves, means making decisions and judgements based on previous experience and knowledge. "It is practice, and a great deal of it, that develops your decisional capital" (ibid:.95). , Teachers make many decisions every lesson, possibly hundreds in the course of a workday. Nevertheless, it takes thousands and thousands of decisions and judgements before a teacher becomes skilled professional, rather than an enthusiastic amateur. Chris Day's research on the stages of teachers' careers found that teachers did not become skilled professionals until they had worked for 8-10 years (Day et al. 2007, in Day, 2012) - that's about 10,000 hours, possibly hundreds of thousands of decisions! This does not mean that teachers with ten years'

experience are necessarily better teachers than novice teachers only that on average, with these hours behind them, the evidence is clear that teachers have attained higher levels of proficiency than their colleagues who have put in less time (Fullan and Hargreaves, 2012: 95).

"Decisional capital is also sharpened when it is mediated through interaction with colleagues (social capital)" (ibid.: 95). Decisions get better and better. Teachers learn from the consequences of earlier decisions. Discussing problems, specific pupils' needs, teaching strategies and so on, will enhance a teacher's decisional capital. Having the time to reflect over decisions and own practice will also sharpen decisional capital. Reflecting over practice is benefited by having a mentor or colleague who can ask the right questions. Reflection can be about the decisions you took during a lesson, reflecting *in action*, or after the lesson, reflecting *on action* (Schön, 1983 in Fullan & Hargreaves, 2012). Inquiring into your own practice, be it individually, with a mentor, or in a Lesson Study group, will increase your teaching skills, decisional capital, and benefit the professional capital of the school. Reflecting over practice will help teachers *teach like a pro.* Teaching like a pro *"*is about undertaking difficult, inspiring work; constantly trying to improve practices and working with all the collective might and ingenuity of professional colleagues to do so." (Fullan & Hargreaves, 2012:22) 'Teaching like a pro' is a theory of action for teaching professionals. A closer look at theories of action might determine how reflection on and after action could improve classroom instruction.

2.3 Theories of action

Theories of action describe the links between what people do (actions), the values and beliefs that explain their actions, and the consequences of these actions. According to Argyris and Schön (1974), there are two kinds of theories of action, *espoused theory* and *theory-in-use*. Espoused theories are what people say they do and theories-in-use are what people actually do.



The difference between what people do and what people say they do is an old story. But the distinction between espoused theories of action and theories-in-use is more than this- theories-in-use govern actual behaviour and tend to be tacit structures. Their relation to action "is like the relation of grammar-in-use to speech; they contain assumptions about self, others and environment – these assumptions constitute a microcosm of science in everyday life" (Argyris & Schön 1974: 30). The words we use to convey what we, do or what we would like others to think we do, can then be called espoused theory. For example, a teacher's espoused theory when asked how they deal with a classroom disturbance might be that they control the disturbance with a gentle, but firm form of classroom management. The teacher's theory-in-use however, is revealed during observation to be somewhat different. The disturbing pupil is brought to submission through a humiliating comment in front of the rest of the class.

These theories of action are useful when considering teachers' professional development, because they help us determine why we teachers do not do what we say we do. Reflection over this gap helps us become more conscious of our theories-in-use. This distinction emphasizes that our actions are not accidental and makes us responsible agents. The gap between our espoused theories and our theories-in-use is the scene for reflection. Providing this gap is not too extensive, much can be learned from reflection over this distinction. If the gap is too extensive, then there is a danger that reflection over action will not be challenging enough. Teachers may end up in what Louise Stoll refers to as "the Land of Nice" (City, et al. 2010, in Stoll, 2014), a collaborative reflection where no one dares to constructively criticize or professionally challenge their colleagues, and consequently, no progress is made. I believe collaborative constructive criticism to be culturally restrained. The collaborative atmosphere needs to have trust, mutual respect, and confidentiality. These collaborative values arguably necessary for collaborative inquiry will only be present if there is a culture that supports these values. Teacher learning is a cultural activity (Stigler & Hiebert, 2009).

2.4 Closing the Teaching Gap

Stigler and Hiebert's article *Closing the teaching gap* (2009) is a follow-up article on their book *The Teaching Gap* from 1999. They coin the term *teaching gap* to describe differences in commonly used teaching methods across cultures. In this follow up article, they expand the idea of teaching as a cultural activity to include *teacher learning* as a cultural activity.

> The most important things we have learnt since we wrote *The Teaching Gap* revolve around the fact that, just as teaching is a cultural activity and difficult to change, teacher learning is also a cultural activity thus subject to many of the same forces that keep traditional teaching practices in place. Stigler and Hiebert, 2009

They argue that improving overall student achievement is not about finding 'super teachers', but by raising the average performance of teachers. A transference from traditional, solitary, teacher planning to collaborative, inquiry-based planning will be challenging due to the strong cultural aspect.

Stigler and Hiebert observed Lesson Study during their research in Japan and emphasized it in the Teaching Gap because it is "based on features that research shows are essential for teacher learning and teacher improvement" (Stigler and Hiebert, 2009:36). Lesson study shifts teachers' focus from teachers to teaching. The lesson study group plans a detailed lesson together. One of the teachers in the group leads the lesson and the other teachers observe the students. The focus is on the students, not the teacher. How do they react to the instruction? How do they solve the problems given? What complications arise? Can we see any evidence of learning? How can we reach every single student? Etc. This shift of focus from teachers to teaching is "a necessary shift if teaching is ever going to become a knowledge-based profession" (ibid:37). Closing the gap between what is taught and what is learnt requires a collaborative, professional inquiry stance.

2.5 Collaborative Inquiry as a professional learning structure for educators

Christopher Day and Judyth Sachs (2004) published *International Handbook on the Continuing Professional Development of Teachers* in which they address the different forms of CPD, activities which teachers participate in that are designed to enhance their work, and ultimately, improve pupils' learning. They criticize CPDs that cannot mirror the complexity of the collection of individuals they are designed for, as they do not consider the influence of individual and collective culture. "Just as conditions in classrooms affect the ability of teachers to provide the best learning opportunities for students, so the school culture provides positive or negative support for its teachers' learning*"* (Day & Sachs, 2004:77).

Continuing professional development (CPD) is a term used to describe all the activities in which teachers engage during the course of a career which are designed to enhance their work. Yet this is a deceptively simple description of a hugely complex intellectual and emotional endeavour, which is at the heart of raising and maintaining standards of teaching, learning and achievement. Moreover, because teachers, like the students they teach, think and feel, are influenced also by their biographies, social histories and working contexts, peer groups, teaching preferences, identities, phase of development and broader socio-political cultures, the purposes, design and processes of CPD will need to mirror these if it is to result in effective outcomes (Day & Sachs, 2004). I will now briefly present Kennedy's framework for analysis of CPD models emphasising the type of models that are similar to Lesson Study, the CPD model I am studying.

2.6 Models of Continuing Professional Development: a framework for analysis

Aileen Kennedy's framework for analysis of CPD models (Kennedy, 2014, originally published 2005) identifies nine key models, which are then classified according to their capacity for supporting professional autonomy and transformative practice. Her analytical framework suggests that professional learning opportunities can be located along a continuum where the underlying purposes of the CPD models can be categorized as 'transmissive', 'transitional' or 'transformative' (Fraser, Kennedy, Reid & McKinney, 2007).

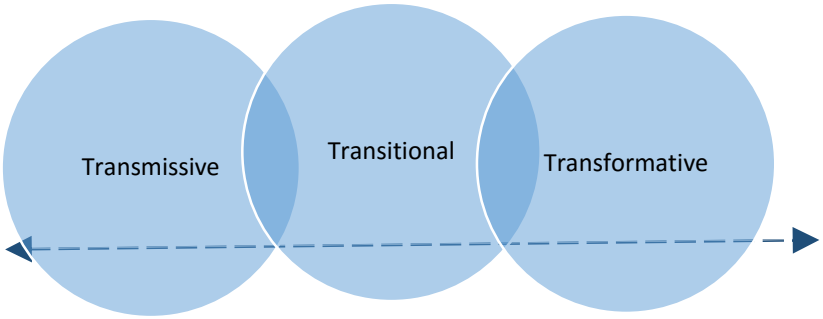


Figure 2: CPD model continuum (based on Kennedy, 2014)

Transmissive models rely on teacher development through externally delivered, 'expert' tuition. These include traditional off-site courses that focus on technical aspects of the job rather than issues relating to values, beliefs and attitudes. "This type of CPD does not support teacher autonomy, but arguably, compliance" (ibid:159). Traditional teacher training models, popular in recent decades, are universally recognisable transmissive models where the authorities control the agenda. It is a 'top down' type of CPD.

Transitional models of CPD build on the transmissive models but encourage the spreading of the individual knowledge acquired. The 'cascade model' where individual teachers attend training stunts and then cascade the information to colleagues, is an example of this form of CPD. One of the drawbacks of this model is that colleagues do not have ownership of what is learnt and, consequently, implementation into own practice, transformation, is restricted (Day, 1999, in Kennedy, 2014). Soloman & Tressman (1999, in Kennedy, 2014) argue that the disadvantage with this model is that it is skills-focused and rarely focuses on values. This argument is reiterated by Nieto (2003, in Kennedy, 2014) when she claims that teacher education needs to shift its focus from "what" and "how" to "why".

2.6.1. the Coaching/Mentoring Model

Kennedy describes 'the coaching/ mentoring model' of CPD as a variety of practices defined by a one-to one relationship based on philosophical premises (Kennedy, 2014). Coaching is more skilled-based and mentoring involves an element of 'counselling and professional

> So, while the key characteristic of the coaching/mentoring model is its reliance on a one-to-one relationship, it can, depending on its underpinning philosophy, support either a transmission or a transformative conception of CPD. (Kennedy, 2014: 344)

friendship' (Rhodes & Beneicke, 2002, in Kennedy, 2014). Mentoring involves a relationship where one teacher is experienced and the other is a novice. Mentoring models of CPD have become widespread in Norway since the Ministry of Education published the White Paper 11 (2008-2009), *the Role of the Teacher in Education,* when it was suggested that every novice teacher has a mentor to guide them through their first year of practice. However, this form of CPD is limited to the professional development of the novices and the mentors, and rarely spreads to the rest of their colleagues.

'Peer coaching'[4], another variety of the coaching/mentoring model, is a collegiate version where colleagues work together to develop professionally. There are many varieties of peer coaching. They range in scale from a hierarchical, deficit-reducing tactic focusing on skills (or lack of them) that aims to improve failing teachers, to the less hierarchical, equitable relationship that allows for two teachers involved to discuss possibilities and beliefs, interrogating practice in a challenging and supportive manner, leading to what Kennedy refers to as a 'transformative' conception of CPD. Key to all forms of coaching/ mentoring models is the notion that professional learning can take place within the school context and can be enhanced by sharing dialogue with colleagues.

2.6.2. The Community of Practice Model

Whereas peer coaching and mentoring models generally refers to two colleagues, a community of practice model generally involves more than two people and does not necessarily involve confidentiality. The Communities of Practice thesis (Wenger, 1998) is a social theory of learning (jfr.Dewey, 1916 and Vygotsky, 1978, mentioned earlier). Wenger contends that, while we are all members of various communities of practice, learning within these involves three essential processes:

- evolving forms of mutual engagement;
- understanding and tuning [their] enterprise;
- developing [their] repertoire, styles and discourses (Wenger, 1998:95, in Kennedy, 2015:345)

Wenger (1998), Fullan and Hargreaves (2012), Day and Sachs (2004), Stigler and Hiebert (2004) all recognise a social conception of learning that can be both positive and negative for the community of practice, depending on the role played of the individual in the wider team. A passive individual can be greatly influenced by a dominant active team member, and the

[4] Kollegaveiledning in Norwegian

dominant members can shape the group's understanding of the community and its roles. Power is fundamental to a successful CPD within a community of practice. Wenger (1998) argues that "negotiating a joint enterprise gives rise to relations of mutual accountability among those involved" (Wenger, 1998:81). Establishing joint goals, improving pupil learning by working together and fine-tuning instructional activities are essential in a lesson study. This model of community of practice might be "a powerful site of transformation, where the sum total of individual knowledge and experience is enhanced significantly through collective endeavour" (Kennedy, 2014:346), providing the development does not serve to perpetuate dominant discourses.

2.6.3. The Action Research Model

The term "action research" was coined in the 1940s by Kurt Lewin, a German-American social psychologist who is widely considered to be the founder of his field. There are many variations of action research in education, but the basic principles (Lewin 1946) of evaluative, investigative and analytical research methods designed to find and correct weaknesses are still in use to this day.

Action research is often termed a *cycle of action* or a *cycle of inquiry*, because it is cyclical and follows a pre-defined process that is repeated over time (Great Schools Partnership, 2016). Action research can involve one teacher or many. An individual teacher searching for a way to improve her class management strategies, a mentor-novice action research focusing on innovative instruction, or a collaborative action research project where all math teachers are focused on improving school math results, are all examples of action research projects. Lesson study is a form of action research based on *collaborative* inquiry.

Burbank and Kauchack (2003, in Kennedy, 2014) argue that collaborative action research provides an active role to teachers that offers a fresh alternative to the passive role imposed on teachers by traditional transmissive CPD models. However, Sachs (2003, in Kennedy, 2014) queries the extent to which teachers have room to ask critical questions about the political determinants that shape the parameters of practice. Nevertheless, action research models, particularly collaborative action research models, have the significant capacity for transformative practice and professional autonomy and can therefore be placed on the right-hand side of the continuum in figure 2.

2.6.4 Transformative models

At the end of the continuum, Kennedy describes a 'transformative model' of CPD and argues that "the transformative model is not one clearly definable model in itself; rather it recognizes the range of different conditions required for transformative practice" (Kennedy, 2014: 347). This model features an effective integration of the community of practice model, the action research model and the coaching/ mentoring model (minus confidentiality), and can form a powerful site of transformation, where the sum total of individual knowledge is enhanced through collective endeavour. In other words, an improved 'professional capital' (Fullan & Hargreaves, 2012).

Lesson study as a collaborative CPD action research model has the potential to be transformative. However, the scepticism expressed by Sachs (2003, in Kennedy, 2014) about its capacity to transform beyond the parameters set by the political determinants is valid. The impact on student outcomes might be limited by these political restraints and the cultural complexity of the communities of practice. Dudley (2015) describes lesson study as a CPD that has the potential to mirror this cultural complexity, arguing that the knowledge learnt in LS does not need to be transferred, as do traditional, transmissive CPDs because the professional learning in LS takes place in a school-based, classroom-based, situation-based, authentic setting, mirroring the complexity of the learning environment. I have considered the limitations of LS and the key factors that limit transformation in the discussion chapter.

2.7 An organizational perspective

The relationship between the individual and the collective plays a central role in the discussion about how organizations function and develop. In their book Professional Capital, Hargreaves and Fullan (2012) discuss the question of whether the quality of the teacher is the single most important factor in the pupils' learning. They see teachers as the key to quality in a school, but argue that this does not imply that one should encourage and reward individual teachers. Hargreaves and Fullan emphasize the fact that highly successful schools and school systems are typically in a continual collective development. Creating an even better school is a question of increasing the teachers' professional capital from the perspective of a school as an organization (Hargreaves and Fullan 2012: 5 – 23).

