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Teacher education and school-based distance learning:

Individual and systemic development

in schools and a teacher education programme

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Enginn slítur þau bönd,

    sem hann er bundinn heimahögum sínum. Móðir þín

    fylgir þér á götu, er þú leggur af stað út í heiminn,

    en þorpið fer með þér alla leið.

<div align="right">

Úr *Þorpinu* eftir Jón úr Vör

</div>

Nobody tears those bonds,

    which bind him to his roots. Your mother

    takes you to the street, when you start out in the world,

    but your village travels with you along the entire road.

<div align="right">

From *The Village* by Jón úr Vör
English translation: Marshall Brement

</div>

ÁGRIP

Ritgerðin fjallar um kennaramenntun í fjarnámi og kennaranema sem búa á landsbyggðinni og kenna í grunnskólum þar samhliða kennaranámi. Vettvangur rannsóknarinnar var annars vegar fjarnám við Kennaraháskóla Íslands þar sem fylgst var með háskólanámi kennaranema og hins vegar strandhérað þar sem lengi hafði verið kennaraskortur en þar var fylgst með kennaranemum í skólum. Tilgangur rannsóknarinnar er að varpa ljósi hvernig möguleikar kennaranema til náms og þróunar tengist annars vegar skólunum þar sem þeir kenna og hins vegar fjarnáminu. Ég kanna hvernig kennarnemar læra annars vegar starfið á vinnustað sínum og hins vegar hvernig þeir læra að vera námsmenn og þátttakendur í fjarnáminu. Einnig eru skoðaðir þeir möguleikar sem opnast með fjarnáminu fyrir kerfisþróun sem felst í samspili skólanna og kennaramenntunarstofnunar á háskólastigi.

Byggt er á *menningarsögulegri starfsemiskenningu* sem kenningalegum grundvelli rannsóknarinnar. Kannað er hvernig kennaranemar fara á milli starfsemiskerfa til að athuga hvernig þeir kennaranemar sem starfa í skóla samhliða fjarnáminu hafa stuðning af kennslustarfinu í náminu og á sama hátt hvernig þeir hafa stuðning af fjarnáminu í kennslu sinni. Starfssemiskenningin almennt og sérstaklega *kenningin um víkkað nám* innan hennar gefur mér heildarramma sem nýtist annars vegar til að mynda og túlka gögn og hins vegar fyrir annars konar skilning á alhæfingarhugtakinu í rannsóknum sem tengist því hvernig niðurstöður rannsókna eru notaðar og sannreyndar með starfsfólki á vinnustöðum. Móthverfugreining, aðferð sem þróuð hefur verið undir merkjum kenningarinnar um víkkað nám, er notuð til að greina nám einstaklinga í samhengi bæði við aðstæður í skólunum þar sem þeir kenna og í fjarnáminu þar sem þeir eru nemendur

Rannsóknarspurningarnar snúast um einstaklingsþróun og kerfisþróun. Rannsóknin er gerð til að leiða í ljós *svæði mögulegrar þróunar* fyrir kennarnema út frá aðstæðum í skólunum annars vegar og í fjarnáminu hins vegar. Einnig er spurt hverjir séu þróunarmöguleikar í skólunum og háskólanum sem stofnunum og niðurstöðurnar varpa ljósi á möguleika fyrir þróun stofnanatengsla milli þeirra.

Aðferðin sem notuð var til að afla og mynda gögn byggðist á etnógrafíu. Þrír kennaranemar í þremur skólum voru valdir sem sérstök tilvik sem voru rannsökuð í þaula. Sex til sjö viðtöl voru tekin við hvern þeirra á meðan vettvangsvinnan stóð yfir og eru þau meginuppistaða rannsóknargagnanna. Til viðbótar var fylgst með þremur fjarnámskeiðum á netinu og gerði vettvangsathuganir í nokkrum staðlotum þeim tengdum. Námskeiðin voru valin út frá því að einn af þremur aðalþátttakendum í rannsókninni væri skráður í hvert þeirra og í viðtölum við þá kom fram þeirra sjónarhorn á þróun náms og kennslu í fjarnáminu.

Með því að greina samspil einstaklingsþróunar og stofnanaþróunar er varpað ljósi á hvernig möguleikar til að læra að vera kennari tengjast bæði skólaþróun í grunnskólunum og þróun fjarnámsins. Möguleikar kennaranema til náms, þ.e. svæði mögulegrar þróunar fyrir þá, er í senn háð kerfisþóun í skólunum þar sem þeir kenna og í fjarnáminu í háskólanum þar sem þeir stunda nám.

Þátttaka í fjarnáminu getur verið bæði hvetjandi og styðjandi fyrir kennslu kennaranemanna. En hvernig þeir gátu nýtt sér fjarnámið til stuðnings í kennslu fer eftir aðstæðum í skólunum þar sem þeir kenndu. Niðurstöðurnar gefa vísbendingu um að til þess að styrkja námsferli kennaranema í skólunum sé almennt þörf fyrir þróunarvinnu í þeim skólum þar sem þeir kenna á meðan þeir eru í fjarnáminu.

Í samfélagi fjarnemanna skipti möguleiki til félagslegra samskipta miklu máli. Til að læra að vera þátttakandi í fjarnámi reyndist mjög áríðandi að læra að biðja um hjálp, þiggja hjálp og læra að vera hjálpsamur við aðra. Fjarnemar almennt, og þeir sem kenna í skólum samhliða náminu sérstaklega, eru öðruvísi viðfang í kennaramenntun en hefðbundnir kennaranemar sem læra til starfa áður en þeir byrja að kenna. Taki kennaramenntunarstofnunin ekki mið af þessu veldur það truflun í námi fjarnema og stendur í vegi fyrir þróun fjarnámsins.

Aðferðafræðin sem kenningin um víkkað nám leggur til gerir ráð fyrir að niðurstöður rannsókna gagnist til að móta hugtök og tilgátur sem nota megi í þróunarvinnu. Hér á það við um þróun starfs í skólum með þátttöku skólastjórnenda, kennara, kennaranema og nemenda sem og þróun fjarnáms með þátttöku stjórnenda í háskólanum, háskólakennara og kennaranema, svo og við þróun samstarfs skóla og háskóla á stofnanagrunni.

Niðurstöður benda til þess að mótun framtíðarsýnar sé mikilvæg til að stýra skólaþróun. Fyrir kennaranema sem eru að læra að vera kennarar í skólum er framtíðarsýn á líf nemenda mikilvægur hvati til að átta sig á hlutverki kennara og skóla í menntun barna. Þróun slíkrar framtíðarsýnar sprettur fram úr reynslunni af því að vera kennari, *veita nemendum athygli* og leitast við að koma til móts við mismunandi þarfir þeirra. Varðandi þróun fjarnámsins í kennaramenntun er lykilatriði að upplifa þörfina fyrir að *þiggja hjálp og bregðast við þörfum annarra* í samfélagi fjarnemanna. Kennsluaðferðir sem byggja á samvinnu styrkja næmi fyrir gildi samhjálpar í samfélagi fjarnema. Mikilvægt er að víkka áhersluna á ábyrgð, þannig að til viðbótar við einstaklingsábyrgð sé lögð áhersla á *samábyrgð* og niðurstöður rannsóknarinnar beina athyglinni að ábyrgð skólanna og háskólans sem stofnana.

Óhefðbundið form kennaramenntunar þar sem námið á sér stað samhliða í skólum og kennaraháskóla gefur tilefni til að kanna sameiginlegt viðfangsefni þessara stofnana sem varðar miklu fyrir þróun samstarfs skóla almennt og þeirra háskóla sem bjóða kennaramenntun. Kennaramenntun er í senn akademískt og starfstengt nám þar sem bæði háskólar og skólar gegna mikilvægu hlutverki. Þar af leiðandi þarf háskólinn að viðurkenna mikilvægi skólanna í kennaranámi og á sama hátt þurfa skólarnir að læra að meta gildi þess fyrir skólaþróun að kennaramenntun verði hluti af starfsemi þeirra.

Meginniðurstaða ritgerðarinnar er að kennaramenntun þarf að þróa á grundvelli stofnana-samvinnu á milli grunnskóla og háskóla. Til þess að slíkt samstarf beri árangur þarf í senn að beina sjónum að *einstaklingsábyrgð* og *samábyrgð* bæði í hópi kennaranema og háskólakennara svo og að *sameiginlegri stofnanaábyrgð* bæði grunnskóla og háskóla.

Gildi rannsóknarinnar er tvíþætt: Annars vegar er hægt að nýta niðurstöðurnar nú þegar til að þróa fjarnámið sem óhefðbundinn valkost með samvinnu grunnskólanna og kennaradeildar háskólans. Hins vegar er hægt að taka upp aðferðafræðina sem gengið er út frá í ritgerðinni og nota hana í annarri þróunarvinnu þar sem samvinna sem tengist sameiginlegu viðfangsefni vinnustaða og háskóla er nauðsynleg.

ABSTRACT

The thesis is about teacher education in a distance programme and student teachers who live in rural Iceland and work in schools. A coastal region in rural Iceland that has long suffered from a shortage of qualified teachers was selected as the site for studying schools and school-based student teachers. The distance programme for compulsory school teachers in the Iceland University of Education was chosen as the teacher education programme. The aim of the research is to reveal the possibilities for learning and development for student teachers in relation to their schools and to the programme. I explore how student teachers develop their practice as individuals in their workplace and how they learn to participate as students in the programme. Possibilities for system development inherent in the interaction of the schools and the teacher education programme are also explored.

Cultural-historical activity theory is used as the theoretical framework in this study. Boundary crossing between activity systems is explored in order to find out whether school-based student teachers in the distance programme find support for from schools learning and from the programme for teaching. Activity theory in general and expansive learning theory in particular provide a comprehensive framework for generating and interpreting data, an alternative understanding of what generalization means and how the results obtained from using this framework can be used with practitioners in workplaces. Contradiction analysis, a method developed within the framework of the expansive learning theory, has been used to analyse the development of individuals in the context of the schools and of the distance programme.

The research questions focus on individual and system level development. The research is done to reveal the *zone of proximal development* for individual student teachers in the context of the schools, for student teachers in relation to the distance programme, and for the schools and the programme as institutions and for their inter-organisational relationship.

An ethnographic approach was used for accessing and generating data. Three student teachers in three schools were chosen as specific cases for further study and six or seven interviews with them during the time of fieldwork make up much of the data. I also monitored three online courses in the distance programme and attended several face-to-face on-campus sessions for observation. Each of the three main participants took part in one of the courses I studied and were interviewed to gain their perspective on the courses.

The analysis reveals how developmental possibilities of individuals and groups were intertwined with developments of the systems in which they participate. The possibilities for development of the student teachers i.e. their *zone of proximal development*, are dependent on system development in the schools and in the programme.

Participation in the teacher education programme could be both inspiring and supportive for the work of the students as teachers. The way in which the student teachers could use the programme as support for their work as teachers depended however on the conditions in the schools where they were employed. My results indicate that to support the learning trajectories of student teachers better in their home schools there is in general a need for developmental work in the schools in which they are situated.

In the community of the distance learners the affordances of social mediation were imperative. In learning to participate in the programme it was of crucial importance to learn to ask for help, receive help and learn to be helpful to others. The lack of a system level response

to distance student teachers in general and to school-based student teachers in particular, as a changed object in teacher education, caused disruptions and tensions, disturbing student teachers' learning and hindering programme development.

When using the methodology of expansive learning research findings are expected to be useful in providing concepts and hypotheses that may be used in development work. This includes the development of practice in schools among school leaders, teachers, student teachers and pupils; in the university programme among programme leaders, university lecturers and students and in school-university collaboration between institutions.

The findings suggest that the formation of visionary models for directing school development is important. For student teachers who are learning to be teachers in schools it is important to have a future vision of pupils' lives as a motive when recognising the role of teachers and schools in educating children. Development of such a future vision emerges from the experience of being a teacher, *paying attention to pupils* and striving to respond to their different needs. As for developing practice in university-based teacher education the key issue is to experience the need to *be responsive to the needs of others and receive help from others* in the community of the programme. Teaching methods based on collaboration support this kind of sensitivity. Expanding the focus on individual responsibility so that it embraces collective responsibility is important and the findings call attention to system level responsibility of the schools and the university as institutions.

An alternative form for teacher education, where learning occurs simultaneously in schools and in university, opens up an opportunity for exploring a shared object that is of value for developing school-university partnership. The results reveal how teacher education incorporates both academic and practical learning in which both the university and the schools have a role to play. As a result the university should recognize the importance of schools with regard to student teachers learning to be teachers. In the same way the schools should appreciate the value for school development of including the education of teachers in their activities.

A hypothesis to be worked with in inter-organisational developmental work is that in order to develop the practice of compulsory schools and the practice of the university providing teacher education, as interacting activity systems, *individual* and *collective responsibility* of students and lecturers and *system level responsibility* of the university and the schools as institutions is needed.

The value of this research is twofold. On the one hand the findings may be used immediately in the development of the alternative model in school-university partnership. On the other hand the methodology can be adopted for use in other developmental work where collaboration on a shared object between workplaces and universities is essential.

I would like to dedicate my thesis to the memory of my beloved sister, Margrét Vallý Jóhannsdóttir, who died in her prime in 2006. She devoted her professional life to preschools and to the care of young children.

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CHAPTER 1: INTRODUCTION

1.1 My origin and a short story of my educational journey

I was born and brought up in a small fishing village in the north coast of Iceland in the middle of the twentieth century. At that time fisheries were being industrialised and with a better economy the population of the town was increasing. The community had ambitions for running a good compulsory school for educating their children and youngsters and was keen on hiring qualified teachers. When I was little I wanted to become a teacher. Teacher education was at that time on a college level and could be entered when compulsory school had been finished at age of sixteen. Since the only teacher college was situated in Reykjavík and did not offer a boarding house I continued my studies in a general college or grammar school in a nearby town in the north after finishing compulsory school. After four years there I went to Reykjavík to study at the University of Iceland where I graduated with B.A. degree in Icelandic language and literature with sociology as a second subject. To get teacher certification in lower and upper secondary schools students were expected to take a one year certification programme in addition to a bachelor degree. However, because of increases in the upper secondary level there was a shortage of certified teachers and I was invited to take a part time teacher job during my last year in the B.A. programme. During my first years in teaching I took the obligatory courses for teacher certification bit by bit. Thus I learned to be a teacher while working as a teacher and having access to the university programme offering the academic part of the pedagogy.

When teaching Icelandic in upper secondary schools I was in touch with the Iceland University of Education (IUE) since every now and then I had taught courses on writing Icelandic and children's literature. Also I was involved in some ICT projects concerning education. When the B.Ed. teacher education degree programme was initially offered as distance learning in 1993 I gained my first experience of distance teaching with a group of women living and teaching in rural districts while studying for their teacher certification. This quickened my interest in the affordances that the Internet and new information and communication technology were opening up for access to education, not least for women with family commitments, with limited possibilities to move to Reykjavík where most higher education programmes were offered.

In 1996 I joined the graduate programme at the IUE, offered as flexible learning or a blended mode of online and face-to-face sessions. I graduated in 2001 with a master's thesis titled: *Let's set the net to catch education. On learning theories and new media and their effects on learning and teaching* (Jóhannsdóttir, 2001) where I explored the affordances of ICT in education. With my supervisor Sólveig Jakobsdóttir I had participated in a small research project where stories from teacher educators were collected on a website. The assumption was that through sharing their experience of ICT teachers would find support for their professional development (Jakobsdóttir & Jóhannsdóttir, 2001). After graduation I worked for one year as an adviser for teacher educators at the university, supporting their use of ICT, especially for improving distance teaching. Then I got the opportunity to work as a researcher and a project coordinator at the Research Centre of the Iceland University of Education.

1.2 Origins of the study

In the spring 2003 I was in a group of researchers visiting schools in a sparsely populated coastal district in Iceland looking for the ways in which schools and teachers and their pupils were using information and communication technology. We had received a grant from the national programme for information technology and the environment (Icelandic: Markáætlun um upplýsingatækni og umhverfismál) for the years 2002-2005 for a research project on the use of information and communication technologies in Icelandic schools. Our research questions focused on the consequences of using ICT for students and for learning, for teachers and for teaching and for schools as organizations.

During the visit I came to realize that in some of the schools several of the teaching staff were enrolled in teacher education distance programmes. In addition, in some schools student teachers had been regularly employed since 1993 when the Icelandic University College of Education in Reykjavík first offered a full teacher education degree in a distance programme. In one small school all the teachers had qualified as teachers through the distance programme while a principal in another school lamented that teachers without certification in his school had not yet been admitted.

Many of those who completed the distance programme early on later continued their studies in graduate distance programmes, specializing in certain areas of the teaching profession and becoming key players in the development of the schools. This sparked

my interest in the meaning and importance for the schools as institutions of having a link to a teacher education institution, and for the professional and personal development of teaching staff. I also wondered whether the university understood the affordances of the distance programme for student teacher learning and school development.

My childhood and school experience in a small fishing town similar to those I visited influenced my interest in understanding the meaning and importance of the distance programme for the education of teachers and pupils in the schools.

1.2.1 The rural perspective

In autumn 2000, when colleagues from North Norway were on a visit to Iceland an agreement was made on developing collaboration between the Tromsø University College and Iceland University of Education (changed name after merging with other colleges, see Chapter 1.2.2). One common interest was rural education as related to teacher education, and information technology as related to teacher education and rural development. Sigurjón Mýrdal, a senior lecturer who had been director of the distance teacher education programme when it started, and I were the representatives from Iceland. We initiated the collaboration with the representatives from Tromsø, Andrew Kristiansen and Randi Skjelmo. Our collaboration developed into a larger project with teacher educators in Luleå in Sweden and in Tartu in Estonia. We formed a network named *Learning and Teaching in Rural Arctic*, shortened to LATIRA, which remained active until 2006. We made connections with the University of the Arctic where we participated in a book project on ICT in education in the North, titled *On top of It: Overcoming the challenges of ICT and distance education in the Arctic* (Pekkala et al., 2004).

Both Randi Skjelmo in Tromsø and I were starting to focus on the development of alternative teacher education planned for teachers in sparsely populated rural areas. We started to collaborate on understanding the development of unconventional and more flexible teacher education. Randi was researching the decentralised programmes that had been offered by Tromsø University College for North Norway and I was focusing on the distance education programme offered by Iceland University of Education. The first steps in this research project resulted in two articles analysing the origins and development of flexible, decentralised teacher education in Iceland and North Norway

(Jóhannsdóttir & Skjelmo, 2004; Skjelmo & Jóhannsdóttir, 2004). We had been admitted to doctoral programmes and started work on our Ph.D. dissertations, Randi Skjelmo at the University of Tromsø and myself at the University of Iceland. Andrew Kristiansen, also a member in the LATIRA collaboration, was working on his Ph.D. dissertation on differentiation and social selection in elementary education as a question of equal rights of pupils.