Irgens (2010) sees the discussion between the individual and the collective in the light of the relationship between the day-to-day running of a school and development work. This can give rise to both tensions and opportunities, as illustrated in Figure 3.

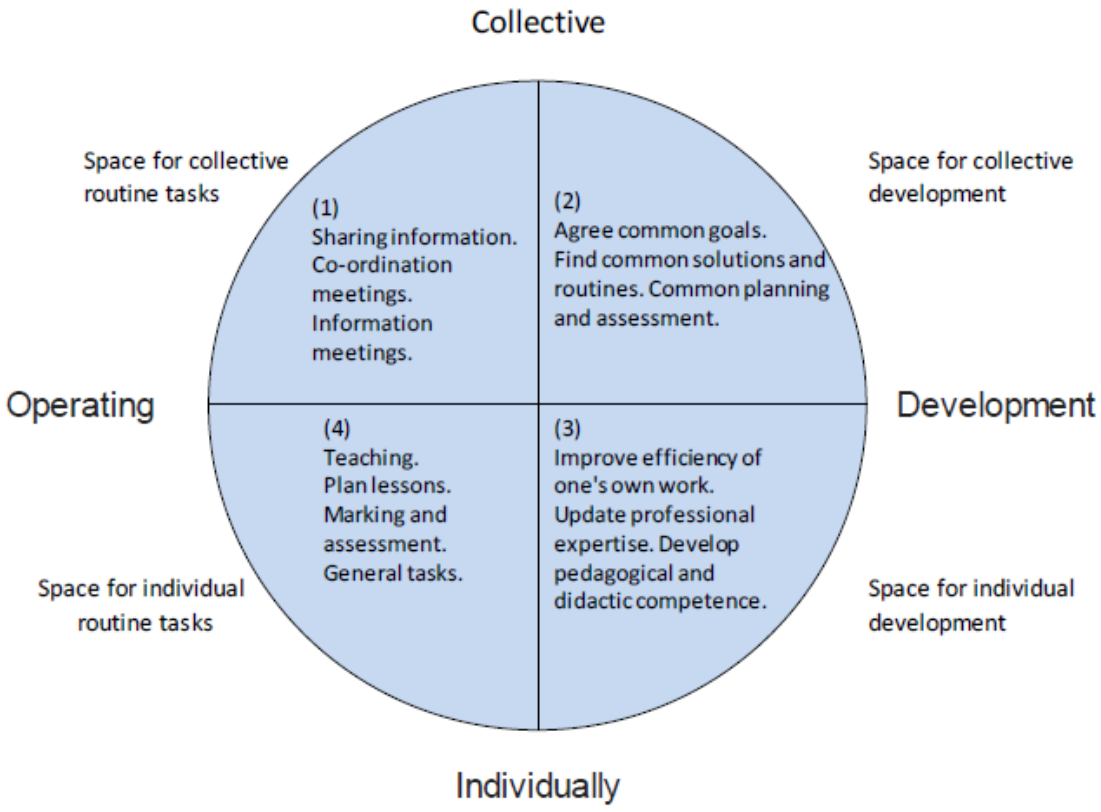


Figure 3: A development wheel for a school in motion (Irgens, 2010:136)

The teacher's professional identity is traditionally closely linked to Space 4 in Figure 3: individual management tasks which are central parts of the day-to-day teaching. Irgens argues that this is not enough to maintain and develop quality in a school, as it leads to a school with a short-term management perspective. Space 3 characterizes a school where individual teachers have the opportunity to work with their own development. However, if individual teachers enhance their own skills, it will still not be sufficient to create a good learning environment that requires agreement on shared goals, collaborative rules and routines. It is via collective management tasks (Space 1) and collective development (Space 2) that one can foster a good school organization which supports the enhancement of the quality of teaching and learning (Irgens, 2014; Roald, Andreassen & Ekholm, 2012).

LS is a classroom-based, model of CPD that involves both the collective and the individual dimension of the organization. The individual teacher has the possibility to develop through

the exchange of ideas, joint lesson planning, joint decisions about lesson targets and collaborative inquiry about how pupils learn. Whether or not their practice is improved affects the individual dimension, but also the collaborative dimension. Fullan and Hargreaves (2012) idea of professional capital underpins the notion that the collective organisational value is greater than the sum of the individuals involved.

2.8 Organizational culture

Schein's theory of organizational culture (Schein, 1985) states that a set of *basic assumptions* form the core of a culture. This cultural core is what many refer to as being 'in the walls of the organizations building' (*det sitter i veggen*). It manifests as values and cultural norms in an organization. Organizational norms communicate important information, they are often left unstated and communicated informally, for example, what sort of clothing to wear at work, and whether it is appropriate to break down and cry or laugh out loud (Schein, 1985 in Hatch, 2013:170). Organizational values have a higher level of awareness, albeit are rarely top of the mind and can seldom be explained impromptu. They are the social principles, goals and standards that cultural members believe have intrinsic worth. They define what the members of a culture care most about and are revealed by their priorities (ibid:169).They often guide their members in what is right or wrong, not life choices, but occupational ethics.

The basic assumptions in a school are reflected in the tradition of collaboration between teachers. Is it OK to interrupt a colleague and ask them to help you assess a student's English paper? How normal is collaboration and to what extent? What can a teacher expect from his colleagues? These norms are formed by the values of the organization. If a school values teacher collaboration highly, then subject-group meetings, team meetings, and such will be an everyday occurrence. These meetings, often scheduled, are an example of what Schein calls ***artifacts*.** The sign with the agenda for the mandatory teacher-planning time (*fellestid*) stating, for example, "*subject-specific group meeting 1-3 pm, room 2b";* or "*Lesson study, group 3, room 7c"* is an artefact reflecting the basic assumptions of the organizational culture. The signs show that the school leaders have organized this for the teachers and the teachers are expected to participate. The signs do not have to say anything about the consequences of non-participation, as it is unstated, but understood, that unjustified non-participation might cost you your job!

A school is an organization within a larger organization. The concrete organization of a specific school sits within the abstract entity of the educational institution, under the Ministry of Education umbrella. The organizational culture within the specific organization is influenced by the organizational culture of the abstract organization(s) (Hatch, 2011:10). Teachers are paid to do a job. This unique job has a societal mandate: we are responsible for the general education of society's younger citizens. This means we are committed to follow the laws on education and national curricula. We should also follow the guidelines laid down by the Ministry of Education, specifically the White Papers and laws that refer to education. The way in which an individual school realizes these guidelines, or ignores them, will be reflected in the organizational culture, its norms, values and basic assumptions.

Developing a teacher learning community is the underlying aim of lesson study (Lewis, 2011). The Norwegian Directorate for Education and Training has issued numerous White Papers (St. Melding 13, 22, 11, 31) where the importance of a teacher learning community is mentioned. The recent national development project of lower-secondary schools in Norway (*Ungdomsskole i Utvikling*) with the White Paper "Motivation – Mastery – Opportunity" emphasizes the need for education that is motivating, practical and varied. In the framework, the Directorate gives the following definition of school-based competence development:

> School-based competence development implies that the school, with its administration and all employees, participate in a development process in their workplace. The aim is to develop the school's overall knowledge, attitudes and skills with regard to learning, teaching and collaboration." The Norwegian Directorate for Education and Training's *Framework for Competence Development in Lower Secondary Education* (2012).

The Directorate for Education programme of school-based professional development aims for a collaborative learning culture with lasting change. Postholm and Wæge's article *Teachers' learning in school-based development* (Postholm & Wæge, 2015), is based on a study in three lower-secondary schools that were connected with this national project of school-based development. Their study showed that it is important for the teachers' learning culture that they are listened to and taken into consideration and that the leaders have competence in leading school-based development to support the teachers' learning. Their study also showed that the school's *learning culture* can make a difference for the teachers' learning and their job satisfaction and well-being (Postholm & Wæge, 2015). A school is an organization whose purpose is learning. A school's organizational culture is therefore its learning culture.

Lesson Study is a collaborative, school-based development method originated in Japan. I suggest Japanese organizational culture to be somewhat different from Norwegian organizational culture. A closer look at these national organizational cultural differences might bring to light some challenges that could arise if LS is enforced on Norwegian teachers.

Modernist organizational theorist Geert Hofstede explored national influences on organizational culture. His influential work measured and studied cultural differences quantitatively and he illustrates these dimensions of difference between cultures around the world with an Organizational Culture Inventory (OCI).

Organizational cultures have a two-way relationship with the environments in which they are found and from which they recruit their members. Employees meld their own cultural backgrounds, their values and identities, with that of the organization's culture, values and identities (Phillips, Goodman and Sackmann, 1992, in Hatch, 2013). Sometimes an organizational culture clashes with the culture in the place where it locates. For example, Parisians resisted Disney's theme park opening in Paris in 1992 as it represented an American icon. The result was a compromise between two cultures, indicating just how interwoven an organizational culture and its environment can become (Hatch, 2013:163). An analysis of Japan and Norway's organizational cultures may give some insight into the likelihood of a clash of organizational cultures if a Japanese method of professional development is introduced into the Norwegian teachers' workplace.

Hofstede constructed measures of work-related values that he then compared across countries. His study of IBM worldwide revealed four dimensions of national cultural difference within IBM's organizational culture: *power distance, uncertainty avoidance, individualism vs. collectivism,* and *masculinity vs. femininity* (Hatch, 2013:164-168). I have chosen to concentrate on differences in power distances as these were the most significant dimensions.

Power distance refers to the extent to which the members of a culture are willing to accept an unequal distribution of wealth, power and prestige. High power distance cultures are typical in countries with defined hierarchies, for example, Saudi Arabia and Singapore. Norway is a low power distance country, where inequality of status is difficult to accept. Social democracy, combined with an unspoken *Janteloven,* Jante Law in Norway, evens out differences and, it might even be argued, that no individual should stand out, or do better, than other Norwegians do. In high power distance cultures, employees expect to be told what to do and follow orders obediently. In low power cultures, employees expect to be consulted by their bosses, a person

who is most probably, a resourceful democrat. Hofstede places Japan at 65 on the power distance index whereas Norway is placed at 30. If we consider these power distance values then any organizational change in a Japanese organization can be dictated to its workforce, whereas organizational change in a Norwegian organization will only be a success if the workforce accept and nurture it first. Implementation of new ideas, like a lesson study, is *a bottom-up affair* in Norway and (most likely) *a top-down affair* in Japan. Postholm and Wæge's study confirmed the need for Norwegian teachers to be consulted by their leaders.

Hofstede's OCI shows the large differences in the organisational cultures between Norway and Japan. His index does not however say anything about the internal differences within a country, of which of course there are many. Postholm and Wæge's recent study of the school-based development programme shows the important role leadership plays. The content in Lesson Study evolves from the teachers, but the organization needs to be strongly supported by management.

2.9 Student-centered leadership

Student-centered leadership is about making a bigger difference to student learning and well-being (Robinson, 2011). In her book, *Student-centered leadership*, Viviane Robinson presents available evidence about the impact of different types of leadership on student outcomes and shows leaders how they can make a bigger difference to the quality of teaching and learning in their school and ultimately improve their students' performance. She presents five leadership dimensions of student-centered leadership and analyses thirty studies of the impact of school leadership on student outcomes, to find the effect size of each dimension. The five dimensions with their effect size statistic are: Establishing goals and expectations (0.42); resourcing strategically (0.31); Ensuring quality teaching (0.42); Leading teacher learning and development (0.84); and Ensuring an orderly and safe environment (0.27).

Robinson states "the most powerful way that school leaders can make a difference to the learning of their students is by promoting and participating in the professional learning and development of their teachers" (Robinson, 2011:104). In the case of Lesson Study, this would mean promoting LS by putting it on the school's agenda: making space in teachers' busy schedules for joint-planning, research lesson observations and collaborative inquiry;

promoting LS by presenting the LS groups' findings; and possibly rewarding the teachers who participate (as they often do in Japan, with a bottle of Saki).

Robinson says that promotion is not enough, that school leaders should also *participate*. According to Robinson's findings in her meta-analysis, this has a symbolic value: "..The leader is modelling the importance of being a learner and that if a busy principal can give priority to the learning, then teachers feel more inclined to do the same" (Robinson, 2011:105). Further down the page she argues that "perhaps the most important reason for the effect is that direct involvement in professional learning enables leaders to learn in detail about the challenges the learning presents and the conditions teachers require to succeed."

There are many ways a leader could participate in a LS, from spreading literature to actually participating in the whole cycle on an equal basis with the teachers. My case study will examine the level of the school leaders' promotion and participation seen through the eyes of the research participants. My study will also examine other organizational cultural aspects that might cause barriers, and affordances for lesson study in Norway. The theories I have presented here in this chapter were the lenses with which I analysed my data and have used to assist the answering of my research question: *How could Lesson Study contribute to continuing professional learning in Norwegian schools?*

Chapter 3: Methodology

In this chapter, I will describe the way I collected the data I used in my analysis, the methodological choices I made and the reasons for my choices. I will describe how I sorted and analysed the data and how I have ensured credibility and ethical awareness. The description of the process will be explicit to maximise transparency.

I have chosen a qualitative methodological approach for this study. This gives me the opportunity to gather data where research subjects are directly observed in their natural settings and are encouraged to tell their own stories and reflect on their own experiences (Postholm, 2011). This is especially challenging considering my own participation as facilitator, but I believe that the use of video and audio recordings, and an openness to my own subjectivity, will result in a reflection-filled text, which has transferability.

3.1 Case study

Mirriam (1998, in Postholm, 2011:50-51) describes case study as descriptive research. He argues that such a study, as with all qualitative research, not only orientates towards few variables, but many or all variables within a given context. A case study is defined as researching a bound system, a system that is bound in both time and place. Lesson Study is such a bound system. It is an activity which takes place over a period of time (in my study- from November 2014-April 2015) and the geographical limitation of the *classroom* is essential to the activity. A case study gives a detailed description of what is studied in its context. By directing focus towards a specific case in its context, this type of methodology can manage to reveal the interaction between different factors that are characteristic for this case in this setting. In this way it is possible to give a comprehensive description of what is being studied, which is the objective for all types of qualitative research (Stake 1995, from Postholm 2010:50-51). My study needs to be thoroughly descriptive prior to an evaluation of its transferability to similar settings.

Stake (1995) uses three terms to describe case studies; intrinsic, instrumental, and collective. Intrinsic case studies are used when the intent is to only understand a particular case, not because the case represents other cases nor understand some abstract phenomenon. As my intent is to gain insight into the phenomenon of the lesson study method, an intrinsic case

study would not be appropriate. According to Baxter and Jack (2008), Stake's description of collective case studies is very similar to Yin's multiple case studies (Yin, 2003, in Baxter & Jack, 2008). Multiple case studies and collective case studies are about comparing and contrasting multiple cases with the intent to predict similar results across cases, or predict contrasting results based on theory (ibid:548). This type of case study is not appropriate for my study as I have only one case study.

In an instrumental case study, the case is of secondary interest; it plays a supportive role, facilitating our understanding of something else. The case is often looked at in depth, its contexts scrutinized, its ordinary activities detailed, and it helps the researcher pursue the external interest. The case may or may not be seen as typical of other cases (Stake, 1995, in Baxter & Jack, 2008). My study of lesson study *includes* the case study of lesson study, but also includes the wealth of research literature and supporting theories I am influenced by in the course of the study. The case study in itself is secondary to the gaining of understanding of the phenomena lesson study, but it does give me the opportunity to deconstruct and reconstruct the phenomena, breaking it down into the characteristics, affordances and barriers of lesson study. Consequently, my study of the phenomenon lesson study is an intrinsic case study according to Stake (1995).

Case studies are also described as *steps to action* (Adelman, Kemmis & Jenkis, 1980, from Postholm 2010:51). Case studies carried out in the real world will influence the world they come from and contribute to further action in this reality. My case study of Lesson Study will probably influence future lesson studies within my local municipality. In addition, the very fact that my research requires a larger extent of meta reflection than necessary for a lesson study, combined with the essential fact that I am both facilitator and participant, means that this research will influence action on many levels. For example, it will probably affect the participant's level of commitment to the study. The participating teachers answer questions that evaluate the LS process in accordance to how the teachers learn. These written texts increase the participating teachers meta learning, directly influencing the outcome of the level of success for the lesson study.

The intertwining of research and reality, or steps to action as Adelman et al (1980) call it, are exemplified in the effect of the rolling video camera. This might have sharpened the teachers' focus, but it also may have hindered critique of the method. My obvious enthusiasm for lesson

study might too have hindered action. The fact that five participants withdrew after the first introductory session claiming a fear of being filmed is proof of these barriers. Another example of how the use of video caused a step to action was when reviewing the video material after the first planning session, I realized that one of the teachers had been very quiet and hardly contributed at all. I made a note to myself as facilitator to bring him more into the discussion in the next session. This teacher contributed a lot more in the next session after being asked his opinion directly by me. His contributions and actions would not have come about if not for my watching the video and consciously taking action to include him more in the discussion.

My multiple roles of researcher, facilitator and participant put me very much in the position of 'native' (Postholm, 2010:2). The danger here was that I might not have been able to see the woods for the trees. There was a threat that my subjectivity could interact with the research participant in a way that could reduce the value of the research findings (Nilssen, 2014:139). Using video has helped me distance myself from the participator role (the 'native') when analysing the data material (the 'why'). While reviewing the video recordings, I have noted my own actions and the reactions of the other participants with equal interest.

To get quality out of qualitative you have to distance the (n)ative and add the 'y'

3.2 Method description and data collection

A hallmark of case study research is the use of multiple data sources (Patton, 1990; Yin, 2003 in Baxter & Jacks, 2008). I have triangulated data sources to enhance data credibility. 12 hours of video data material document the lesson study process, audio recordings of three interviews give an in-depth insight of the phenomena and written reflection texts from ten participants provide insight to otherwise invisible cognitive processes. Each data source in the triangle form pieces of the puzzle, contributing to my understanding of the whole phenomenon. This convergence adds strength to my findings. According to Knafl & Breitmayer (1989, in Baxter & Jacks, 2008), the collection and comparison of this data enhances data quality based on the principles of idea convergence and the confirmation of

findings where the interplay of concepts, methods and research advances knowledge development. In other words, the relevance of the sum of data is strengthened by having three different forms. The triangle below models this convergence.

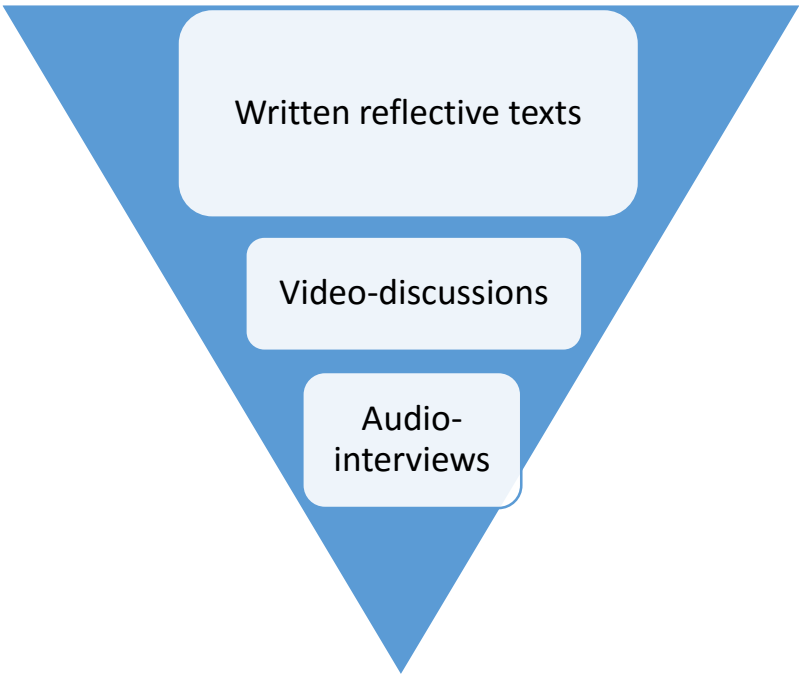


Figure 4: Three source forms of data collection

My local education authority has organized disciplinary-based networks for teachers in the majority of compulsory subjects, for the past ten years. These networks form a teacher collaboration arena where teachers from different lower-secondary schools meet to share ideas, work on curricula and student assessment and generally update and refresh themselves in their respective subjects. I have led the English teacher network for six years. I used my position as English subject network leader to find English teachers from different lower-secondary schools who were willing to join me on this project. At the start of the school year, August 2014, I advertised the English teacher network in the borough's course catalogue as a pilot project of lesson study. The content descriptions for all the different courses and networks available aim to guide teachers in the local municipality, such that they can choose the appropriate course/ network (participation in one or more of these courses/ networks is compulsory) The scene was set for voluntary participation in a lesson study with English pedagogical content.

However, there was a teacher strike in August and many of the schools in my area, my own included, went on strike. This led to a delayed and chaotic school start and, unknown to me at this stage, many teachers were placed in my English network by their school principles. They were not given the chance to choose, nor were they aware that the English network was going to be different from previous years. This resulted in a very different first network meeting than any of us expected, and the voluntary aspect of lesson study participation that I had been aiming for had been compromised.

There were fifteen English teachers registered in my English network prior to the first introductory meeting. The fifteen teachers ranged in age from 24-65. They represented five different lower-secondary schools. Three were novice teachers with less than two years experience, nine teachers had 2-15 years experience and three teachers had more than 15 years experience. There was a spread of ages, gender and experience, which I considered a fair sample.

There were twelve teachers present at the first meeting and three were absent. As I was concerned about the negative effects of forced collaboration (Hargreaves, 1994), I underlined the importance of voluntary participation in lesson study and gave everyone the chance to withdraw from the group. Shortly after the first meeting, five teachers withdrew. The reason for withdrawal given to me by their school deputy-head was that they did not want to be filmed. I was left with ten teachers, eight of whom had been present during the introduction and two who had not. I had lost one of the novice teachers and four experienced teachers, but felt that the ten remaining teachers would still give me valuable data. I noted which teachers had been placed in the group, which teachers were absent, and which teachers had chosen to partake voluntarily (although participation in at least one cross-school network was compulsory). The ten teachers formed two lesson study groups which I have named LSG1 and LSG2. The participants have been given pseudonyms and their experience in service has been banded to increase anonymity.

Table 1: Research participants

LS group	Pseudonym	Years in service	Gender	Note on level of voluntariness
LSG1	Peter	2-5	M	Self-Registered
LSG1	Marie	10-14	F	Self-Registered
LSG1	Fredrik	0-2	M	Self-Registered
LSG1	Beatrix	15+	F	Self-Registered (network leader)
LSG2	Sarah	6-9	F	Involuntary
LSG2	Ruth	0-2	F	Involuntary (absent introduction session)
LSG2	Jill	15+	F	Involuntary
LSG2	Anne	10-14	F	Involuntary (absent introduction sessions)
LSG2	Robert	10-14	M	Involuntary
LSG2	Thomas	15+	M	Involuntary

The first English teacher network was an introduction to the method Lesson Study. I presented the learning theories, showed the group a video on LS (Lewis & Hurd, 2011), described the cycle and we discussed the possible advantages and problems that could arise. We discussed the practicalities, I presented the framework for the lesson studies and we planned how we should go ahead with the project. I presented my study, informed them of my researcher role and asked for their participation in my research. The power point, the

network meeting agenda and minutes from this first introductory round are also part of my data material, as these documents mark operational aspects of lesson study. In addition, my roles of both facilitator, participant and researcher are made transparent.

As facilitator, I guided fellow teachers through the stages of lesson study: 1) goal setting 2) designing and planning a lesson 3) teaching and observing the lesson 4) evaluating and reflecting on lessons and analysing pupils' learning 5) revising and re-teaching the lesson 6) evaluating and reflecting over the re-taught lesson and pupils' learning. The instructional texts are included in my data material. They build on the theories and professional development models mentioned in the theory chapter. They are included as *appendix 1* to this thesis such that my study is as transparent as possible.

There were two LS groups that saw the LS through the complete cycle. I participated in one of these groups, leading the group of four teachers from three different schools (LSG1). The second LS group was made up of six teachers from the same school (LSG2). They did not have a group leader on site, but completed the cycle of two research lessons using the model and instruction tips I gave them in the beginning.

3.2.1. Video

As researcher, I filmed the LS in which I participated (LSG1). I filmed the lesson planning discussions, the evaluation discussions and consequent revisions, and the post-research lesson discussion. I also filmed the evaluation discussion meeting at the end, when both LS groups met to evaluate the process. This accumulated to approximately 12 hours of video material.

The second LS group (LSG2) sent me a lesson plan and wrote detailed reflection texts answering questions I asked about their individual experiences of the project and the lesson study method. These texts have proven to be valuable research data in my analysis. I did ask them to film the discussions in the group such that I might use this in my research, and I was told that they did, but illness and technical difficulties meant my never viewing these videos. Fortunately, the reflection texts proved to be sufficient.

Audio and video recording has two main advantages when observing a situation. Firstly, the observer's limited memory is backed up – you can rewind, play in slow motion and re-play

relevant moments. The second advantage is the amount of detail you can capture- you can see the video numerous times, focusing on different areas each time, or re-watch the same sequence over and over again registering something new each time (Bjørndal, C., 2011:76). Using video helped me to manage both roles as participant and researcher.

During the winter of 2015/16 I have sorted through the 12 hours of video material, noting down relevant sequences and discarding the rest (discarding, not deleting). The filmed teacher discussions are the data basis for my analysis. I have categorized the relevant sequences according to four categories: *affordances; barriers; local implementation and operationalization* as these terms form the core of my research questions.

3.2.2. Audio

The first individual interview took place in August 2014 prior to the start of the lesson study pilot project. I interviewed one of the teachers who had registered in my network group. Seeing as most of the teachers in the network group were out on strike, I had to interview a teacher who was not. This left only three possibilities. I sent out an interview request to all three and interviewed the teacher who answered my request first. The questions were aimed at discovering the level of motivation for participating the English network, and pre-knowledge of lesson study. There were also questions about the experience of being a novice teacher. I originally thought that I would interview the same person after the project, but the interviewee wrote an evaluative reflection text that made another interview unnecessary.

My second interview was a semi-structured interview of a senior advisor in the education department of the borough. The aim was to unveil the reasoning behind the borough's efforts to introduce lesson study to school leaders. After all, they had hired a professor to give a series of lectures to all the school heads and competency leaders. My questions targeted at finding out why lesson study was prioritized and to what aim.

The third interview was carried out after completion of the LS cycle in my borough. It was a group interview of one headmaster and two LS group leaders[5] at a school in Oslo. I had read about the school's use of lesson study to improve student learning and was keen to hear about their experiences. The interview revealed some of the affordances and barriers that they had

[5] *Kollegaveileder* is the Norwegian title

encountered during the two years that they had strategically been using lesson study as a professional pedagogical development method. It also provided an insight into the measures they had taken to implement LS. This interview was analysed for use in the discussion chapters of my thesis.

3.2.3. Written reflection texts

Writing is an integrated part of the research process on all levels of research. There is my own writing: field notes, logs, master programme assignments; and the participants' writing: the lesson plans, logs, reflection notes and evaluations written in the course of the lesson study. I do not have access to the "creative processing" texts[6], but do have the "critical process" evaluations of the LS.

In the final evaluation session, I asked all the present teachers to answer a series of questions on the evaluation of the LS process. These questions were divided into five areas: lesson planning; experience of the research lesson (from either an instructor or an observer's perspective); post-lesson experience; experience of the revised research lesson and consequent post-lesson discussion; and an evaluation of the LS process. The posed questions are enclosed as *appendix 2*. These long, open answers to these questions have provided valuable depth to my study. I have categorized these texts using the same categories: operationalization; affordances; barriers and local implementation. I present many quotes from these answers in the next chapter.

3.3 Sorting and analysing the data

As in any other qualitative study, the data collection and analysis occur concurrently. My raw data consisted of 12 hours of video, 3 hours of audio recordings, and approximately 50 pages of written texts including reflection texts that evaluated the entire process (8 teachers seeing as there were only 8 teachers present at the final, evaluation session), half-way logs (4 teachers- LSG1 only. I did not get to see the logs from LSG2), lesson plans (2 groups) and my

[6] Nygaard, 2008, et.al., separates the creative and the critical writing process. "In the creative process we put our ideas into words so they make sense to us,… while in the critical process we try to make those words make sense to someone else" (p.30 in Nygaard, 2008. Taken from Nilssen, V.,2014, p. 35)

own research logs. The audio recordings were of three semi-structured interviews, including one group interview and two one-one interviews. (See *table 2*)

Firstly, I transcribed the three interviews. Next, I read the texts written by the participating teachers during the evaluation meeting. The written responses to questions about the lesson study project surprized me with their honest, detailed responses. They gave me the motivation I needed to start working on an analysis.

I reduced the video footage down to 3 hours of focused material and chose not to transcribe this material, but noted sequences relevant to my research questions. The initial viewings, though time consuming, was mainly about getting to know my data material. Due to the amount of data, it was necessary to select the most relevant sequences already at this stage. There was a lot of dialogue that I could exclude from my study, such as chatter about general issues. Nevertheless, I was concerned about missing relevant material, so I did not delete anything, just sorted out the most relevant sequences, and got rid of the distractions In this way, I reduced the quantity of data, such that it is more straightforward, and paved the way for the next part of my methodological journey, the 'descriptive' analysis. Postholm (2010:91) refers to this type of data reduction by coding and categorizing as a *descriptive analysis*.