The three of us collaborated fruitfully within the LATIRA network with our common interests in school development and the relationship of teacher education rural schools. We all had some experience of small schools in sparsely populated areas in our countries: the Norwegians as a teacher and a principal in a small village school in North Norway, while I was brought up in such a village in Iceland. Since the situations in rural Iceland and North Norway were in many ways similar, and we had been facing similar challenges as teacher educators, we had a common interest in how teacher education could be enhanced to better support the rural schools. Randi and Andrew both graduated in 2007. Randi's dissertation was titled *Endringer i norsk allmennlærerutdanning - mot en sterkere enhetlighet Desentralisert allmennlærerutdanning i Nord-Norge 1979-2006* (in English: Changes in Norwegian teacher education – towards a stronger unity. Decentralized teacher education in North-Norway 1979-2006) (Skjelmo, 2007), Andrew's dissertation was titled *Lik rett til kunnskap. En epistemologisk studie av tilpasset opplæring og social seleksjon i utdanning* (in English: Equal right to knowledge. An epistemological study of differentiated teaching and social selection in education) (Kristiansen, 2007).

1.2.2 Focus and purpose of the study and emerging research questions

I was interested in exploring the significance for schools and their development of being linked to teacher education over time. At the same time I wanted to explore the significance for individual student teachers of working as teachers during their university studies. I wanted to explore the possibilities for the potential development of teacher education when the student teachers are simultaneously teaching in schools. I felt it could be important, both for the university that provides a distance programme for teachers and for the schools involved, to better understand the affordances and constraints of such a partnership for student teacher learning, school development, and development of teacher education.

When I first visited the rural schools the distance education programme had been developing for ten years. The inception period is important for understanding the need that brought about this alternative form for teacher education and in the thesis I will account for that. However my main focus is on analysing the situation in 2003-2005 by examining the learning processes of student teachers being simultaneously situated in schools and enrolled in academic teacher education. Also I want to get a better understanding of the interplay of student teacher learning and school development in the schools where they teach. The purpose of this research is to better understand how this connection between schools and university teacher education through school-based student teachers may enhance both teacher education and school development.

1.3 The context of Icelandic teacher education

1.3.1 Teacher education in Iceland

The Iceland University of Education, primarily based in Reykjavík, traces its history to the Icelandic teacher training college (Kennaraskóli Íslands) founded in 1908. In 1971 it was upgraded to university level and became the Icelandic University College of Education (Kennaraháskóli Íslands). Until 1993 it was the only institution in Iceland that educated compulsory school teachers and it still is the major centre for teacher education in Iceland. Most of the time it has served mainly compulsory schools (primary and lower secondary) while the education department at the University of Iceland has, since 1951, served lower and upper secondary schools and offered shorter (half or one year) teacher certification programmes for students who have completed university studies through at least a B.A. or B. Sc. programmes.

From 1974 the University College of Education also offered certification programmes for students with an art education or a journeyman's licence in different trades. Those programmes were planned as part-time, flexible studies based on the needs of the relevant student groups (Kaaber & Kristjánsdóttir, 2008). Over time the certification programme became open to all students, irrespective of their undergraduate education, and is now offered as a distance programme with face-to-face sessions included (blended mode).

The University of Akureyri has offered teacher education programmes since 1993 and now its department of teacher education offers both undergraduate and graduate

programmes for compulsory and preschool teachers in addition to certification programmes. Since 2003 the University of Akureyri has offered distance programmes for compulsory school teachers. Since 2000 Reykjavík University which is a private university and the Iceland Academy of the Arts have offered certification programmes for prospective teachers in secondary schools.

In 1998 the University College of Education (in Icelandic Kennaraháskóli Íslands) merged with three other education colleges, those that had educated preschool teachers, sports teachers and development therapists. The three colleges were thereby upgraded to university level. The new organisation was known by the Icelandic name Kennaraháskóli Íslands, the new English name was Iceland University of Education. In 2008, after celebrating its one hundred year anniversary, it merged with the University of Iceland and became the School of Education within the university together with the former education department of University of Iceland.

1.3.2 Distance teacher education in Iceland University of Education

Origins

Throughout its history the Iceland University of Education and its forerunners had obligations towards serving the need for educated teachers in sparsely populated districts. In order to meet this need the university has offered several non-traditional types of teacher education.

In 1979 it offered off-campus opportunities for people who had been teaching in primary schools without formal education. The reason was the introduction of stricter legislation on the professional rights of those holding teacher positions, as well as the fact that up to 25 percent of teachers in primary schools were without formal teacher education (Kristjánsdóttir, 1992, p. 321). Teachers with reasonable experience could complete formal teacher education in a flexible programme alongside their job, which was organized so that they could fulfil their teaching obligations at the same time. Teacher students met their lecturers for a maximum of eight weeks a year, and in-between they studied at home corresponding by mail with the lecturers. It took students two to four years (or more) to complete the certification programme depending on their earlier education. The programme was considered a one-time opportunity for people who had served mainly in rural schools. However, when the first group had finished the

programme the problem of teacher shortages in rural communities was still pressing. The Iceland University College of Education responded to the continued demand for flexible teacher education with a second off-campus group in 1988.

Self-studies played a crucial role in this form of teacher education, although gatherings of students and teachers also played an important role. The fact that the student teachers were at the same time participants in the working culture of schoolteachers was clearly interpreted as a strength. This form of teacher education turned out to serve its purpose well in rural areas. An informal survey conducted in 1990 on the 1979 group of participants showed that up to 90 percent were still teaching and most of them still in rural communities (Kristjánsdóttir, 1992, p. 322).

The launching of a full B.Ed. programme in 1993

This experience of a different, more flexible form of teacher education had been positive. Teacher educators and the community recognized the potential of this form of education. Since the problem of teacher shortages still existed in the rural areas the school authorities and the teacher educators were facing the fact that the 'temporary' provision had to be replaced by offering alternative forms of teacher education on a regular basis. In January 1993 the Iceland University College of Education thus launched a full B.Ed. teacher education distance programme. During the early years of the programme most student teachers generally held teaching positions in districts with a shortage of certified teachers. A survey, conducted in 1996 as part of an evaluation study on the first cohort (J. Jónasson, 1996, 2001), showed that about 90 percent of the student teachers lived in rural areas, and nearly 90 percent were teaching alongside their studies. The initiative and support of regional education offices played an important role in realizing this alternative form of teacher education (for a more elaborated description, see Chapter 5).

The 1993 setup assumed that student teachers would gather on campus in Reykjavík several weeks a year during school holidays while the distance learning sessions consisted of self-study with support from teachers via the Internet, mainly using email. A little earlier grassroots movement of several teachers in small schools in sparsely populated areas had initiated a project with the aim of connecting all compulsory schools in Iceland to the Internet. The movement, formalized in the nationwide Icelandic Educational network (Ísmennt) in 1992, was an important facilitator in

launching the distance programme in teacher education (Stefánsdóttir & Mýrdal, 1993) (see Chapter 5). The Internet and computer technology developed fast and came to play an increasingly important role in distance learning.

Changes in the situation in 2003-2005

Ten years after the inception of the distance programme the university had placed an increasing emphasis on the compatibility of online and on-campus programmes, and priority guidelines for admission had been abolished. Either programme, distance or conventional, was by then offered to all applicants irrespective of residence.

Other changes in programme regulations have affected the situation of distance student teachers. In1996 the management of schools was moved from the state to local municipalities. Regional services were no longer under the Ministry of Education and their role in teacher education has since virtually disappeared. The support of the Iceland Educational Network (Ísmennt) diminished when taken over by the state in 1996, sold to a private company in 1999, where dedicated school services gradually disappeared. Since the 1998 merger the focus was not only on educating compulsory school teachers; distance education was also offered in the other faculties of the IUE.

In 2004 the percentage of distance students living in rural districts had decreased to 57 percent (Kennaraháskóli Íslands, 2006), yet a survey from that year shows that 42 percent of distance student teachers were employed as teachers in schools alongside their studies (Björnsdóttir, 2009). Thus, despite the altered admission guidelines, the programme still served rural communities and met the need for uncertified teachers to gain a professional degree. This situation of student teachers being employed in schools while studying is examined in this thesis.

With developments in information and communication technology online tools for use in distance education have become essential parts of the programme. The course management system used in most distance courses at IUE in 2003-2005 was WebCT. Some teachers, however, were trying out different kinds of online tools, and email was continuously used. Increasingly free online tools such as text chat (instant messaging) became available for students to communicate amongst themselves. Some teachers started to use audio files to deliver lectures through the use of PowerPoint with recorded talk.

1.4 Structure of the thesis

Above I have described my background and interest in the research topic, provided a short overview of teacher education in Iceland, and introduced the inception and development of the distance programme for compulsory school teachers at the Iceland University of Education.

The aim of Chapter 2 is to introduce my field of research by presenting the development of alternative routes into the teacher profession. I will discuss how unconventional models for teacher education have been developed, such as distance programmes for meeting problems of shortage of qualified teachers and school-based models in response to criticism of university programmes as lacking connections to real practice in schools.

Chapter 3 covers the theoretical framework used in my research presenting some central concepts in the theories of Vygotsky and cultural-historical activity theory, especially the approach taken by Engeström in his expansive learning theory. The theories of Vygotsky and Engeström are intertwined with the development of appropriate research methods.

In Chapter 4 I discuss shortcomings of traditional research paradigms from a cultural-historical perspective and account for indicate how the activity theoretical framework calls for a certain methodology. I explain the methods of the expansive learning theory and how I will use them in my analysis.

The object of my study and the research settings/sites and a short description of the programme are discussed in Chapter 5. I account for the selection of cases, preparation of the empirical data, methods for generating and analysing data and the form of presenting findings in accordance with expansive learning methodology. Finally criteria for quality and ethical issues are discussed.

Findings are presented in Chapters 6, 7, 8 and 9. In Chapter 6 the historical phase of the distance programme is analysed by discussing the inception of the programme and the experience of three school-based distance students enrolled in the first cohort. In Chapter 7 the experience of the three student teachers of working as teachers while learning to be teachers during the years 2003-2005 is analysed. In Chapter 8, three courses taught during the spring term 2005 are described and analysed before analysing the experience of the case study students who were enrolled in these courses.

In Chapter 9 the development of student teachers, the schools where they work and the distance programme are examined in terms of how student teachers learn by participating simultaneously in, and boundary crossing between, the schools and the distance programme. The aim of the chapter is to explore the possible future development of schools and teacher education in school-university collaboration. This chapter has been published (Jóhannsdóttir, 2010b) in the book *Cultural-historical perspectives on teacher education and development*, edited by Viv Ellis, Anne Edwards and Peter Smagorinsky, with an afterword in which Willem Wardekker discusses the articles (Ellis, Edwards, & Smagorinsky, 2010).

Finally in Chapter 10, the implications of the results presented in Chapters 6, 7, 8 and 9 are discussed with reference to the research questions. Inter-organisational boundary work is presented as a form for developmental work where compulsory schools and the teacher education could collaborate in developing teacher education as a shared undertaking. The conclusion of the thesis is to propose this kind of work for developing teacher education and as a result of the analysis I have generated concepts, hypotheses and visions proposed as double stimulations for participants in such work.

CHAPTER 2: ALTERNATIVE MODELS AND SCHOOL-UNIVERSITY PARTNERSHIPS IN TEACHER EDUCATION

2.1 Introduction

The study is located within the research field of teacher education in general and alternative forms for teacher education in particular. During the last few decades education systems around the world have been facing problems of a shortage of teachers. My focus in this research is on the relationship between schools and teacher education institutions and possibilities for development when the form for teacher education is calling for more school-university interdependence than in the conventional pre-service model.

The purpose of this chapter is to relate my research issue to matters of concern in teacher education that have called for alternative solutions, such as school-based teacher education and distance learning which have been used separately or together all over the world as deviant forms for educating teachers.

First I discuss problems related to recruitment of teachers and how open and distance learning (ODL) have been used for responding to the lack of qualified teachers all over the world and in Iceland when teacher education for compulsory school teachers became accessible via distance in 1993. Problems related to quality of teacher education and concern for how it affects the education of pupils in schools have called for more school-based models as an option deviating from traditional academic teacher education based in universities. This has led to development of different forms of school-based models in partnerships between schools and universities. I present two well known examples, one from the United States and one from England and Wales and discuss empirical research on these partnerships which have revealed implications regarding the role of theories used for underpinning their rationales and implementation. The chapter rounds up by discussing the theoretical framework that seems to be suitable for analysing school-university partnership in teacher education.

2.2 Distance education and school-based models as alternatives in teacher education

In both developed and developing countries increased concern with teacher education is related to the belief that education can enhance prosperity and development of societies

for wellbeing of citizens. The international community set the target of *Education for all* in 2000 (UNESCO, 2000), which in turn highlighted the need to educate teachers, the challenge being both to educate more teachers and upgrade the skills of teachers to meet changing demands of their roles in a changing world.

2.2.1 Problems in recruiting teachers

Problems with recruiting teachers are a matter of concern worldwide. In the UNESCO publication *Global perspectives on teacher learning: improving policy and practice* (Schwille & Dembélé, 2007), the authors acknowledge the importance of good teachers and the need for improving the way teachers are recruited and educated. They present different models of teacher preparation and professional development of teachers. In developing countries the teaching profession is quite diverse, with various levels of preparation. Many teachers are recruited with little or no preparation for the job and their positions are uncertain (ibid, pp. 40-41). Short term courses for preparing teachers before starting to teach in schools have made it possible to increase access to primary education in many developing countries. However shortcut practices for recruitment of teachers are questioned, and pointed to the consequences it is bound to have on the quality of children's education as well as on the development of the teacher profession.

In Europe the issue of age in the teaching profession (30% of teachers older than 50 in some countries) requires authorities to make teaching an attractive career choice, both for young people and people considering a career change (Commission of the European Communities, 2007, p. 10). Concerns about the attractiveness of teaching as a career is discussed in the OECD report *Teachers matter* (OECD, 2005) where half of the 25 participating countries are seriously concerned about the supply of qualified teachers as well as the image, status and salaries of teachers (ibid, overview, p. 3).

The need to educate more teachers has supported calls for development of alternative routes into the teaching profession. Two alternatives have been used in both developing and developed countries (Schwille & Dembélé, 2007):

- School-based apprenticeship programmes where student teachers learn on the job.

- Open and distance learning (ODL) which has been used for reaching unconventional student teachers as well as opening up possibilities for different forms for educating teachers.

2.2.2 Distance teacher education

Open and distance learning (ODL) is used as an umbrella concept for unconventional and more flexible modes of education, which institutions are increasingly offering in order to reach certain groups of students. These students want to be able to adapt their studies to their particular circumstances, which may not allow them to attend traditional courses offered at a specific time and place. The development of information and communication technology has opened up various possibilities to respond to that demand. Definitions of *distance education* and *open learning*, respectively, are presented here for clarification:

> Distance education has been defined as an educational process in which a significant proportion of the teaching is conducted by someone removed in space and/or time from the learner. Open learning, in turn, is an organised educational activity, based on the use of teaching materials, in which constraints on study are minimised in terms either of access, or of time and place, pace, method of study, or any combination of these (Perraton, Robinson, & Creed, 2007, p. 14).

In the following *distance education* in teacher education will be discussed rather than open learning as it is defined here.

Teacher education is offered via distance programmes all over the world, as two-thirds of higher education institutions have offered some sort of distance programme for teachers (Robinson & Latchem, 2003). Most countries with large populations make extensive use of distance education, providing large-scale programmes to educate teachers. Distance education has also been used in sparsely populated countries to recruit potential teachers who, had they needed to move from their homes, would not have enrolled in teacher education. Distance learning has been used to get more women into teaching since globally the situation of women makes them more likely to choose an education that enables them to stay with their families. Developing countries make relatively more use of distance programmes for initial education where teacher shortage is such a big problem that conventional education will not be able to deal with it.

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Distance learning has also been used to meet the need to upgrade qualifications of teachers, i.e. providing in-service continuing professional development.

In some countries (China, Nigeria, South Africa) distance education for teachers is part of the national strategic plan for teacher supply while in others it has been provided for as an alternative (United Kingdom, Chile) or supplement (Brazil, India) (Perraton, et al., 2007, p. 281). In both the United Kingdom and United States distance programmes have been offered in response to problems with recruiting teaching staff (Robinson & Latchem, 2003). Distance education programmes have been used to enable school-based training of teachers focusing on the school as a site of teachers' learning (Perraton, et al., 2007; Robinson & Latchem, 2003). That was the way distance learning was proposed in the initial distance programme in Iceland in 1993 where student teachers in the distance programme were generally situated in schools suffering from a lack of certified teachers (Stefánsdóttir & Mýrdal, 1993). Distance learning as a strategy for reform and change has been an underused opportunity (Robinson & Latchem, 2003).

Organisation and cooperation with local services

Distance education has been offered by traditional universities offering distance programmes, special distance teaching universities, and in some cases special distance teacher colleges (Perraton, et al., 2007, p. 287). Traditional universities have increasingly offered online distance teacher education programmes for reaching new teacher audiences (Robinson & Latchem, 2003). Thus they can use their resources and infrastructure to offer additional courses via distance enabling them to respond to new needs more quickly. Students generally follow the programmes mainly online, though they may attend to shorter face-to-face sessions, which has usually been the case in the teacher education programme at the Iceland University of Education (now the University of Iceland School of Education) (Jakobsdóttir, 2008). Initial teacher education programmes are often organised in partnership with local schools and district education services, in which teacher education providers negotiate delegation of responsibilities. This is of a particular relevance regarding practice teaching and its assessment.

In programmes of scale the organisation and management of practice teaching poses a major problem both of organization and cost. Moon and Robinson (2003) argue that provision of local support is essential for the success of programmes that have to rely on

partnerships for student teachers' practical learning, and they point out that the complexity and time and cost of managing these relationships are often underestimated (ibid, p. 81). This includes providing training for the partnership personnel, both school mentors and other facilitators. In the case when distance student teachers are school-based and enter teacher education with some teaching experience this problem is reduced (Moon & Robinson, 2003). In the initial distance programme for teachers in Iceland this was presumed to be the case, though later it was opened to all applicants, regardless of experience of teaching (Jóhannsdóttir & Skjelmo, 2004; Stefánsdóttir & Mýrdal, 1993).