Table 2: Data overview

Item	Title	Date recorded	Level of analysis	Duration	Description
A	**Written texts**				
1	Reflection notes, 25.2.15, LSG1, 4 teachers	25.02.2015	Coded and categorized		Reflection after LSG1, 3 schools, 4 teachers
2	Written responses to evaluation questions	16.04.2015	Coded and categorized		Experiences of LS process, 8 teachers, from 4 schools, LG1 and LG2
3	Evaluation questions	16.04.2015	background		Questions aimed at revealing the participating teachers' experiences of LS
4	LS introduction PP	05.11.2014	background		LS method presentation
5	Minutes	05.11.2014	background		Agenda and minutes 5.11.14. Plan for LS pilot project
6	Plan for lesson LSG1	26.01.2015	background		Agreed Lesson plan, with activities, duration, and learning targets
7	Revised lesson LSG1	28.02.2015	background		Adapted lesson plan
8	Plan for lesson LSG2	04.02.2015	background		Agreed Lesson plan, with activities, duration, and learning targets
B	**Video**				
1	LSG1, teacher discussion. Lesson planning. 4 teachers	27.01.2015	background	1 hr 18 min	Teacher collaboration
2	LSG1 teacher discussion. Lesson evaluation. 4 teachers	28.01.2015	background	2 hrs	Teacher collaboration
3	LSG1 Revised lesson preparation, 4 teachers	25.02.2015	background	37 min	Teacher collaboration
4	LSG1 Revised lesson evaluation, 4 teachers	25.02.2015	background	58 min	Discussion about LS method prior to writing evaluation texts individually
5	LSG1 and LSG2 LS process evaluation, 8 teachers	15.04.2015	background	2 hrs	Discussion about LS method prior to writing evaluation texts individually
C	**Audio**				
1	Group interview 1 principle, 2 LS facilitators	16.10.2015	Transcribed and coded for discussion	1 hr 25 min	External school, 2 yr experience with LS.
2	1-1 Interview Senior advisor	17.04.2015	transcribed	53 min	The municipality's intensions with LS
3	1-1 interview, 1 teacher	01.08.2014	transcribed	45 min	Pre-start up, 1 teacher in LS group

3.3.1 Open coding and axial coding

Field notes, documents, logs and transcribed data material make what Patton (2002) calls ‘the undigested, complex reality’. Reducing, simplifying and distilling meaning out of this

complexity is the challenge of an inductive approach. Coding is the first step in the reduction process. Open coding means to identify, sort and name the most important patterns in the material. You see what you have and give it a name (Nilssen, 2014:84).

Inspired by Strauss and Corbin's constant-comparative method (1998), I read, noted in the margins, highlighted, underlined, re-read and looked for codes in the material, reducing the data to as few themes, dimensions and categories as possible, without losing the essence in the material (Strauss & Corbin, 1998, in Nilssen, 2014:80). Many terms and codes did not make a lot of sense to me at this stage. But, in this way, I tried to eliminate unnecessary 'distractions' in the data, whilst staying open to indications that might oppose my assumption of lesson study being a successful model for continued professional development (CPD). I could not put aside my pre-conceptions and consequently the sorting of the data was a subjective process. Complete openness is an illusion! (Nilssen, 2014:82)

I first tried working with the four categories: *affordances; barriers; operationalization and categorization*. However, analysis is not linear. I found myself moving backwards and forwards from an open coding, to what I interpret as being an axial coding: I compared and contrasted repetitive terms, descriptions and themes, in light of my research questions, trying to find a term to cover all the labels I had noted in my data material.

Once I had decided on possible categories, I went back through my material, marking the sequences and statements according to these categories. This is when I realized that these category labels were not sufficient. The categories could be better grounded in the data. There were many statements about the possible organization of LS, tips to be learnt from other schools and suggestions about how to make LS work. I decided on a category labelled *implementation in a local municipality.* In addition, the categories *operationalization* and *characterization* were difficult to distinguish from *affordances and barriers*. For example, the issue of *time* came up repeatedly in my data. *Time* was a relevant requirement for the operation of a lesson study, it was also seen as a barrier if the management did not allocate enough for the teachers' collaboration, and it was an important factor in the characterization of lesson study, the cycle demands about 15 hours. So, here again, I let the data lead me. I enlarged the affordances category, giving it three sub-categories: *collaborative professional inquiry; novice teachers-experienced teachers, symbiosis learning*; and *focus on pupils*

learning. These sub- categories encompassed most of the characterization codes and part of the operationalization codes.

Barriers too, could be more precise. I divided the barriers into three sub-categories: *lack of managerial support*; *teachers' lack of ownership*; and *resistance to cultural change*. I placed *'*time*'* under 'lack of managerial support' as this was where the majority of the participant's comments belonged. The operational aspect of 'time' is also covered here. The resulting constant-comparative analysis created the scaffolding for my findings.

3.3.2 Qualitative content analysis

My analysis of the data has a qualitative content analytical approach in that I interpret meaning from the content of text data and, hence adhere to the naturalistic paradigm. According to Downe-Wamboldt, (1992, cited in Hsieh & Shannon, 2005), the goal of content analysis is "to provide knowledge and understanding of the phenomenon under study". Hsieh & Shannon define qualitative content analysis as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p.?). In their article, *Three Approaches to Qualitative Content Analysis*, they divide content analysis further into three approaches: conventional content analysis, directed content analysis and summative content analysis. They have grouped the approaches according to coding differences. Conventional content analysis starts with observation; codes are defined during data analysis and derive from the data itself, in other words an inductive approach to analysing the data. Directed content analysis starts with existing theory or prior research needing further explanation- codes are defined both before and during data analysis, through theory and/or prior research findings. Summative content analysis starts with keywords which are identified both prior and during analysis.

The content analytical approach I have used lies somewhere between the conventional content analysis and the directed content analysis approach as defined by Hsieh & Shannon (2005). I have met the data material with theoretically tinted glasses. I have used prior research to identify key concepts in the lesson study model to help me analyse the data. My initial categories *affordances; barriers; operationalization and categorization* evolved from a review of the research literature available that I found in *Lesson Study. An international*

review of the research (Xu & Pedder, Chapter 2, in Dudley, 2015). This may well be defined as a deductive category application (Mayring, 2000, in Hsieh & Shannon, 2005), but the initial categories were broken down into sub-categories according to the data. I analysed the written reflection texts first, found my sub-categories, adjusted my initial categories to meet the data, and then looked at the video and audio texts. Figure 3 illustrates this process. Consequently, I have used a slightly more conventional content analysis approach than the structured process of directed content analysis.

I have attempted to remain as open as possible to the emerging results. However, despite my openness to meeting the data, my approach has been *abductive* in that my theories have only been adjusted and not ignored. I met the data with a presumption that lesson study does work as a method for CPD and used the data to find out *how* it works and what can *prevent* it from working.

3.4 Ensuring credibility and Ethical awareness

The combination of three major roles – researcher, facilitator and participant – has demanded a constant ethical awareness, an additional openness in all stages of the study. Cresswell (1998) and Glesne og Peshkin (1992) are sceptical to research 'amongst one's own'. Miles and Huberman (1994) are of the opinion that a good researcher ought to know the setting and the phenomenon they are studying (Postholm, 2011). A certain amount of scepticism is necessary. It is important to be open about my own subjectivity during the study. The desire to drive the development process forward, to prove Lesson Study to be a successful CPD method and validate myself as an expert on this method, has undoubtedly coloured the study. After all, I chose this theme for further study because I believe it to be a useful method for developing professional teaching practice. However, by categorizing and coding the data according to the key terms in my research questions, my assumptions are transparent and my subjectivity too. I have given a detailed description of the process to make it as transparent as possible. It will be up to the reader to decide if my findings are transferable to situations with similar conditions.

Chapter 4: Results

I shall now present my findings and exemplify them with citations from the participants in the study.

Findings:

1. LS afforded collaborative professional inquiry
2. The teacher collaboration in LS afforded the feeling of belonging to a professional learning community
3. LS afforded symbiotic professional learning for novice and experienced teachers
4. The pupil observation in LS afforded a shift of focus from teachers' teaching to students' learning
5. A sustainable, successful LS cycle needs a group leader and a 'student-centred leadership'

The purpose of this chapter is to make transparent how I concluded with the above findings. I will analyse and interpret the data material in light of relevant theories, discussing their relevance and importance to my research questions as I go along. I have selected two main categories for analysis: *affordances* and *barriers.* I will present each main category with its sub-category, define the category, describe the relevant theories, and then present the empiric evidence and interpretations for each of the main categories.

The research participants have been given fictive names. The sample size used in this study was small because it was limited to the English teachers who participated in the English teacher network and consequent lesson study.

This is a case study. The aim is to describe the study comprehensively and learn something from it. To use Flyvbjerg's words: "we do case studies, not in the hope of proving anything but rather in the hope of learning something from them" (Flyvbjerg, 2001:73).

4.1 Affordances

According to Gibson (1986:127), affordances are possibilities for action provided to an animal by the environment—by the substances, surfaces, objects, and other living creatures that surround it. Gibson's definition of affordances originates from ecological psychology

where it has been assumed that affordances primarily relate to motor action- to kicking, jumping, grasping, and so on. Rietveld & Kieverstein (2014) define affordances in a much broader sense, where the affordances an environment offers to an animal are dependent on the skills the animal possesses. They say that by virtue of our many abilities, the landscape of affordances we inhabit as humans is very rich and resourceful. If we apply this to the environment of education, then the professional landscape of a teacher is far richer than the school building in which he or she works.

When considering the affordances of lesson study, I define these as the possibilities LS offers teachers, dependent on the skills, the personal and professional experiences the teacher possesses, and the group relations. The term is wider than 'advantages' or 'enables' as it includes what possibilities a phenomenon, in this case lesson study, has. However, these characteristics of lesson study are only 'possibilities' which are dependent on the environment they occur- hence the term 'affordances'. From the findings, the following terms illustrate different aspects of the affordances: 1**.** Collaborative professional inquiry; 2. novice teacher-experienced teacher, symbiosis learning; 3. focus on how pupils learn.

The category of affordances covers data material showing LS method in action, from a positive angle and includes the method design, characteristics and properties that make LS different from other CPDs. Professional inquiry is found in most forms of CPDs. However, recent research shows that "what distinguishes LS from other forms of professional development is the planning of jointly conceived research lessons to address particular problems with learning, rather than focusing on the performance of an individual teacher" (Cajkler, Wood, Norton, Pedder, & Xu, 2015:192). Consequently, the evidence presented in the affordance category focuses on the inquiry that comes about from the collaborative planning, revision and evaluation of the lesson, in addition to the professional inquiry stemming from the observations of the pupils during the lesson.

4.1.1 Affordance 1: Collaborative professional inquiry

Participation in lesson study can help teachers develop an 'inquiry stance' and become more reflective about their practice (Fernandez 2005, Ricks 2011 in Cajkler et al, 2015). The cyclical plan-teach/observe-evaluate procedures (cf. Figure 1) offer concrete reference points

for the ongoing work of experimentation, adaption and refinement of practice found in all professional inquiry.

Colleagues provide a need to make a teacher's thinking visible. Colleagues can help each other learn by offering ideas, questions and challenges. James Hiebert and James Stigler (1999) argue in *the Teaching Gap* that lesson study provides a means to improve teaching and learning through development of a shared professional knowledge base on teaching. The filmed lesson study discussions and written reflection texts revealed a brick or two in this so-called building of a knowledge base about student thinking, lesson design and teaching strategies. This being a pilot project where no teacher had previously carried out a lesson study, the extent of the development of a shared professional knowledge was limited. Nevertheless, collaborative teacher planning and evaluation revealed a sharing of professional knowledge, both tacit and explicit, and an improved professional capital (Fullan & Hargreaves, 2014).

4.1.1.1. Collaborative teacher planning

In phase 1 of the lesson studies, the teachers (myself included) identified particular problems of learning they wished to focus on, set the learning targets and discussed possible teaching activities they could use to achieve these goals. The learning problem in LSG1's lesson was that few pupils dared to speak English aloud. The goal was therefore set at getting every pupil in the class to speak English during the lesson. Oral production was to be encouraged via written production; the activity also asked for the pupils to write an original text and read it aloud in class. The overall lesson target was to improve language proficiency.

Wenger (1998) and Vygotsky (1986) see learning as a social phenomenon. With this in mind, we asked the class to write an original fairy tale in pairs or threes. An added bonus with this social-constructivist pedagogy was that we could observe how they worked together, what they said, who said what, who wrote and who did not. They were given a helping start with a handout and brainstorming on the topic, which built on their previous knowledge of the genre. This joint-planning session lasted for two hours. The pre-decision discussion centred on effective methods of teaching English, learning theories and lesson plan ideas. Everybody contributed to the discussion and the resulting lesson plan. I have cited some comments from

the written reflection texts (cf. Table 2, items 1, 2, 3, 6, 7 and 8) to exemplify the pre-decision discussion.

> The beginning phase was brainstorming ideas for a lesson plan. This took some time, but in the end the group decided to have a lesson based on a topic (fairytales) that had been recently covered. It was also decided that the students were to use oral, writing and reading proficiencies in English. The flow of ideas between teachers was good and everyone, including myself, was engaged (Peter, written reflection text).

> I got to contribute with some suggestions, and felt that everyone else in the group did so too. I got some tips and activity ideas. For example, that you don't have to write a whole fairytale, it's enough to write just a part (Marie, written reflection text).

> I learnt new ways to get the class to repeat what they know about a theme (Colin, written reflection text).

The "tips" and "learning of new ways" exemplify the hands-on practicality of lesson study, seldom found on external teacher 'courses' where information is fed and teachers listen. The teachers build and share on pedagogical content knowledge (Shulman, 1986), a knowledge about the pedagogic approaches best suited to teaching particular aspects of a subject, often making explicit previously tacit knowledge.

The second lesson study group (LSG2) decided on a different problem of learning English:

> Sarah: We quickly agreed that we wanted to focus on grammar, specifically concord, since most of the pupils on this level struggle with this.

> Ruth: We agreed together. We went through areas that were common challenges across the grades, 8th, 9th and 10th. We landed on the teaching of grammar as a particular challenge, as far as both motivating the pupils and knowing who gets what.

This group of six teachers established a common challenge quickly and then built on their shared professional teaching base to find possible solutions to this learning problem. The group decided on a game of *Kahoot!*, an interactive quiz requiring smart phone technology and a projector. The idea was to teach pupils about concord in a motivating and fun way.

Once again, we see how the structured joint-lesson-planning of lesson study helps teachers refine ideas, and encourages them to believe that changes in their own teaching can help students learn.

4.1.1.2. Collaboration and an improved sense of community

Colin, a novice teacher, was the instructor in both the research lessons for LSG1 (he requested this himself). What was interesting was that when asked to express his experience of the research lesson, he used the pronouns 'our' and 'we' when talking about the lesson (I have put them in bold text):

> I experienced it just like a normal lesson. These were two classes who were used to having students in the classroom, so they didn't react to there being observers. I managed to stick to **our** lesson plan in both the lessons. When **we** taught the second lesson, **we** chose to give an extra supporting hand-out to the pupils with a recipe of how to write a fairytale. **We** did this so it would help the pupils get into the writing process quicker (Colin, reflection notes, 25.2.15).