Summing up advantages of using distance programmes in teacher education

In areas where a lack of qualified teachers is an ongoing problem distance learning, supported by mass media or ICT, has the advantage of quickly reaching numerous teachers and there is evidence of its positive impact. In addition, distance programmes reach new and maybe different entrants into the teaching profession; distance students tend to be older and access for rural inhabitants is easier. Teachers who have graduated from distance programmes tend to remain longer in their jobs and since keeping teachers can be a problem this counts as a benefit.

2.2.3 School-based teacher education

Global interest in improving the outcomes of school systems have made reforms in teacher education a debated political issue and authorities worldwide have strived for changing and improving teacher education in hope of enhancing the qualifications of their citizens, in turn affecting the competitiveness of their societies (Garm & Karlsen, 2004). However, although the importance of teacher education in acknowledged, there appears to be no agreement on how much and what kind of formal preparation is needed, and where and how to acquire it. There are:

> competing views on the importance of subject matter, pedagogy, knowledge of students, etc; the problematic relationship of theory and practice; disagreement over what teachers learn best from experience (Schwille & Dembélé, 2007, p. 27).

Teacher training programmes in general have been criticized for poor quality and inadequate time for school experience, as well as for weak integration of theory and practice. There have been disbeliefs in education departments in universities (Kennedy,

1999; Schwille & Dembélé, 2007) and the benefits of traditional teacher education institutions having a monopoly on educating teachers have been doubted. Traditional teacher education has been criticized for a lack of connection to school needs and a lack of continuity between initial teacher education and in-service professional development (Commission of the European Communities, 2007; OECD, 2005).

Many have pointed to the need to reconceptualise the traditional structure of initial teacher education and the need to make teacher education more flexible (OECD, 2005; Perraton, Creed, & Robinson, 2002). It has been suggested that school-based teacher education offers better integration of theory with practice through on-the-job learning (Robinson & Latchem, 2003, p. 33). School-based teacher education has been organised both for meeting the need for more flexibility and enabling recruitment of more diverse student teachers and in response to criticism of insufficient relation to school practice in university departments. Moon and Robinson (2003) describe the benefits of distance education for school-based student teachers and argue that:

> if well designed, [school-based teacher education] increases the chances of programmes being relevant to the practicalities of teaching, strengthening the relationship between theory and individual practice and offering an important means of influencing classroom practice and school improvement (Moon & Robinson, 2003, p. 89).

School-based apprenticeship programmes are known, both in industrialized countries and the developing countries, as an alternative route into teaching where there is a shortage of teachers. Schwille and Dembélé (2007) suggest that apprenticeship models are especially suitable for practicing teachers who have been hired because of a teacher shortage and need a proper education to meet qualification standards in their countries (ibid, p. 45).

In the US the programme *Teach for America* has been developed to recruit bright young students with an undergraduate degree into teaching. They sign a contract for a two-year teaching commitment and get five weeks of preparation during the summer before they enter schools as teachers. The way in which they are supported in the schools differs a lot and in many cases they are supposed to enrol in a certification course once they have started to teach (Schwille & Dembélé, 2007, p. 44). In the developing countries on-the-job learning has been used to meet the shortage of teachers. New teachers get just a few weeks of training before they take on responsibility for school classes. In many cases

the model can be described as 'sink or swim' where the novices work in circumstances where they can not rely on the support of more experienced colleagues.

> Most schools may not be appropriately resourced as training sites, lacking both qualified teachers and enough teaching and learning materials. Nor do staff necessarily see their role as including training new teachers and they are unlikely themselves to have any training as trainers (Lewin and Stuart, 2003: xx quoted in Schwille & Dembélé, 2007, p. 87).

As a matter of fact, in the developed countries student teachers also experience 'sink or swim' in both the apprenticeship model and in practice teaching modules in conventional programmes.

2.2.4 The importance of practicum in teacher education

The McKinsey report (Barber & Mourshed, 2007) draws attention to the fact that all the best performing school systems in the world integrate practicum into their programmes and have been increasing and improving support for novice teachers.

> Despite the evidence, and the fact that almost every other profession conducts most of its training in real-life settings (doctors and nurses in hospitals, clergy in churches, lawyers in courtrooms, consultants with clients) very little teacher training takes place in the teacher's own classrooms, the place in which it would be precise and relevant enough to be the most effective (Barber & Mourshed, 2007, p. 27).

Boston in the US, England, Finland and Japan are taken as examples, each with different models. In Boston a two-year graduate programme for teachers has been developed in line with a medical-residency model. After six-weeks of summer school teacher students enter an apprenticeship in schools where they work with experienced teachers four days a week and spend one day on coursework. During the second year they work as teachers supported by a mentor two and a half hours per week. The mentors are specialized and hired as full-time mentors, each with several student teachers (ibid, p. 29). In Japan the pre-service education does not include practicum but the first year of teaching involves intense training to develop practical skills with one-on-one guidance up to two days a week. In these educational systems the importance of getting an opportunity to learn to become a teacher through guided participation has been prioritised, and the authors of the report claim that results measured by pupils' performance on standardized tests have revealed its effectiveness (ibid, p. 26-31).

2.3 Partnerships between universities and schools

The development of new models in teacher education has directed attention to the relationship between schools and teacher education institutions. In distance teacher education higher education programmes have to rely on partnerships with schools for the practicum. In school-based models cooperation is needed between a university programme where the student teachers are enrolled and schools where they are situated for coordination and compromise on dividing or sharing responsibility. Here two examples of partnerships that have influenced the international scholarly discussion on development of teacher education will be presented before presenting and discussing some empirical research on such partnership models.

2.3.1 Professional Development Schools (PDS) in the US

In the US the diminishing belief in the usefulness of university programmes for teacher education has led to the closing of educational departments, e.g. the University of Chicago closed its education department in 1997 (Kennedy, 1999, p. 29). For defending the education departments a special kind of schools, Professional Development Schools (PDS), were established, designed to be collaborative partners of the universities (Holmes Group, 1990, 1995; Mayes, 1998; The Holmes Partnership, 2007). The schools were intended to bridge the gap between schools and educational departments, and build new ways of knowing and knowledge in teaching (Cochran-Smith & Lytle, 1999). The aim was to promote collaborative research between teacher education departments in universities and schools, in order to encourage in-service teacher development and improve pre-service teacher education (Mayes, 1998). Thus the professional development schools were meant to serve as a place of internship for pre-service teachers, for continuous in-service teachers' professional development, and for development of school practice in general (Hallinan & Khmelkov, 2001; Holmes Group, 1990). They were implemented by school-university partnerships and by 2006 over 1000 schools had been established in the US (Darling-Hammond, 2006, 2005).

Darling-Hammond (2006, 2005), one of the designers of professional development schools, says that although not all of them have been successful, and the partnership can be difficult to enact, there is growing evidence of the possibilities inherent in this approach. Others are more critical and claim that rigorous research is needed to evaluate whether the PDS live up to their promises (Hallinan & Khmelkov, 2001). Several

studies have been conducted and evaluation research has shown evidence of positive effects on pre-service teachers, as they enable them to better integrate theory and practice than in traditional arrangements and to get more varied experience of practice. There was some evidence of positive effects on in-service teacher development but very little on the success of partnerships of schools and universities in collaborative research (Mayes, 1998).

The PDS have been criticized for being a top-down initiative that have had little impact on the gap between theory and practice, and may even have widened the gap between schools and higher education institutions by favouring the educational departments (Mayes, 1998). Their ideology has been criticised for being conservative, historically de-contextualized, and for not making explicit their theoretical background. Implicitly though their approach seems to be based on constructivist theories, reflective practitioners, and situated learning theories stressing the role of communities of practice and collaboration (Edwards, Gilroy, & Hartley, 2002; Mayes, 1998).

2.3.2 Partnerships in England and Wales

In 1992 the Department for Education in England and Wales promoted a new national policy in teacher education, where teacher training programmes were to be run as partnerships between schools and higher education institutions; schools and universities were supposed to share responsibilities for educating teachers. (Furlong, Barton, Miles, Whiting, & Whitty, 2000). The change was initiated through governmental intervention, and implementation was monitored by central control. The partnerships in England and Wales have developed to become multiple arrangements where not only higher education institutions work in partnerships with several schools, but also schools work in partnerships with several higher education institutions (Edwards & Mutton, 2007).

The reforms are still another example of the tendency towards school-based training, enhancing the role of schools and reducing the role of higher education institutions in educating teachers (Furlong, 2002). The move towards more school-based teacher training was also grounded in criticism and a diminishing belief in the potential of universities to provide a suitable education for teachers as well as better integration of theory and practice.

These changes towards more school-based teacher training in the 1990s have been thoroughly researched. Two big research projects conducted in the years 1991-1996 revealed that the partnership of schools and universities had been organized in various ways and different models had significant implications for the roles of schools and teachers (Furlong, et al., 2000, p. 77). Partnerships per definition are expected to involve some degree of joint responsibility. In analysing the different models the researchers identified two ideal-typical forms of partnership, showing possible relationships of schools and higher education institutions. In the *complementary partnership*

> the school and the university or college have separate and complementary responsibilities but there is no systematic attempt to bring these two dimensions into dialogue (ibid, p. 78).