This quote from Colin illustrates how the collaborative planning of the lesson has helped this novice teacher into the professional community, how LS can strengthen the 'social capital' and lead to an improved 'professional capital' (Fullan & Hargreaves, 2014).

4.1.1.3. Revision of lesson

Like other forms of action research, a strength of lesson study is the cyclic process that allows a repeated experience of the "same lesson." It gives the opportunity to try out conjectures and anticipations in the classroom and draw conclusions from observations. The two teams decided to revise the lessons in several ways before re-teaching them. LSG1 cut down the length of time spent on brainstorming pre-knowledge of fairy tales so that the students would have more time writing their own version. They compensated for the

brainstorming by giving the students a handout with terms and expressions. The decision was based on the observation that there were only a few students actively participating in the brainstorming session, whereas all students were active in the pair-writing activity. The handout built on previous knowledge taught in earlier classes. The revised lesson was taught and assessed, the prediction of greater student activity was proven correct.

> It was a little better, a bit.. the time planning was better, but it was a different group of pupils. The pupils had more time to write, which was good, and everyone spoke English aloud- we were really pleased about that (Marie, written reflection).

LSG2 revised the lesson by cutting out activities that they did not have time for in the first lesson. The comments made by Sarah when asked to express her experience of the post-lesson discussion and revised lesson stressed the dissatisfaction of not getting through everything in the lesson plan.

> There was a good tone in the group and it was easy to suggest edits. That things went so slowly was a weakness. We didn't get through the whole lesson plan and had to revise it. We had to cut out some activities and focus on just the one instead (Sarah, written reflection).

This indicates a focus on teachers' teaching rather than students' learning typical of novice teachers, even though Sarah is a teacher with many years' experience. The disappointment was possibly because they had so many good activities they wanted to try out, or maybe due to one of her suggestions being discarded. I did not interview her about this so I cannot say, but when asked about her overall experience of the process, Sarah writes: "To be able to observe the pupils without teaching at the same time has been a good learning experience for me. To see what they do and when they fall out. It was also good to exchange ideas and thoughts with other English teachers.*"* Therefore, it seems her focus ***does*** shift from the teacher's teaching to students' learning during the cycle of LS.

4.1.2 Affordance 2: Novice teachers- experienced teachers, symbiosis learning

Unlike mentoring, where the power balance between a mentor and mentee is asymmetrical (Mathisen, 2008), a novice teacher in a lesson study group has as much to contribute to the group as an experienced teacher. Recently out of teacher training, they are used to joint planning with peer students, and have learning theories and new research results fresh in their minds. Novice teachers are used to reflecting over practice, being observed by other teachers and are eager to sponge up the instructional ideas of experienced teachers. Ruth, a novice teacher in LSG2, was surprized by the lack of a collaborative professional culture at her school and wrote after the first joint-planning session, "Experienced teachers are not used to having to work together, and seem to be unsure of allowing others to observe their teaching."

After an initial phase of insecurity in the group, Ruth gradually contributed more as the group valued her novice's voice. Her written reflection texts showed a constructive criticism of the process, proving to be valuable research material illustrating both the barriers and affordances of the lesson study project. She wrote:

> As previously mentioned, I am pretty new in the game. Therefore, I'm very positive to being able to collaborate with colleagues on lesson planning, instruction, and reflection processes (it's normally me who's observed ;) (Ruth, written reflection).

Her novice enthusiasm, as shown in Ruth's statement below, no doubt infected the lesson study group, possibly strengthening its professionalization.

> I thought that it was very exciting, and informative. I am currently in the middle of my teacher training (PPU), and it has been very beneficial to see how experienced teachers plan a lesson and revise a lesson. It is also dearly welcome to see professional development and competency raising among colleagues put on the agenda of my future teaching practice (Ruth, written reflection).

What was also interesting was how the most experienced teacher in the group learnt from her younger colleagues how to set up a *Kahoot*.

> I had never done anything like this before, this was my first time. It was such fun! I could use this in my own classroom and have time for a proper following up to see how much they had learnt (Jill, written reflection).

Jill's statement also shows how participation in a lesson study can benefit teachers from all stages of teaching service, the power symmetry in the group encouraging a symbiotic learning effect of lesson study, where novice teachers can learn from experienced teachers and vice versa.

4.1.3 Affordance 3: Focus on how pupils learn

As I participated in the lesson study, I also reflected over my own participation, keeping logs after each stage, answering the same questions posed to tweak inquiry as the other participants. This helped build a gap between me, the researcher, and me, the 'native' (Postholm, 2010). When asked what part of lesson study had had the most positive effect on my own professional development, I wrote:

> Focusing on evidence of the pupil's learning! After 20 years of teaching, I was amazed to realize this was the first time I had really looked closely at how students react to instruction. I'm normally too busy teaching to notice if they're learning anything. Oh, you can see who's writing and who's peeking at their mobile, but it's so very hard to see if they're actually learning anything. Being the observer in a lesson study, with the observation focus on the pupils, not the teacher, was a real 'a-ha' experience (the researcher, written reflection).

When asked about the experience of observing the pupils, Peter, also in LSG1 wrote:

> Being an observer was interesting, mainly because I was concerned that I may be too focused on the teaching and lesson itself, rather than on how the students responded to the lesson and the final outcome. I felt I was able to get sufficient information to contribute to the group when we were to work on revisions (Peter, written reflection).

LSG2 also wrote positively about pupil observation. Sarah puts the difficulty of observing learning into words:

> Being so many observers in the classroom meant that we observed different things and saw more of what went on in the classroom. It was really good having so many teachers in at the same time. It was difficult to observe 'learning', apart from a couple of A-ha's and the enthusiasm around the game of Kahoot (Sarah, written reflection).

4.1.3.1. 'What does visible learning look like?'

John Hattie (2012), in his book *Visible learning for teachers. Maximizing impact on learning*, addresses this question. He offers no program, no single script, no workbook on how to implement visible learning; instead he offers a set of benchmarks that can be used to create debates, to seek evidence, and to self-review to determine whether a school is having a marked impact on all its students (Hattie, 2012:vii). Lesson study frees teachers from instruction (apart from the one leading the class) and gives the observing teachers a chance to look for evidence of visible learning, and, just as important, evidence of misunderstanding, confusion, different ways of approaching a problem, and lack of motivation. However, this type of observation is new to most teachers, as the comments above show. The participants in my study (myself included) lacked proficiency in this type of observation. Every lesson is different and every pupil is unique, so an achievable proficiency in this field needs both time and parameters. Ruth, one of the novice teachers, wrote:

> After the first research lesson, we had to recap the observer's role- were we passive or active observers? Remind each other about what a passive observer meant. We lacked coordination here, simply because we hadn't considered that the term could mean different things to each of us. Noted down many observations- but the foci for observation should have been clearer. Should have had clearer parameters, and divided them among us. It was in any case a lesson for next time (Ruth, written reflection).

Working with lesson study can contribute to teachers' scrutiny of how pupils learn and an improvement in teaching effectiveness, but as my study shows, observation of pupils' learning is a complex phenomenon.

Observation of what is spoken, written or acted; physical observation is only one way of scrutinizing what pupils learn. Asking the pupils for feedback on the lesson is another. Assessment for learning is not just about giving a student feedback on a product, or guiding them during a project; it is also about asking for feedback on instruction, listening to that feedback, and using it to adapt teaching to improve learning. Both lesson study groups had short interviews with groups of students after the research lesson. In retrospect, it is easy to see how important these conversations were, and that, as Peter states below; they should have been given more space in the lesson studies. A more critical assessment of the lesson might have surfaced if the students could answer anonymously. Nevertheless, the comments from pupils enforced teachers' efficacy and helped them see the impact they have.

> I talked to my pupils after the lesson, and they had enjoyed the lesson because it was different and was slower than normal. The pupils I spoke to had various answers to whether they had learnt anything or not (Sarah, written reflection).

> We spoke to the pupils after the lesson. They all said that they had a better understanding of concord and were pleased. We could see from the Kahoot scores that every pupil had improved their scores from the first to the second round of Kahoot (Anne, written reflection).

> A weakness would likely be that we weren't able to interview students in the first round, and only a few in the second. I think feedback from all students, both the weak and strong, would have been valuable (Peter, written reflection).

My study has shown that the LS method afforded a collaborative professional inquiry and sense of community. This 'inquiry stance' in a structured, LS setting, afforded professional learning for both novice and experienced teachers alike and shifted the participants' focus from teachers' teaching to pupils' learning.

4.2. Barriers

Many obstacles can prevent the LS method achieving its potential. Many hindrances can defer a LS cycle's success. I met some of those hindrances during the pilot project. The participants expressed resistance to the pilot project in different terms. I have divided the data material into sub-categories according to the obstacles mentioned by the participating teachers: 1) lack of managerial support; 2) teachers' lack of ownership; and 3) resistance to organizational culture change. I will describe these statements and then subjectively interpret their meaning as a barrier to LS.

4.2.1 Barrier 1: Lack of managerial support

The written reflections from the four participants from LSG2 express a frustration over the lack of support they received from their school leader. The four participants from LSG1 expressed the complete opposite.

Vivian Robinson, Professor of Education in Auckland, New Zealand, published a report in 2009, based on a meta study that underlined the impact school leaders have on student outcomes. "The big finding of the BES (Best Evidence Synthesis) is that when school leaders promote and/or participate in effective teacher professional learning this has twice the impact on student outcomes across a school than any other leadership activity." (Robinson, 2009)

LSG2 did not feel that their leaders promoted and/or participated in the LS cycle, they did not feel they had explicit managerial support. Explicit managerial support proved to be a critical factor in my study with the two lesson study groups experiencing different ranges of support from their school leaders and facilitator. LSG1 experienced full backing from their respective school leaders, and had a facilitator on-site (me), whereas the group members in LSG2 did not express the same support from their school leaders nor did they have a facilitator on-site.

Here are comments from the first group, LSG1, which exemplify their experience of managerial support:

> Support for the project was unproblematic. I received substitute teachers whenever needed without question, and interest in eventual feedback was expressed when the project was finished (Peter, written reflection).
>
> We received support from management in the form of freed time from other duties, substitute teachers so we could observe the parallel class and they were also interested in coming to observe our research lesson. So yes, I felt we had enough support from management (Colin, written reflection).
>
> We got substitute teachers when we asked for them, and we used the time allocated for the English network for planning. I think we would have got more time if we asked for it (Marie, written reflection).

Here are some comments from LSG2 indicating a different experience:

> We would have liked to have more time for lesson planning. They suggested that we could use the recess (!), but we were given after a while some of the communal time[7] on a couple of Wednesdays. But not enough really. We felt a split in the management's engagement on this (Sarah, written reflection).
>
> We were supported by management in so much as that we were given time to plan in one part of teacher communal time, 45 minutes in total. Two teachers were excused from inspection after the revised lesson, given a 12-13 minutes meeting to reflect and evaluate. This was too little and consequently, I felt that we did not have enough time to round off the project. It ebbed out at the end without a conclusion, and the group didn't: a) discuss what we had learnt during the process or b) discuss how we could use lesson study as a method in the future. A collaborative evaluation of the outcome and possible future practice was absent. ….A research project demands time, and gathering 6 teachers in the breaks is not good enough… This is time for interruptions, unexpected pupil issues and toilet visits! (Ruth, written reflection)

[7] Norwegian: *Fellestid.* This is the time at school without pupils, set aside for professional development and other administrative activities.

> We were given 45 minutes (by management) in addition to the time that we would have spent in the English teacher group. In addition, we used some of our own time and breaks (Jill, written reflection).

As I was facilitating the project, I feel a need to explain how the time needed for joint-planning and evaluation was freed. Both groups were given **the same amount of time** for necessary collaboration; six hours total (2x3hrs) split on two Wednesdays with a three week gap, were allocated to the cross-school network collaboration in the different disciplines. (The two lesson study groups would have had to meet up at the English network meeting if they were not participating in a lesson study). In addition, lesson study group 2 asked to leave early from the introductory session saying that they would make up for the time when they plan the lesson at their own school. I agreed, seeing as all six taught at the same school and two of the six teachers were absent due to illness. They promised to mail me the lesson plan as soon as it was ready. I informed the management at their school about the project, the time frame and asked for the deputy-head to follow it up. The deputy had also participated in the LS orientation course organized by the local authority with an external lecturer. Consequently, I (naively) believed that LSG2 would get the support they needed from management, and carry through the cycle without a facilitator on-site. In retrospect, this was a bad decision by me in my role as the project leader, but a good one for me in my role as researcher: It has given me the opportunity to enlighten the critical factor of managerial support and observe the different actions and motivation levels between the group with a facilitator and one without.

4.2.1.1 Need for a group leader / facilitator

Although, the criticism from the group members of LSG2 expresses a lack of managerial support during the process, I see absence of an on-site facilitator, a group leader who can gather the troops and keep the group focused, sticking to the LS protocol, is more to blame. There was no one to drag them away from their individual professional needs to the collective professional requirements of joint planning and assessment of the research lesson. I suspect that some of the time allocated to these collaborative tasks, gave way to pressing issues, so common in a teacher's workday. Ruth and Anne express the frustration over a lack of a group leader or on-site facilitator thus:

> In the first phase of planning, it would have been beneficial with some more guidance- preferably in connection with the first planning meeting (presence of someone who had done this before)….. (A negative experience was) that we didn't have a group leader. In a group of colleagues, it is difficult for one person to take responsibility and steer the other colleague's time. Consequently, we used a long time to get started (Ruth, written reflection).

> I would consider participating in another lesson study cycle, providing we had a facilitator with us in the beginning, and more time provided by the school's management (Anne, written reflection).

The experiences of LSG2 illustrate how lack of managerial support, both explicitly in the form of resources – substitute teachers, instruction materials, and permission to be excused from other duties- and implicitly in the form of proud words of encouragement in the teachers' lounge or participation in the research lesson, is a barrier preventing maximum achievement. The completion of a high-quality lesson study cycle needs support from management on many levels. However, I believe that the group's frustrations over the lack of support from their leaders would have been substantively less if they had had a facilitator on site. Consequently, I see the need for a facilitator or group leader with knowledge of LS as a key success factor.

4.2.2 Barrier 2: Teachers' lack of ownership – contrived collegiality?

Another barrier that can hinder a lesson study from reaching its maximum potential occurs when the participating teachers do not feel they 'own' the lesson study. Lesson study is a teacher-driven, teacher-directed and teacher-orientated system of research and development (Lewis & Hurd, 2011). If the teachers are placed in the study group without their consent this may lead to a lack of ownership and low level of motivation. When asked what the most negative aspect of the LS project was, Sarah wrote:

> That we don't feel an ownership of lesson studies itself, that we didn't get enough time at school or guidance from an expert, and that we didn't choose to participate, we were placed there- such that we weren't so very motivated. All this came 'on top of' everything else (Sarah, written reflection).