In the *collaborative partnership* there was a

> commitment to develop a training programme where students are exposed to different forms of educational knowledge, some of which come from school, some of which come from higher education or elsewhere (ibid, p. 80).

Furlong, et al. (2000, p. 98) claim that the complementary model was the one implicit in the policy, while the collaborative model was being promoted in the professional literature.

The policy assumed the partnership to be a joint responsibility of schools and higher education. Generally the schools were willing to take on more responsibility to support student teachers' development of practical competence in teaching, but the majority of the schools involved were unwilling to take on a more substantial role. In effect, surveys revealed that teachers in the schools were more active in the role of guiding the practice of student teachers, who spent a substantially greater part of their study time in the schools than before. Management of courses, including organization of school-based work, continued to be the responsibility of the university. In very few cases the schools were given autonomy to act as equal partners (Furlong, et al., 2000). In most cases the partnerships turned out to be higher education led models, based on contracts with the schools to provide resources in setting up learning opportunities for student teachers. The accountability of quality control and assessment continued to be within the higher education institutions, which often used explicit competency frameworks to define what

students should learn. Even the responsibility for the practice preparation of teachers remained with the higher education institutions.

The experiences of student teachers enrolled in partnership programmes had by and large been positive, and they felt that they were well prepared for teaching since their training had been more closely tied to the reality of schools. They had also spent substantially more time in schools. Even if it was led by the higher education tutors the planning of the practice was better aligned to the situation in the schools, so the reforms resulted in better connections between higher education tutors and school realities. How this is developed depended on which kind of partnership was established between the schools and the higher education institutions. Furlong, et al. (2000) argue that the challenge of the partnership reform will be to draw schools and teachers into the process of teacher training in a more systematic and structured manner (ibid, p. 117).

Research on teacher education in the partnerships programmes in England and Wales

The two examples from the UK and US draw attention to the importance of making the theoretical background for reforms explicit, both at the policy level and the level of implementation. Anne Edwards and her colleagues have conducted extensive research on the execution of the partnership models in England and Wales (Edwards, 1995, 1997, 1998, 2005a; Edwards & Mackenzie, 2005; Edwards & Mutton, 2007; Edwards & Ogden, 1998; Edwards & Protheroe, 2003, 2004). These researchers have taken the opportunity of the radical reforms in teacher education in the 1990s to examine what is central in teacher education, raising questions about the nature of teachers' knowledge and how it is acquired and used. At the same time they have been examining the usefulness of different theoretical approaches in analysing the relationship between schools and teacher education in higher education institutions. Since this relates directly to my research interest I devote more space here in presenting and discussing the research of Anne Edwards and her colleagues although also referring to others.

The studies of Edwards and colleagues have focused on how student teachers learn when situated in schools (Edwards, 1997; Edwards & Protheroe, 2003), how school-based mentors function in their new roles, and the effects of schools as activity systems upon their possible actions (Edwards, 1998; Edwards & Protheroe, 2004). They have been concerned with the relationship of the schools and universities in the partnerships, where they argue for the need to take the complexity of the school-university

relationship into account for the benefit of the partnership model to appear (Edwards, 1998; Edwards & Mutton, 2007). The place of theories has been examined, both in the government's reform documents, and in the implementation phase. The way in which the implicitness of theories cause trouble and constrain the potential benefits of the promoted changes have been analyzed. This shows that a lack of explicit theoretical underpinning is a problem that may be damaging the education of both student teachers and pupils in the schools and they worry the potential of the partnership models is not being used to benefit the learning of the student teachers and in turn the learning of the pupils.

2.3.3 Implications concerning the place of theories in partnerships

Furlong et al. (2000) pointed out that the policy of the reformers stressed competencies of student teachers as measured by standard-based outcomes. However, teacher educators continued to focus on the reflective practitioner, which had been a dominant ideal model of professionalism before the reforms. The notion of the reflective practitioner is based on the theories of Schön (1987) on reflection-in-action, suggesting that learning may be enhanced by making knowledge in action explicit through deliberation and reflection. The conception is based on an idea rooted in constructivism, that knowledge is constructed by inquiry in and on practice (Cochran-Smith & Lytle, 1999). In an early publication Edwards (1995) observes how the managerial model inherent in the policy, stressing performance of student teachers checked by centrally controlled inspection, is at odds with the discourse of higher education lecturers, who continue to work with psychologically framed pedagogical models for developing student teacher professionalism. The intentions behind the partnership models are to enhance teacher professionalism, and thereby pupil learning, while a different understanding of professionalism is likely to cause problems if not made explicit. The idea of improving student teacher learning by spending more time in schools could be grounded in theories of workplace learning (Lave, 1997; Lave & Wenger, 1991) but since this is not explicit the potential of the school-based learning is underutilized.

The apprenticeship model for learning has generally been promoted with reference to theories on situated learning and participation in communities of practice (Lave, 1997; Lave & Wenger, 1991; Wenger, 1998). School-based teacher education has a theoretical foundation, explicit or implicit, in situated learning theories and in theories of guided

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participation developed by post-Vygotskian socio-cultural theorists (Edwards, 1998; Rogoff, 1990; van Huizen, van Oers, & Wubbels, 2005). In light of these theories professional learning, such as teacher education, is best conceived of as participation evolving into social practice. Student teachers are presumed to develop practical skills by induction into communities of practice guided by experienced teachers. Van Huizen et al. (2005) present three paradigms that have been used to underpin teacher education i.e. competency-based teacher education, the personal orientation to teaching and the paradigm advocating reflection and inquiry and claim that their impact has remained limited. They suggest that a Vygotskian perspective offers a more comprehensive paradigm for teacher education by integrating valuable elements of the other paradigms concentrating "on the connection between individual functioning and development and the sociocultural practices in which the individuals take part" (ibid, p. 271). They emphasize that in learning to work as teachers it is important that student teachers have an opportunity for close interaction between assigning meaning and realizing meaning in action. This means that

> teacher-education programmes will have to shape their interaction between the reflective inquiry involved in assigning meaning to teaching and the practical activity in which these meanings have to be realized (ibid, p. 285).

Developing teacher education from a Vygotskian perspective calls for a focus on the relation between the pedagogy supporting the professional development of student teachers and the institutional conditions needed for realizing it. This has implications for the organisation and implementation of teacher education in schools and universities and should focus attention on the importance of their relationship.

Edwards and colleagues (1998; 2003) argue that the use of theories for underpinning teacher education in partnership models is problematic and claim for instance that support for student teachers is in general not guided by the situated learning theories. Student teachers do not get an opportunity to be peripheral participants who gradually become acculturated into the community of practice and develop towards professional practice. Instead of having the opportunity to be learners in the schools they are expected to act as teachers from the day they enter the classroom (Edwards, et al., 2002; Edwards & Protheroe, 2003, 2004). A relatively narrow view of mentoring directed the mentors' efforts in supporting student teacher performance in delivering the curriculum without being concerned with either learning of pupils or student teachers (Edwards,

1998, p. 59). Edwards and Protheroe (2003) suggest that the notion of professional preparation as knowledge to be applied limited the way mentors were acting. If it were informed by theories of guided participation the expertise of experienced teachers could be better exploited.

Conflicting ideas disturbing practice in schools

One of the reasons for this kind of arrangement in teacher training in schools is that practice in schools is governed by the traditional paradigm of curriculum delivery, and thus mentors are held accountable for assessing student teacher performance in curriculum delivery. Another reason is that when student teachers enter the classroom they are to present themselves as teachers and not learners in order to have status and authority with regard to the pupils. In addition the role of mentors is complicated (Edwards, 1998; Edwards & Protheroe, 2004) as they now have the twofold task of being responsible for teaching both pupils and student teachers. The responsibility for the performance of pupils makes them choose to keep the class on track rather than taking any risks with experiments with the student teachers:

> in England and Wales, one can see how mentors are being placed in an impossible position as guardians of school standards while giving up their classrooms for the trial and error learning of student teachers, and this issue deserves more exploration (Edwards & Protheroe, 2003, p. 240).

The outcome-based criteria, for assessing the performance of both student teachers and pupils, make the end performance more important than the process of learning, which is in strong contradiction with the situated learning approach. While the assessment is based on individual performance the theories of situated learning focus on the community and how it supports individual induction:

> in England, we have a participatory programme of learning through experience, sustained anachronistically by an application of knowledge to practice model of support (Edwards & Protheroe, 2003, p. 238).

Thus the new policy is in practice translated into an old model of internship, where student teachers teach in a prescribed way and follow the mentors' plans. The mentors observe student lessons and discuss them afterwards with the student teachers. This kind of practice seems to be a recipe for induction into the status quo.

Cultural-historical activity theory as a framework for analysing school-university partnership

In their research Edwards and colleagues have applied cultural-historical activity theory as developed by Engeström, founded on the work of Vygotsky and Leontiev (Cole & Engeström, 2007; Engeström, 1987, 1999a). Within cultural-historical activity theory the unit of analysis is an historically evolving activity system. The approach allows for analysis of the interaction of individual and systemic development (Cole & Engeström, 2007; Engeström, 1999a). Edwards et al. (2002) emphasize the value of the activity theory framework for identifying how affordances for actions are distributed differentially across activity systems that are apparently similar, such as schools and classrooms, thereby urging us to be aware of how learners in different systems have different opportunities for actions. This calls for organizational analysis alongside a focus on individual learning processes.