Anne explains her feeling of non-ownership as a voyeur role:

> Since I entered the project later than the others, (she was absent for the introduction meeting) I took on a kind of 'actress doing her part' role, I felt too little ownership of the project and the theme. The whole thing was more improvised than the method presumes. In addition, we hadn't discussed/ known enough about what we should focus on, what we should observe, what we expected, which parameters we could use to measure learning effect (Anne, written reflection).

Andy Hargreaves warns of the dark side of teacher collaboration in his book *Changing teachers, changing time* (1994). He describes a harmful 'contrived collaboration' that can arise under the following conditions (Hargreaves, 1994:195-196):

- Working together does not evolve spontaneously but results from administrative regulation.
- Teachers are required to work together to meet the mandates of others.
- Takes place at particular times in particular places.
- Control over purposes and regulation of time are designed to produce highly predictable outcomes.

The teachers in LSG2 were placed in the group by their school leader while they were on strike! There is a definite danger of contrived collegiality resulting from this administrative regulation. The reflection texts and videos indicate that contrived collegiality was evident in the start of the project, but genuine teacher collaboration grew as the teachers realized the value of their professional inquiry. LS outcomes were not 'highly predictable', in contrast the outcomes are often 'unintended', nor were the purposes controlled (bar reporting back to me which learning difficulties they had agreed to focus on and the targets for the lesson). Nevertheless, the reason that they were working together was partly for 'the mandate of others' as they knew they were participating in my study of lesson study. The fact that they had reported to me, written reflection texts and filmed the whole process must have contributed to a contrived collegiality, possibly detrimental to creating a genuine, sustainable collaborative culture.

On the other hand, the participating teachers favourably tell of the sharing of ideas and exchange of resources. The sharing of ideas denotes a collegiality built on professional respect and trust. Hargreaves (1994) explains that collaborative cultures in their most robust form "extend to joint work, mutual observation, and focused, reflective inquiry" (Hargreaves, 1994:204), which are also affordances of lesson study. Anne expresses this:

> The most positive thing I experienced was being able to spend time with competent colleagues, having time to reflect and plan lessons together. We can learn a lot from each other, and make each other better (Anne, written reflection).

How then, can this robust, sustainable collaborative culture be achieved without contriving collegiality to some degree? I shall discuss this in my next chapter.

4.2.3 Barrier 3: Resistance to change

Hargreaves and Fullan (2012) argue that resistance to change and professional development, and consequently teachers' learning, is caused by an emotional reaction to the loss of security, predictability and stability. They include the personal element in teachers' professional development. According to them, teachers need a commitment, a desire to change and improve their teaching. The lack of commitment to change among the participating teachers was especially evident when two new instruments of inquiry were introduced: the video camera and the reflection text.

4.2.3.1. Resistance to video

The resistance to using video was especially strong in the start of the project- five teachers dropped out, at least two gave specific reasons that they did not wish to be filmed. Despite that I specified that the video would only be used for my research, and would be deleted at the end of the study, and discretely filmed with an iPad placed in the corner, filming the discussions caused uneasiness in the beginning and may have restricted the openness in the dialogue.

Introducing a new concept of filming in the classroom interestingly caused two different reactions among the pupils in the class. Both groups informed guardians and pupils of the lesson study and video filming, but the reactions to the pupils were very different. In LSG1, the pupils were prepared for the lesson study with a letter sent home and one of the teachers went into the class prior to the research lesson to explain what was going to happen:

> I went into both classes and explained that they were the lucky classes who were going to be part of a lesson study. I explained that we would be observing how they react to the instruction, not the teacher, so that we could improve the lesson (Marie, written reflection).

Marie portrays an ownership of the research lesson. She presents the lesson study to the class attractively, emphasizing that the teachers are doing this to be better teachers. The pupils are not worried about being judged. This positive pupil preparation paved the way for an effective research lesson. The pupils hardly reacted at all to the video camera in the corner, nor to the silent observers wandering around with their notebooks.

The written reflection notes of the LSG2 told a very different story. Here, the pupils were actually scared of being filmed. Ruth writes "Many pupils were dreading a lesson they knew was going to be filmed. It was a bit scary to be observed by 5 teachers in addition to an instructor." Anne also comments on the same fear: "Some of the pupils thought it a bit strange, and were quieter than usual, but it went fine. Some of the pupils were frightened of being filmed and didn't like that at all"

4.2.3.2. Resistance to writing

I was surprized at the resistance to writing in both groups. I had to verify the reasoning behind my demands and literally nag my participants to write logs and reflection texts. However, when asked retrospectively how this went, most of the participants admitted that writing had been beneficial.

> I think that if you hadn't made us sit down and write while we were still in the group, then I would have just rushed a couple of lines when I got home. Making us write whilst still here meant that we had to put our thoughts into words and

> reflect over what we had learnt while it was still fresh in our minds (Peter, written reflection text).

The resistance to writing is evident in the logs and other texts that I did *not* receive. I asked to be sent reflection notes from all the participants. I received only 8 of 10. Only the 8 teachers who were physically present at the last meeting, actually wrote an evaluation reflection text. The two absent teachers never answered my mail requests.

4.3. Conclusion

The lack of commitment and consequent resistance to change was evident in all stages of the pilot project, but particularly in the beginning. The sub-category 'resistance' overlaps the previous two sub-categories 'lack of managerial support' and 'lack of teachers' ownership. There is evidence of resistance in the expressions about the lack of time given for collaboration and the reactions to being placed in the pilot study by their school leader. I will interpret these expressions of resistance more thoroughly in my next chapter when I present this as a reaction to 'top down' managerial control.

My study shows evidence of collaborative professional inquiry and sense of community. This 'inquiry stance' in a structured, LS setting, afforded professional learning for both novice and experienced teachers alike and shifted the participants' focus from teachers' teaching to pupils' learning.

In the next chapter, I shall discuss the findings of my study in light of the theories on teachers' professional learning and development presented in chapter 2.

Chapter 5: Presentation of findings in light of research and theory

I have described my case study of LS, how I collected my data material, observed the participants, analysed and interpreted the observations, the entire time trying to understand the phenomenon better. I have tried to identify and describe the ordinary activities in light of theories and the purpose of lesson study. However, there is a wealth of literature and recent research on the method of lesson study that can assist my understanding of the phenomenon, and to ignore these would be to reduce the value of my study. As my study is an *instrumental* case study (Stake, 1995, in Baxter & Jack, 2008), the case study in itself is secondary to the gaining of understanding of the phenomena lesson study. Consequently, I shall now present my findings in light of recently published research and theories and the recorded experiences of a school in Norway that has managed to implement LS successfully. I shall then make suggestions based on my study, the research and studies of others, about what the key factors of LS are, and what to consider if implementing LS as a classroom-based CPD in Norway.

5.1 Finding 1: LS afforded collaborative professional inquiry

A key principle and purpose of LS is the improvement of learning, both for pupils and teachers. My study has focused on the learning of teachers, but more specifically, teachers' learning about pupils' learning. I have looked at the LS method in itself, and how it is characterized and operationalized to achieve its purpose. The study has confirmed recent research (Dudley 2013) that describes how LS establishes learning through explicit and visible teachers' talk; through joint lesson planning and evaluation of lessons and pupils' learning.

The participants in my study testified to the sharing of ideas, to a mutual sharing of knowledge and resources about the teaching and learning of English. The finding of LS's affordance of collaborative professional inquiry is backed up by numerous other recent studies (Davies and Dunhill, 2008; Dudley, 2013; Lewis, Perry and Hurd, 2009; Pang, 2006; Sibbald, 2009; all found in Xu & Pedder, 2015).

Planned, focused social interaction among teachers is at the core of collaborative inquiry. According to Fullan and Hargreaves (2012): "Groups, teams, and communities are far more powerful than individuals when it comes to developing human capital" (Fullan & Hargreaves,

2012:300). Human capital is the talent and knowledge of the individual. Social capital is the interactions with peers in a group, in the relations between people. Human capital must be complemented by social capital. Teacher collaboration is essential for teachers' professional development and the maximization of professional capital. Fullan and Hargreaves conclude that "teachers teach better when they are given the chance to learn from each other*"* (ibid:3). The structure of LS, the bringing together of experienced teachers with all their combined pedagogical content knowledge (Shulman, 1986) in a pupil-learning-focused inquiry, affords teachers' learning.

Rietveld & Kieverstein (2014) define affordances as possibilities for action in an environment, where the affordances an environment offers to an animal are dependent on the skills the animal possesses. In my study, I define affordances as the possibilities LS offers to teachers, dependent on the skills, the personal and professional experiences the teacher possesses and the group relations. My study finds that LS affords teachers' learning. However, I argue that the affordances LS offers to the development of a professional learning community are dependent on the LS group's skills to communicate on a challenging level.

The LS method gives teachers a chance to observe pupils in a learning environment. It demands collecting data on what is observed, collectively reflecting on this data, and using this to either strengthen or transform practice. Nevertheless, the collective reflection in the form of teacher conversations does not necessarily lead to *new* knowledge about pupils' learning. Studies of teacher conversations show that there is a difference between what teachers *say* they do and what they actually *do* (Helstad, 2015). Their espoused theories, what they say they do, and their theories-in action, what they actually do, rarely concur (Argyris & Schön, 1974). The gap between espoused theories and theories-in-action is the scene for reflection. If the LS participants examine this gap, then genuine professional inquiry is affordable. Consequently, even though the LS model affords collaborative professional inquiry, teacher conversations might remain 'nice', non-challenging, and hence, not lead to professional development.

Earl and Timberley (2009) distinguish between *strong* and *weak* inquiry in professional communities. Strong inquiry is characterized by human relationships that are professionally challenging, built on trust and mutual respect, and balance between support and challenge. Recognizing the importance of evidence-informed conversations and their dependence on

human relationships, which are characterized by mutual respect and trust, is essential for a deep collaboration that holds possibilities for change (Day & Sachs, 2009, in Earl & Timperley, 2009).

5.2 Finding 2: The teacher collaboration in LS afforded the feeling of belonging to a professional learning community

The joint decision making, joint ownership and responsibility for teaching, essential characteristics of LS, were shown in my study to lead to a feeling of belonging to a professional community. This was made explicit by Colin's use of the plural personal pronouns 'we' and 'our'. Puchner and Taylor state "collaboration among teachers has been identified as one of the most important features of a school culture that fosters professional development, teacher satisfaction, teacher effectiveness and student achievement within a school" (Puchner & Taylor, 2006: 924, in Xu & Pedder, 2015).

Wenger's theory of Communities of Practice (1998) explains how communities of practice share ways of interacting and thinking, with mutual engagement an important guiding concept, representing a mode of belonging in social learning systems. Research suggests that it is a lack of a collegial work environment that leads teachers to leave the profession, more than any other factor, including salary (Brill & McCartney, 2008, in Lewis & Hurd, 2011). *Mutual engagement* in a professional learning community was expressed in the findings in my study.

My study does not reveal whether or not this affordance of sense of community is unique to LS, or whether other forms of teacher collaboration (subject group arenas, for example) would have had the same effect. Most probably, other forms of collaborative CPDs, such as peer coaching or communities of practice models would have a similar affordance. However, the operationalization of LS assumes a structure, an organized, focused arena that strives for a symmetrical power balance, such that all members in the group have equal worth. I believe that this character of LS encourages a sense of community.

5.3 Finding 3: LS afforded symbiotic professional learning for novice and experienced teachers

A basic premise of LS is that there is always more to learn about the practice of teaching. Teachers who aim to be professional should greet the opportunity to learn more about their own practice warmly. Teachers are encouraged to try out new teaching ideas in the search for new pedagogical content knowledge. Innovative lesson plans put experienced teachers on par with novice teachers as neither have tried out the lesson plan previously. Experienced teachers are able to admit that they do not have all the answers (Lewis & Hurd, 2011).

The novice and experienced teachers in my study collaborated in a consistent dialogue about pedagogy. Although the novice teachers in my study lacked the years of pedagogical experience their colleagues had, they met the groups with innovative teaching ideas (for example, Kahoot) and eagerly sponged up the pedagogical content knowledge shared by the more experienced teachers. The professional learning experience was symbiotic, both partners learned from each other.

Cajkler and Wood (2015) from the University of Leicester, UK, developed a LS model for a field project with student-teachers of geography and modern languages. They studied how LS could be used in initial teacher education (ITE). In their article, *Lesson Study in initial teacher education* (Cajkler & Wood, 2015), they describe how the principle achievement of LS in ITE is "the detailed and collaborative opportunity to explore the complex system of classroom-orientated processes" (Cajkler & Wood, 2015:120), what they identify as the 'pedagogic black box'. Further, they explain how the collaboration benefits both student-teachers and novice teachers*:*

> This box can remain partially or even wholly shut in individually-orientated teacher placements but is unlocked and opened for investigation by the focused collaboration of the community of teachers (expert and novice) in lesson studies. (Cajkler & Wood, 2015: 120)

Helen S. Timperley writes in the Mentor's Voice (2010) that novice teachers do not get the assistance they need to develop a teaching practice informed by research evidence of what works to improve students' learning and well-being.

> The challenge, therefore, is for mentors to fulfil a wider role that includes supporting novice teachers through the emotional roller coaster of learning to teach, while at the same time building the basis of a profession that engages with the growing research evidence of what works, to improve student learning and well-being as well as to support the adults who teach them. (Timperley, 2010:134)

Although my study did not aim to investigate mentor-novice roles, coincidently, both of the lesson study groups had novice teachers in them. The written reflection texts and videos show evidence of a type of mentoring that takes place in a lesson study group that focuses on the improvement of student learning. I found myself wondering if a new type of mentor role, a 'wider role' (Timperley, 2010) might be possible if both mentor and novice teacher partake in a lesson study with other experienced teachers.

The professional learning community offered by an effective, student learning focused lesson study, might weaken the pre-occupation with self and survival in the early stages of a teacher's development. The professional interaction of the mentor and the novice in a lesson study might well 'unpack the novice teacher's personal theories about what is effective and what is not', and simultaneously enlighten the mentor teacher's skilled development that benefits students (Dall'Alba and Sandberg, 2006, in Timperley, 2010). I do not suggest LS as a replacement for mentor-novice counselling, the one-to-one professional support is too important to mess with, but rather LS in addition to counselling. LS arena is an opportunity to open the pedagogic black box, a chance for teachers with any level of seniority to explore learning with their colleagues.

5.4 Finding 4: The pupil observation in LS afforded a shift of focus from teachers' teaching to pupils' learning

"The real journey of discovery lies not in seeking new landscapes but in having new eyes."-
Marcel Proust (1871-1922) (in Lewis & Hurd, 2011:57)

The research participants in my case study testament to the benefits of pupil observation that occurs when the lesson has been jointly planned and the focus is on pupils' learning. This shift of focus is often a 'revelation' for experienced teachers, as I felt during our first research lesson. I felt that I was seeing with new eyes. Xu and Pedder's international review points to twenty-one studies that show that LS participation helps in-service teachers or student

teachers to shift their focus from teaching to learning and develop greater awareness about learners and their needs (Andrew, 2011, Chassels and Melville, 2009; Davies & Dunhill, 2008; Lee, 2008;Norwich & Ylonen, 2013; Pang, 2006; Perry & Lewis, 2009; Roback et. Al, 2006; Rock & Wilson, 2005; all in Xu & Pedder, 2015). Why on earth has it taken so long to discover that we teachers have been looking the wrong way?