The activity theoretical approach opens up an understanding of the interplay of the individual and systemic level in development, and explains how the reforms in teacher education need to be incorporated into schools as activity systems. Edwards et al. (2002) discuss the need to rethink the school-university relationship and suggest that in partnership models initial teacher education would need to be incorporated into the pedagogical goals of schools.

Partnership for enhancing school development and teacher education

As for the relationship between universities and schools, Edwards (1998) discusses the need to reconsider the relationship of the systems involved in partnerships in order to make use of benefits for enhancing both school development and teacher education:

> schools would need to accommodate the structural implications of a whole school commitment to initial teacher training, while universities would be obliged to examine the impact of schools as sites of knowledge production on how they work with teachers in their continuing professional development (Edwards, 1998, p. 59).

In fact neither policy makers nor schools and higher education institutions seem to have been concerned with the potential for school development inherent in the partnerships. Although not explicitly stated in the reforms the possible benefit of the joint responsibility has been recognized by researchers that have focused their research on implications in partnerships and the issue of boundary crossing between schools and

teacher education programmes (Edwards & Mutton, 2007). Edwards and Mutton (2007) discussed research on the nature of the role of the school-based co-ordinators of teacher training, especially regarding how they work with the universities as partners, focusing on their work on the boundaries of the two systems involved, i.e. their boundary crossing. They draw on third generation activity theory as developed by Engeström (2001) where he proposes two interacting activity systems to be the minimal unit of analysis and puts forwards ideas on boundary crossing in inter-organisational development. Edwards and Mutton (2007) argue that this theoretical perspective has been helpful to shed light on the complexity of the school-university relationships. They suggest that in developing teacher education, analysis from the perspective of cultural-historical activity theory could be used to perceive the possibilities of teacher education in networks of training providers, including both schools and higher education institutions.

2.4 Summary

A lack of qualified teachers is a problem in many countries and governments worldwide are concerned with the quality of teacher education and how it affects the quality of teaching in schools. In addressing these problems alternative routes for recruiting teachers have been explored. Distance education is one such approach, based on its potential to bring more and different populations into teacher education programmes, such as women in sparsely populated regions. Rapidly developing online technology holds promise for that purpose as well as for upgrading teachers' skills in continuing professional development. School-based programmes are also suggested where there is a shortage of qualified teachers and schools have to employ teachers without certification. In such cases distance learning may be used for giving students access to teacher education programmes for acquiring professional qualification which was the idea behind the first model for distance teacher education launched in Iceland in 1993.

Concern about the quality of teacher education in university departments where the gap between theory and practice is supposedly too wide has resulted in more emphasis being placed on strengthening the connection of teacher education to schools. From a Vygotskian perspective it is important for student teachers to get an opportunity to realize the meaning they have assigned to teaching by realizing it in practical activity in school. As a part of promoting school-based models in teacher education, different

forms of partnership models have been experimented with, such as in the US and in England and Wales, where policy reforms have assumed that schools should take responsibility for teacher education in partnership with university departments. The implementation of these partnerships has been carefully researched especially in England and Wales. Results reveal implications concerning the place of theories, both in the policy documents, and in the implementation of the changes in schools and in teacher education programmes.

Theoretical approaches for analysing teacher education in partnerships have been developed in research conducted by Anne Edwards and colleagues. They suggest that cultural-historical activity theory provides powerful tools for research into school-university relationships by enabling analysis of the interplay of individual and system development and boundary crossing between systems. Activity theoretical analysis has opened up understanding of possibilities for reform and development in school-university partnerships. Since my research interest centres on these issues, cultural-historical activity theory seems to be a suitable theoretical framework and therefore I present some key elements of the theory useful for my research in Chapter 3.

CHAPTER 3: THEORETICAL BACKGROUND: VYGOTSKY AND CULTURAL-HISTORICAL ACTIVITY THEORY

3.1 Introduction

In the thesis I want to improve understanding of student teachers' learning trajectories when teacher education is planned in a distance programme and the student teachers are situated in schools while studying in an academic programme. When student teachers are simultaneously participating in both systems while learning to be teachers attention is drawn to the relationship of these institutions and I am interested in the developmental possibilities and reforms on a system level that may be inherent in the relationship.

For doing that I need a theoretical approach that allows me to analyse the learning of individuals in the institutions in which they act, i.e. the schools and the university programme. I intend to analyse the development of practice in both systems and how individual learning and development of systems are related. The extensive research of Edwards and colleagues on similar matters (see Chapter 2.3.3), coupled with their suggestion of the potential inherent in cultural-historical activity theory for studying the relationship of schools and teacher education, has supported my choice of theoretical framework for this study.

In this chapter I present the historical foundations of cultural-historical activity theory and those aspects of the theory that I will be using in the thesis. At the core of cultural-historical activity theory is the idea that individual human beings are simultaneously shaped by, and are shapers of, their environment. The theory has its roots in the theories of Lev Vygotsky and his colleagues Alexei Leontiev and Aleksander Luria, who were active researchers in Moscow in the first decades of the Soviet Union (Cole & Engeström, 1993; Engeström, 1999a; Engeström, Miettinen, & Punamäki, 1999). Characteristic for this approach is a view of historical development as following certain laws driven by internal contradictions (Blunden, 1997). The theory strives to overcome the either/or dichotomy (Cole & Engeström, 2007), which has for a long time been inherent in Western thinking, by emphasizing the importance of examining the unity of mutual relations between individual and society. Vygotsky (1978) put forward the understanding that psychological functions of individuals originate in their participation

in society, which in turn is used by the individuals to act upon their environment and change it, thus emphasizing the dialectical relationship between man and society.

It is important to understand the fundamental components of Vygotsky's theories, as they are the foundation on which cultural-historical activity theory has been developed. Cultural-historical activity theory highlights historical development of human life, and therefore I find it appropriate to trace its historical roots and gain an understanding of the social and cultural circumstances out of which it grew. This chapter is therefore divided into two main chapters: the former on Vygotsky and the aspects of his theories that are deemed pertinent, the latter on the development of cultural-historical activity theory with special regard to the contribution of Yrjö Engeström, shaped through developmental work research in Finland (Engeström, 2005a).

3.2 Vygotsky and his theories

3.2.1 Educational background

Vygotsky was born in Byelorussia in 1896 and majored in history and philosophy. It is important for the future development of his theories to keep in mind his interest in philosophy and to recognize that he was well versed in the writings of Russian and European philosophers of his time. After graduating from Moscow University in 1917 with a final thesis on Shakespeare's Hamlet he worked as a teacher for a few years and was a prominent leader in cultural life in Gomel, Byelorussia. During that time he began carrying out research in psychology and education, in addition to lecturing on those topics. His doctoral thesis in 1925, *The Psychology of Arts*, combined his study of literature and his growing interest in psychology.

> During the period of his active interest in issues of art reception Vygotsky moved from the position of literary critic, who could claim the relevance of the recipient's subjective understanding of the message, to that of a scientist, who is concerned with discovering general laws by which a human being encounters such a complex cultural invention such as literature (van der Veer & Valsiner, 1993, p. 34).

As a university student Vygotsky became interested in the work of the philosopher Spinoza. Influences from Spinoza's theories, or relations to them, can be traced in Vygotsky's theories. There are two important characteristics of Vygotsky's theories that seem, to a considerable extent, to be derived from Spinoza. Namely, a holistic or monistic view, seeing the individual and his or her environment as a whole, and an

emphasis on the individual's rational understanding of his interaction with the environment. Spinoza emphasized the capacity of human beings to understand their passions and gradually learn to control them, as well as arguing for the role of intellectual tools.

> Both thinkers [referring to Spinoza and Vygotsky] displayed a certain degree of rationalism, or intellectualism, that is, both shared the ideal of rational man whose intellectual functions (speech, thinking) controlled to a large degree the whole personality (van der Veer & Valsiner, 1993, p. 240).

Spinoza argued for a monistic view of soul and body, considering them not to be separate entities but two aspects of the same substance. Vygotsky also argued for a monistic view of the unity of soul and body, and both disagreed with Descartes who promoted a dualistic view, claiming soul and body as existing independent of each other (van der Veer & Valsiner, 1993, p. 246). Spinoza was a rationalist interested in understanding the relationship between the individual and the environment, and argued that the better people understand how the social and natural environment acts upon them and shapes them, the more freedom we acquire. He saw free creative activity as a prerequisite for that kind of rational understanding. This line of thinking is also prominent in Vygotsky's theories. Spinoza had a vision of completeness and wrote about the whole being connected to the parts, just as the parts are connected to the whole. This holistic understanding was characteristic of Vygotsky's research. Bakhurst (2007) argues that 'Vygotsky's ideas draw much of their power from their rationalist heritage' (p. 51), which can be traced to the ancient Greeks, but among the most influential modern rationalists were Descartes, Spinoza, Kant, Hegel, and Marx (ibid, p. 58).