Observation of pupils' learning is made possible due to the freeing of one or more teachers who observe pupils in a classroom. This observation, and the collaborative inquiry around it, is at the core of the LS method. The data collection made during the research lesson forms the evidence for the post-lesson discussions and lesson revision. The conversations that are based on these data collections have a good chance of leading to change in instructional practice through genuine collaborative inquiry as Earl and Timperley argue below:

> "It is our contention that when educators engage in conversations about what evidence means, it sets the stage for new knowledge to emerge as the participants encounter new ideas or discover that ideas that they have held as "truth" do not hold up under scrutiny and they use the recognition as an opportunity to rethink what they know and what they do". (Earl & Timperley, 2009:2)

My study contributes to the growing evidence that LS affords a shift from teachers' teaching to pupils' learning, and the consequent 'measurable difference' in student achievement. Fullan and Hargreaves (2012) also emphasize the importance of inquiry into how students and pupils learn: "Patterns of interaction among teachers and between teachers and administrators that are focused on student learning make a large and measurable difference in student achievement and sustained improvement." Fullan and Hargreaves (2012: 304). Despite the large and measurable difference in student achievement and learning, a collaborative professional focus on how pupils learn needs a supportive leadership.

5.5 Finding 5: A sustainable, successful LS cycle benefits with a group leader and a supportive, strong leadership.

I have so far discussed the patterns of interaction among teachers and between teachers. I will now discuss the patterns of interaction between teachers and administration, between teachers

and their leaders, and the role of the group leader in LS. This final finding in my research needs to be discussed from an organizational aspect.

The barriers presented in my research findings, which I sub-categorized as: 1) lack of managerial support; 2) teachers' lack of ownership; and 3) resistance to organizational culture change, can partly be seen as a reaction to 'top down' control where leaders tell teachers what to do. This resistance can be actualized in a 'contrived collegiality' (Hargreaves, 1994) which will hinder LS from reaching its potential.

At its core, LS is a teacher-directed, teacher-driven, CPD model, focusing on student and teacher learning. In other words, it is 'bottom up' controlled: teachers decide which area of learning difficulty to study; how to teach; and what to adapt to improve pupils' learning. So in essence, it gives teachers a greater degree of autonomy than seminar-based, traditional professional development. So why was there so much resistance in my study?

At the start of the pilot project, lesson study was a completely new concept for all participants, myself included. I knew little about how to facilitate LS; most of my knowledge came from following the recipe given in Lewis & Hurd's book *Lesson Study, Step-by-Step* (2011). We followed the 'recipe', but like trying to follow an English baking recipe, Norwegian ingredients differ from English, Japanese or American ingredients, (when I first moved to Norway, it took many lead-like loaves of bread before I realized the difference between flours).

According to Hofstede's Organizational Culture Inventory (Hofstede, 2002, in Hatch, 2013:164-168) where he compares national work values, then any organizational change in a Japanese organization can be dictated to its workforce, whereas organizational change in a Norwegian organization will only be a success if the workforce accept and nurture it first. If we follow Hofstede's analysis, implementation of new ideas like a lesson study, should be *a bottom-up affair* in Norway and *a top-down affair* in Japan. Norwegian teachers will consequently react differently to English, American or Japanese teachers when placed in a lesson study and told to 'rise'.

The teachers in my study reacted to the 'top down' placement in the project. Ironically, the teachers were placed on the project while they were on strike - opposing national restrictions

on teachers' autonomy! I assume that their reaction to being told what to do by management caused a lack of ownership and a consequent lack of motivation in the starting phase of the project and led to LSG2's frustration about 'lack of managerial support'.

As mentioned in my research findings, the fact that LSG1 had a group leader and LSG2 did not, gave me the opportunity to observe the different actions and motivation levels between the group with an on-site facilitator and the one without. Both groups were initiated on the LS method, but LSG2 expressed frustration over the lack of an on-site facilitator.

The spirit of *hansei* (Japanese for critical self-reflection, pronounced "han-say*"*) - open, honest reflection focused on improvement of one's shortcomings- is a central value of lesson study (Lewis & Hurd, 2011). In Japan, research lessons by renowned teachers attract thousands of teachers in huge televised LS events. But even these teachers do not consider themselves as perfect teachers or their lessons as perfect lessons. Instead, they focus on what can be improved. The logic seems to be that their strengths do not need working on so why focus on them. Akihido Takahashi commented on being introduced as a "master teacher" at a US event as feeling strange. "In Japan, we think of teaching as something that cannot be mastered" (cited in Lewis & Hurd, 2011:98). This constant search for improvement cannot be taught. Teachers need to be internally motivated to improve their practice. It is impossible to transfer values during an introductory presentation of the model. Values are reflected in a culture's norms and artefacts (Schein, 1987). This open criticism of oneself, to admitting that your teaching can be better, is extremely complex and difficult, and yet, is at the heart of professional development. I argue that having a group leader throughout the first cycle who shares their own self-criticism, who can ask the right amount of challenging questions and knows when to be supportive, can motivate the other teachers and ensure the spirit of *hansei*.

My study supported the need for a leader who can lead both collaborative inquiry, and guide the group through LS protocol procedures, constantly maintaining a spirit of self-critical reflection for themselves and the group. This 'expert' would need knowledge about the LS method, the research and theory base, and aim to benefit the professional learning community. However, being an expert at LS is not simply about doing a few rounds of LS, or in my case, reading about it.

> Knowing how to do LS well doesn't just mean knowing the surface features like how to conduct, observe, and discuss a research lesson. It means being able to do these things in a way that builds team members' knowledge, instructional skill, and capacity to observe students, and doing it in such a way that everyone will want to **continue** to learn together through lesson study (Lewis & Hurd, 2011: 98).

Despite the difficulty of being a good LS facilitator, my study supports the benefits of a group leader, even if the person is not an LS expert. I argue that a humble group leader who knows the surface features of LS, a teacher who is eager to improve students' learning and their own practice, one who is open to improved ways of teaching, asks the right questions and doesn't have all the right answers, and respects their peers' professionalism, has an expert chance of leading a successful LS group.

However, the leadership required in a LS group should not be autocratic, as this would probably diminish mutual accountability of those involved. Wenger (1998) argues communities of practice strive for a power balance based on mutual accountability for a joint enterprise (Wenger, 1998:81). I argue that a LS group needs a 'guiding hand', an advisor, up to the point where the group can work towards professional development independently.

I also believe that a well-balanced team could achieve genuine collaborative inquiry leading to improved student learning without a group leader. Providing that there is a mutual professional respect and trust, mutual accountability for the joint enterprise and a belief that there is always more to learn about teaching, a motivated team could carry through a successful LS that benefitted the extended professional learning community of which they were a part. Nevertheless, expert or no expert, group leader or guiding hand, they cannot work alone. LS needs support from management on many levels.

An LS group needs time and room for collaboration. Teachers joint planning, collaborative inquiry and lesson observation requires organization beyond the power of a regular teacher. Ad hoc LS is virtually impossible. The school principal has to support this collaboration by allocating time in the workday, setting LS on the school's agenda and more. Robinson (2011) describes five dimensions of student-centered leadership- a leadership style that is centered on improving student learning. The five dimensions are inter-related and cannot be isolated,

however, Robinson ranks 'leading teacher learning and development' as the dimension with the largest impact on student outcomes (Robinson, 2011:9). Consequently, according to Robinson, organizing classroom-based CPD that focuses on students' learning, ought to be prioritized and supported by school principles. For example, principles should administer time for collaboration, allocate resources for substitute teachers, praise successful LS groups, and observe research lessons.

Leading teacher learning and development does not mean *forcing* teacher learning and development. "Positional authority is not the same as being autocratic" (Robinson, 2016). Learning cannot be forced, neither students' nor teachers' learning. The result would be a 'contrived collegiality' where teachers might pretend to do what the principle says, smile and carry on as before. Genuine collaborative professional development is a bottom up affair.

5.6 Which factors are key to a successful Lesson Study?

My case study based on two LS groups revealed some of the affordances and barriers to LS as a CPD. To expand my study of the phenomenon, I read about recent studies of LS from other countries (Dudley, 2013; Dudley, 2015; Xu & Pedder, 2015) and visited a school in Norway, Trollby School (pseudonym), which had been using LS as their CPD model for a few years. I interviewed the school principle together with two LS leading teachers. The interview and new research knowledge have widened my perspective about the organisational challenges involved in the implementation of LS and, together with my own study's findings, have helped me define some key factors for a successful lesson study:

- Supportive leadership
- Voluntary participation
- Jointly conceived, innovative lessons with clear targets addressing particular problems of learning
- Case pupils, predicted and actual learning outcomes
- Presentation to colleagues – passing on the knowledge

I shall now describe these key factors in more detail.

5.6.1 Supportive leadership

The school I visited, Trollby School, had advertised their use of LS on their school website. LS was a part of the annual pedagogical development program- it was on the agenda for everyone to see. A large part of the teacher-planning sessions at the start of the school year was allocated to LS. Teachers had been given time for LS collaboration in their work contracts. The school had five guidance counselors[8], each with a 20% reduced teaching position to cover their work with LS. The counselors each lead two LS groups per school year, consequently there were 10 LS groups during the school year. They participated in weekly strategy meetings with the school principal, informing him of the foci in the LS groups and together, they arranged plenum presentations. These activities are evidence of a strongly supportive leadership.

Haixan Xu and David Pedder carried out an international review of the published research on lesson study (Xu & Pedder, 2015). They found three studies that had investigated larger-scale LS practice and developed findings about key factors that are important for the sustainable and successful implementation of LS (Lim et al 2011; Perry & Lewis, 2009; and Saito et al 2012, in Xu & Pedder, 2015: 46-48). Lim et al's study from Singapore identified five critical conditions, four of which are related to support from leadership. "Teachers reported that when school leaders are convinced about LS, they will create favorable school conditions and mobilize resources to enable successful conduct of LS. The study also found that it is crucial to have teacher leaders who are prepared to take the initiative and drive LS activities" (Lim et al. 2011, in Xu & Pedder, 2015). Trollby School's principal had created favorable school conditions. The five guidance teachers took the initiative to drive LS activities.

5.6.2 Voluntary participation

Participation in the LS groups at Trollby School was voluntary. The method and reasons for its implementation were presented to the entire staff at the beginning of the year by the school principal and the five guidance counselors. One of the guidance counselors attested to the popularity of LS such: "We had teachers approach us this year because they felt overlooked

[8] Norwegian: Kollegaveiledere

and wondered when it would be their turn to take part in a LS*"* (LS counselor in interview 16.10.15).

It was important for the principal at Trollby School that the teachers participated voluntarily in a LS. "Yes it was very important to get teachers on the bandwagon. If this was forced, then there would be negative reactions" (interview principal, 16.10.15). Hargreaves warns against 'contrived collaboration' (Hargreaves, 1994) and forcing teachers to work together for the mandates of others. Based on this school's experience and the experiences of the participants in my study, I argue that voluntary participation in a LS is necessary for the mutual accountability of the outcome of improved pupil learning. Recent research indicates the sustainability of LS and its popularity over time, showing that there is absolutely no need to force participation on any individual teacher, as "the method sells itself" (guidance counselor interview 16.10.15)

5.6.3 Jointly conceived, innovative lessons with clear targets addressing particular problems of learning

A lesson study begins with a question. This is established after a review of the current state of the pupils, for example by looking at test results, pupil texts, periodic assessments, student surveys, pupil interviews or other gathered data. There is an overarching goal, which is linked to the school's vision. At Trollby School, the principal and team of guidance counselors decided the overarched goal for all the year's LS groups. The teachers however, agreed on a focus for pupils' learning and progress. They then jointly identify a teaching technique to develop or improve the agreed area of focus. It is then broken down into an achievable lesson, one with coherent aims and methods. This exemplifies a balance between teachers' autonomy and leadership control- the leadership set the overarching goal, the teachers decided the rest.

Although it might be tempting for an individual teacher to bring a well-used lesson plan to the group, there is more to be learned by all if there is plenty of innovation in the research lesson. When I asked the principal and LS advisors at Trollby School about whether they have seen any evidence of improved student outcomes, they spoke of two innovative methods that had transformed teachers' practice. One that had arisen from a LS in a Norwegian language group based on text modelling, and one from a science study on the use of expert students. According to my interviewees, both of these innovative lesson studies attributed to better

student outcomes (interview 16.10.15). Teachers here had dared to try out new techniques, or new aspects of previously used techniques, such that they could develop professionally. Risk-taking in a LS is not the same as experimenting as the risks taken are grounded in teachers' learning theories and the research lesson is a proving ground for those theories (Fujii, 2013).

The jointly planned research lesson requires a descriptive lesson plan which also specifies all coherent aims and methods. This encourages all the members of the group to be mutually accountable. Producing a high quality lesson plan for a research lesson demands quality collaborative inquiry. However, a successful lesson study does not necessarily mean a perfect revised lesson. As the guidance counselors at Trollby School attested, it is the process that is the goal, not the not the perfect lesson. "Yes, it is the process, all the time we spend together, we practice collaboration, we practice observation, we link lessons together…if we find an answer to the research question, or if it went a bit wrong…yes, well, it is still collaborative learning".

Dudley (2015) states that using case pupils to focus observation of pupils' reaction to instruction improves the quality of collaborative professional learning. Unfortunately, I did not ask Trollby School if they used case pupils in their lesson studies; however, there is growing evidence that this does improve the LS quality.

5.6.4 Case pupils, predicted and actual learning outcomes

'Case pupils' are pupils who have been identified by member of the Lesson Study group as archetypal members of learners groups within the class being taught. In many ways, they will typify the needs of a number of learners within a particular group and thus they can exemplify the barriers and solutions to learning which may also unlock learning for others within the class (Dudley, 2015). The LS groups in my study did not use case pupils. Even though most of the participants in my study expressed pupil observation positively, there were comments about the lack of focus in the pupil observations too.

In retrospect, I can see the inclusion of three case pupils, each case pupil typifying an academic achievement level or behaviour characteristics depending on the aim of the research lesson, would have improved the quality of collaborative inquiry in the post-discussion session. By discussing predicted learning outcomes and comparing these to actual learning

outcomes, we could have been more aware of the complex needs of each pupil. Dudley (2013) remarks that observing case pupils helped teachers in his study to 'remove the blinkers' that had restricted teachers seeing the needs of pupils. His study reports a positive experience of this: "However, they did not report feeling overwhelmed by this; they reported it as seeing with new eyes" (Dudley, 2013:119).

Focusing on case pupils also creates the opportunity to include these three or four pupils in the lesson assessment. Consulting with pupils about how to improve the lesson also gives a better insight into how pupils learn. Asking pupils to contribute to the lesson in this way may also improve their motivation for learning. This is assessment for learning on all levels- the pupils get a real chance to adapt the lesson such that they learn more; the teachers assess the pupils' comments and suggestions, learn more about how pupils' learn, and consequently improve the lessons. Dudley recommends strongly the use of case pupils in a LS. I can see his point.

5.6.5 Presentation to colleagues – passing on the knowledge

Trollby School had put LS on the school agenda. At the start of the year, the principal fronted a presentation of the method and organized the groups for the school year. At the end of the LS cycle, each group presented what they had learnt to the rest of their colleagues in a staff event. Inspired by the Japanese cultural aspect, presenting LS groups were awarded bottles of Saki (Japanese rice wine) as a prize. The lesson plans and power point presentations were shared on the school's digital learning platform such that all teachers had access to the material. Colleagues were encouraged to ask critical questions during these presentations. The presentation to colleagues of the LS by the group has many benefits: it spreads pedagogical content knowledge including tacit knowledge; de-mystifies the method; and passes it on so that others can use the knowledge and insights gained in their own classrooms.

Another way of 'passing on' the insights gained is by inviting colleagues in to observe the research lesson. There are many variations on these invitations and they range from an ad hoc 'pop in and come see' approach to the televised research lessons with post-discussion panels, common in Japan. Teachers at Trollby School were encouraged to visit other research lessons as a number of hours of colleague observation had been baked into their work contracts, yet another example of how the leadership at Trollby explicitly supported LS as a model for CPD.

Dudley's research pointed to two spin offs relating to the passing on of insights: 1) teachers who plan their lesson studies in the knowledge that they will be presenting their findings to peers consciously 'raise their game', they are more ambitious, and more accountable to peers; but also, an alternative effect can occur: teachers are made nervous by the idea of presentation to peers and consequently 'safe it', fixing ingrained practice more permanently in their subsequent teaching (Dudley, 2013, in Dudley, 2015: 20). The school I visited had solved this challenge by making the leading teachers responsible for the presentation; any participation from the other LS members at the plenum presentation was voluntary.

The lesson study groups in my study did not have presentations for their school staff and colleagues on the insights they had gained. This was a pilot study and there was not given any space for a presentation. However, the 'passing on' of the insights takes place through this thesis you are reading.

5.7 Chapter 5 - conclusion

Timperley's study revealed an effective professional development with improved student outcomes when school leaders did one or more of the following:

- ✓ Actively organised a supportive environment to promote professional learning opportunities and the implementation of new practices in classrooms;
- ✓ Focused on developing a learning culture within the school and were learners along with the teachers;
- ✓ Provided alternative visions and targets for student outcomes and monitored whether these were met;
- ✓ Created the conditions for distributing leadership by developing the leadership of others. (Timperley et.al, 2007)

The impression I got of the principal at Trollby School, was of a principal who fulfilled all of the active school leader conditions mentioned above. The interviewees suggested practical ways that Norwegian schools could implement Lesson Study as a model for CPD. Such an implementation would require commitment from school leaders and a belief in the model as a tool to improving student outcomes.

The pilot project I led with two lesson study groups each completing a cycle was not as effective as it could have been if all the key factors had been present. It is reasonable to assume that the success of the LS groups would have been greater if both groups had an on-site group leader; the observation foci were targeted at three case pupils; the groups presented their research to their respective schools, with explicit support from their principals, and LSG2 members had chosen to partake in the study themselves. Nevertheless, my study has shown the powerful potential of the method as a classroom-based CPD, and highlighted some of the hindrances that can occur if one or more of the key factors are absent. I shall now discuss the implications of my findings and answer my main research question: How could lesson study contribute to collaborative professional learning in Norwegian schools?

Chapter 6: Concluding discussion

6.1 Introduction

This study set out to examine the phenomenon lesson study and consider the model's suitability in a Norwegian setting. In particular, I sought to answer the following research questions:

- How could Lesson Study contribute to collaborative professional learning in Norwegian schools?
- What are the affordances and barriers of Lesson Study?
- What are the challenges to enacting Lesson Study with Norwegian teachers?

The case study proved to be a suitable methodology for studying the phenomenon. Nevertheless, the study was strengthened by bringing in many other studies of the phenomenon lesson study and theories about teachers' professional development. This was, according to Stake (1995), an instrumental approach to a case study and arguably appropriate due to the multiple roles I had during the study as facilitator, participant and researcher.

6.2 Summary of findings

The findings in my case study showed that LS contributed to collaborative professional learning to a certain degree; however, barriers hindered the model reaching its full transformative potential. In the previous chapters, I have explained how my case study showed that LS afforded collaborative professional inquiry, the feeling of belonging to a professional learning community, symbiotic professional learning for novice and experienced teachers and a shift of focus from teachers' teaching to pupils' learning. The barriers preventing the model from reaching its full potential were shown in my study to be lack of managerial support and lack of ownership.

My study has examined LS as a model of continuing professional development (CPD). Lesson study is a classroom based, collaborative CPD model that focuses on student and pupil learning. It affords teacher learning and has the potential to spread tacit knowledge. Lesson study is not the only classroom based CPD- there are many variations on this collaborative, cyclical, action research model. However, LS provides a rigorous framework, a scaffolding

from which teachers can examine pupils' learning and their own practice. It is the collection of data about pupils' learning and the consecutive collaborative inquiry around this data that makes LS slightly different from other CPD models.

The freeing of teachers from instruction such that they can observe how pupils react to a lesson that they have planned jointly with colleagues sets the stage for a deeper collaborative inquiry focused on how pupils learn. Tacit knowledge is revealed in teachers' talk. Collective observation and the follow-up collaborative inquiry distinguishes lesson study from other collaborative CPDs. **"**It may be that LS's ability to conjure up and make accessible tacit knowledge so effectively is what sets it apart from much other collaborative teacher learning and enquiry models" (Dudley, 2013:22). The finding in my study that LS afforded a shift from teachers' teaching to pupils' learning is supported by much research in recent years (Norwich & Ylonen, 2013; Pang, 2006; Perry & Lewis, 2009;in Xu & Pedder, 2015). My study suggests that the focus on pupil learning in a collaborative setting is possibly what gives the LS model the potential to be transformative (Kennedy, 2014), improving the quality of classroom teaching and pupil learning.

There were many frustrations expressed about the lack of managerial support in my study. Both my study and other recent studies of LS identify strong leadership support to create favourable conditions for teachers to implement and sustain LS practice as a key factor for a successful LS (Meng & Aam, 2011; Saito et al, 2006; Saito et al, 2008; Ylonen & Norwich, 2012; in Xu & Pedder, 2015). There is a great deal of administration involved in the planning of a LS and this needs to be done with a close involvement of the school leader. Symbolic support was also shown to be desirable.

Nevertheless, the control of the group needs to seem bottom-up, rather than top-down, especially so in a Norwegian setting. The organizational culture in Norway based on democratic values and teachers' need for autonomy was expressed in my study in the lack of ownership felt by the participants who had been placed in the LS group without their consultation. Their resistance became a barrier for LS.

6.3 Implications

As Eirik Irgens put it, professional learning in Norway must build on Norwegian values:

> Learning cannot be controlled, but it can be facilitated for via management's control and facilitation. However, to cry out for more managerial control in schools is as ignorant and mistaken as digging oneself down into professional trenches. Instead, it must build on the best of the Scandinavian work traditions: democracy, dialogue, mutual respect and a communal commitment to make the school better. (Irgens, 2012, translated by author).

A student centred leadership does not involve forcing teachers to collaborate, but rather create the favourable conditions needed for collaborative inquiry and professional development. Participation in a LS cycle should not be forced, but an implementation of LS as the chosen CPD model cannot be left to teachers to take up or not. If the process is purely voluntary, then pressing everyday problems may well be prioritized over long-term professional development. Effective professional learning is a powerful lever for getting the kind of change that can enhance pupil learning. LS has the potential to nurture effective professional learning providing there is strong policy support and professional determination (Timperley, 2007). Student centered leadership (Robinson, 2011) that leads teacher learning and development, where leadership provides the framework for participation in LS groups, presenting it as an attractive, hands-on learning experience, should improve the quality of a LS, and consequently, improve collaborative teacher practice and student outcomes.

6.4 Recommendations for further study

There are many studies underway on lesson studies, learning studies and other forms of collaborative CPDs. However, in the two years that I have been working on this paper, I have not found any studies specifically about the role of the facilitator in a lesson study. Neither have I found studies about an extended mentor role and its implications. Further studies on the power balances within a LS group might increase the quality of the LS.

In Japan, where LS is well established, it has been central to the evolution of national curricula (Kuno, 2015). The new White Paper and planned new curricula call for a greater level of professional specialization and simultaneously, a greater focus on the building of basic skills (reading, writing, numeracy, oral competency and digital competency). Kuno argues that the linkage between knowledge of the curricular content and knowledge of how children learn it best helps the Japanese school curriculum to act as a *springboard* into wider,

deeper, and more independent and collaborative learning for students- beyond school and beyond self. He further argues that for this to work effectively the school system is required to be constantly alert to the knowledge about pupil learning that is being discovered on a daily basis throughout its schools. (Kuro, 2015: 130). Might lesson study be a springboard for Norwegian children too? Might LS be a suitable method to deal with these new curricula challenges? Further study on the way LS breaks down national curricula competencies to local learning targets in order to adapt to children's learning needs would be helpful to determine whether LS could be used to interpret curricula. We teachers need to focus more on how our pupils learn and alert education policy makers of the adaptations we make to the national curricula on our pupils' behalf.

More study needs to be made into the quality aspects of collaborative inquiry. Quality can be reduced if the organization lacks a professional collaborative culture. Fear, envy and suspicion in a culture of surveillance can create tensions or conflict, detrimental to professional growth. In this case, it is unlikely that lesson study would have any better chance of success than any other collaborative CPD model. The fossilisation of classroom and school cultures creates also significant challenge. Studies of organizational cultures and the conditions best fit for professional transformation might contribute to questions about how best implement LS and whether LS is the most suitable CPD to implement in a particular setting.

Dudley's study of teacher learning in lesson study (Dudley, 2013) revealed how teachers' discourse interactions on vivid data from research lessons unveiled tacit knowledge. I believe that more research about how teachers 'talk' could reveal how LS can be used to delve even deeper into learning.

6.5 Conclusion

The unrelenting focus on educational change has taken a new form in recent years as theories emerge from a growing evidence base. Education policy and practice are now linked to research. Schools are organisations whose central task is learning. Teachers and leaders must continually strive to improve their own and their pupils' learning. The growing evidence base on how pupils and teachers learn can assist teachers and leaders in their struggle to prepare pupils for a future whose form we can only guess. The unfathomably complex question of

how pupils learn is increasingly being addressed in the classroom through professional inquiry. Individual professional inquiry is less effective than collaborative inquiry (Fullan & Hargreaves, 2012; Irgens, 2012; Stigler & Hiebert, 2009; Wenger, 1998). An effective professional inquiry that has the greatest chance of improving student outcomes demands a constant, committed collaboration targeted at pupils' learning and development (Timperley et al, 2007).

One thing all models of professional inquiry have in common is that they all provide the frame, not the whole picture. Student outcomes and transformations in teaching practice depend on the quality of the CPD model. Lesson Study is consequently dependent on the key factors that help it achieve its potential.

Lesson study is teacher directed and, as such, a platform for practitioners to learn from and about their practice. However, LS is a form of action research also, where evidence from the enactment of lessons is the basis for observations and further development. This requires not only systematic inquiry and reflection- for LS to be powerful; a critical lens is needed in the process as well (Fernandez et al, 2003).

David Pedder (2015) also warns of the dangers involved when teachers are not open to a wider range of understandings about their own, and their pupils' learning. "Teachers are routinely bound up in its (LS) promotion and practice, but not always critically so" (Pedder, 2015:146). He goes on to say that if teachers do not critically reflect what 'learning' is, then "there is a risk that 'learning' is pared down to a set of overriding purposes that define 'learning' in terms of outcomes and attainments" (ibid:147). In other words, focus on results, standards, and national tests can be detrimental to the depth of learning in the LS group. Focusing on results can restrain a deeper understanding of learning, restricting how these might inform teachers' practice and collaboration in future LS cycles.

The new White Paper calls for on-site, teacher collaboration in the analysis and interpretation of the upcoming curricula. The paper states that school-based competency development seems to have the best effect when it is facilitated for through collaborative knowledge sharing. Consequently, the paper states that the facilitation of school-based processes is the most important measure for competency development when the new national curricula are implemented by schools. School leadership is responsible for this facilitation (Meld. til St.

28:72). The quality of instruction and classroom development is dependent on a collective interpretation of the new curricula. One way of collectively breaking down these curricula is through the use of lesson study. The competency aims in the national curricula need to be broken down to learning targets for the lesson. The inquiry stance required in LS might give teachers a wider understanding of the competency aims and a better understanding of how to teach pupils such that they achieve those competencies. Lesson Study could contribute to collaborative professional learning in Norwegian schools providing the key factors are present and teachers keep a critical stance. Without a critical approach, the improvement to student outcomes will be limited and the lesson study will not reach its potential of transforming professional practice.

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Appendix 1

Questions for reflection and evaluation of own professional learning from participation in a lesson study (English translation)

1. Lesson planning

Describe your own contribution I this first phase. How did the group decide on the targets for the LS? Did you share ideas with the others? Did you get new ideas from the others?

How did you choose the research lesson? Which lesson, grade, class and why?

How was the process of planning the pedagogical content? Did you have lesson targets? Learning targets? Were the pupils made clear of these targets?

How were the pupils prepared for the research lesson?

How did you decide the time frame?

Did you receive enough support from the school leadership? Explain.

2. Experience of the research lesson

How did the class react to the observing teachers and video camera?

Answer the following questions depending on which role you had during the research lesson. A) Instructor, B) Observer:

A) What was it like being a teacher in a room with so many other teachers present?

Did you manage to carry out the exact lesson that the group had agreed on? Did you change any of the instructions and in which case why?

B) How did you keep focused on the observation focus point your group had agreed on?

How was being a passive observer? Did you note enough relevant observations?

3. Post-lesson experience

Did you interview any pupils? If so, what did they tell you?

What was the atmosphere like in the group after the research lesson? Could everyone contribute with relevant observation data? Did everyone agree on what had worked well in the lesson how the pupils had reacted to the instruction? Did you see any evidence of learning?

What type of weaknesses were discovered? What revisions were suggested? Did you feel that it was ok to suggest revisions to the group?

4. Experience of the revised research lesson and consequent post-lesson discussion.

What was it like to carry out a revised lesson? Were there any surprizes? What did you discuss afterwards?

What have you written down in the course of the process? Logs? Observation notes? Lesson plans? Reflection notes?

5. Evaluation of the process

When you look back at the whole process, what has had a positive impact on your own professional development?

Did anything surprize you?

What has been the most negative thing you have experienced?

Would you consider participating in a new round of lesson study? On what conditions?

Appendix 2: Introduction to LS Power point presentation pdf

Appendix 2: NSD acceptance pdf