3.2.2 Vygotsky and the dialectical perspective

At the heart of Vygotsky's theories is the dialectical perspective on development, based on Hegel and Marx. His intention was to integrate Marxist and Hegelian traditions (Langford, 2005, p. 81). Hegel was an idealist who saw the self as the main motive force in development and argued that the self begins by being conscious of the environment and then of itself (ibid, p. 37). In his understanding man and reality shape each other, and in that process experience plays a key role (Skirbekk & Gilje, 1999, p. 479). To put it simply, Hegel's dialectic is about how historical development proceeds

when a thesis calls for its opposite or antithesis, and that antithesis in turn delivers a new theory, which is the synthesis of the former two (ibid, p. 484). Dialectic, as a discourse in order to improve understanding, was for Hegel a way to understand historical development. It is a mode of thinking to improve consciousness of how concepts are used and is intended to uncover phenomena as they appear in an everyday context. Hegel argued that the motivation for development of thinking is the desire to improve existing perspectives or world views. In doing so looking for defects is a necessary step to be able to improve the situation or transfigure it (German *aufheben*). For Hegel, the German concept *aufheben* involves breaking away from the constraints of a situation, but nonetheless preserving those factors that function well, and in turn transforming the situation into a higher level form. This approach aims at holistic understanding, e.g. thinking about action directs the mind to the actor performing the action, motives and tools used (Skirbekk & Gilje, 1999, pp. 485-486).

Marx argued that Hegel's idealism needed to be transformed to materialism, thus suggesting that the development of the material reality (production/economy) is the main force in development. The material reality is the fundament for the human condition, which in turn is conceptualized as a superstructure, including culture in a wide sense. Marx viewed man as being creative and free by nature. His work advocated a dialectical relationship between knowledge and work. Work as a social activity is an important force in development and there is a connection between knowledge, work, and development. The dialectical interchange between man and environment explains how the development moves forward when

> advanced forces of production cannot operate within social relations of work that are appropriate for the forces of production at an earlier stage (Langford, 2005, p. 159).

By advanced forces of production Marx was referring to

> the degree to which tools and technology have advanced and the skills and other psychological characteristics of the labour force that are applied to them (ibid, p. 159).

Thus Marx introduces the relationship between tools and skills. In the industrial society work has transformed the environment in such a way that man no longer has power over production, but production acts on the man as an independent power.

Inherent in the dialectical method is that all phenomena are studied as processes in motion. Engels put forward theories on how humans, by using tools, affect their environment and change its nature, and at the same time transform themselves (Cole & Scribner, 1978). In accordance with the tradition of Marx and Engels, Vygotsky comprehended individual development as rooted in society and culture, and recognized the role of tools in development of humans and human societies (ibid, pp. 6-7). From Marx and Engels Vygotsky inherited the vision of the importance of agency for people, based on a belief in their potential for liberating themselves from natural and social constraints.

> The image of man that derives from his [Vygotsky's] theory is that of man as a rational being taking control of his own destiny and emancipating himself from nature's restrictive bounds (van der Veer & Valsiner, 1993, p. 191).

The next section discusses how Vygotsky developed his school of cultural-historical psychology from the background described above, taking as a point of departure central concepts he developed as building blocks for his theories.

3.2.3 Central concepts in Vygotsky's theories

In this section I present some of the main concepts in Vygotsky's theories, which are relevant for analysis of my data and are important for the aspects of cultural-historical activity theory that I apply. I start by discussing *tools* and *signs* as artefacts for *mediation*. Then I turn to mediation by social practice, *social mediation*, which relates to the concepts *internalization* and *externalization*. The importance of *agency* is briefly touched upon before presenting the important Russian concept *perezhivania*, translated as *experience* emphasizing emotions. The role of *ideal forms* in human development is discussed, as is the well-known concept *zone of proximal development*. Finally Vygotsky's theory on the relationship of *everyday* and *scientific* concepts is presented.

Mediation – tools and signs

Mediation is a central concept in Vygotsky's theories (Daniels, 2001; Wertsch, 2007). It is used to explain that human interaction with the world, both natural and cultural, is indirect or mediated. A characteristic of the development of human societies is that people constantly invent new tools for use in their activities to make their actions for survival easier. This means that people use mediators of some kind to act upon their

physical and social environments. As actions are mediated by tools it affects the way people participate and act in their community and in fact change the task.

Engels put forth the theory of human labour where he explained how people use tools to master and/or change nature and in doing so are themselves transformed (Cole & Scribner, 1978, p. 7). Vygotsky's important contribution was to develop Engels' idea and open up an understanding of how use of signs in human culture may be understood in a similar way.

> Like tool systems, sign systems (language, writing, number systems) are created by societies over the course of human history and change with the form of society and the level of its cultural development (Cole & Scribner, 1978, p. 7).

Whereas tools are artefacts used to bring about changes in the physical environment, signs are psychological tools used to direct the mind and behaviour of the sign-user (Daniels, 2001, p. 15). In the same way as tool use changes labour activity, the use of signs changes the psychological structure of an individual's mental functions (Wertsch, 2007, p. 179). While tools are externally oriented, signs are internally oriented (Vygotsky, 1978, p. 55). The tools and the signs act as mediators between the subject and the object (van der Veer & Valsiner, 1993, p. 220). On these grounds Vygotsky came to criticise the behaviourist research model, based on stimulus and response, for not taking into account that in human society actions and communication are always mediated through signs or tools (Vygotsky, 1978, pp. 30-40) (Figure 3.1).
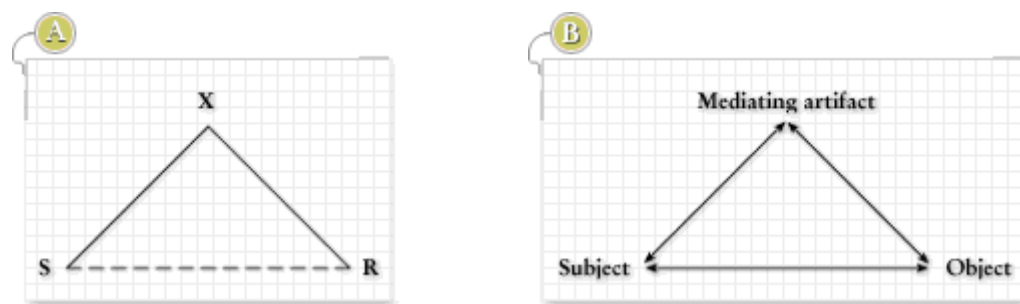
Figure 3.1 (A) Vygotsky's model of mediated action and (B) its common reformulation (a copy from the web of CRADLE)

> The essential difference between instrumental psychological acts and labor operations is that signs are intended to control the psyche and behaviour of others and the self, whereas tools are employed to master nature or material objects (van der Veer & Valsiner, 1993, p. 220).

Vygotsky claimed that while the use of tools has played an important role in the history of man's control of the physical environment, the use of signs has played an important

role in man's control over the self. He emphasized that 'tool and sign are mutually linked and yet separable in the child's cultural development' (Vygotsky, 1978, p. 54).

> The mastering of nature and the mastering of behaviour are mutually linked, just as man's alteration of nature alters man's own nature (Vygotsky, 1978, p. 55).

Vygotsky saw language as being the most influential sign system man has invented, and by studying children's use of language it was possible to explain its role in human development.

> The specifically human capacity for language enables children to provide for auxiliary tools in the solution of difficult tasks, to overcome impulsive action, to plan a solution to a problem prior to its execution, and to master their own behaviour (Vygotsky, 1978, p. 28).

Further research on children's use of signs, especially as an auxiliary tool for memory, underpinned Vygotsky's cultural-historical theory of human development, which differed radically from existing theories in the field. As signs and sign systems are undoubtedly of social origin, the importance of the socio-cultural environment in the mental development of children could be explained, as well as how it is related to biological development.

> Within a general process of development, two qualitatively different lines of development, differing in origin can be distinguished: the elementary processes, which are of biological origin, on the one hand, and the higher psychological functions, of socio-cultural origins, on the other. *The history of child behaviour is born from the interweaving of these two lines* (Vygotsky, 1978, p. 46).

Vygotsky's research on how children's use of tools and signs develops with age revealed the crucial role of signs as an auxiliary stimulus for human beings to control their lives and conditions.

> Because this auxiliary stimulus possesses the specific function of reverse action, it transfers the psychological operation to higher and qualitatively new forms and permits humans, by the aid of extrinsic stimuli, *to control their behaviour from the outside.* The use of signs leads humans to a specific structure of behaviour that breaks away from biological development and creates new forms of a culturally-based psychological process (Vygotsky, 1978, p. 40).

Livingstone (2006) explains that the central feature of Vygotsky's approach is that it is simultaneously instrumental, cultural, and historical. The cultural heritage of mankind means that children are born into a world equipped with artefacts, such as technical tools, and sign systems, such as language. Developing as a human being involves learning to use these artefacts, which in turn act on the psychological functions, and

open up the possibilities for people to create and contribute to the development of their environment, including the cultural artefacts.

Social mediation – internalization – externalization

I am interested in analysing what the school-based student teachers learn in the programme and how they can use it to contribute to the school practice, and vice versa how their experience from the schools may be used to contribute to development of learning practice in the programme. Vygotsky's theories on the relationship of internalization and externalization in human learning and development are suggested to be appropriate for that kind of analysis.

Hegel had put forward the role of social mediation in the development of cognition from elementary functions into higher functions of thought and complex use of concepts (Langford, 2005, p. 161). Besides sign and tool mediation other human beings may also serve as mediators between individual and environment in human actions (Daniels, 2001, pp. 17-19). Thus the culture as social environment is a mediator in people's actions, since their actions are embedded in the culture and are bound to be interpreted via the culture in which they are situated.

Vygotsky (1978) used the concept *internalization* to explain how knowledge gained by experience of participating in human society is transformed into psychological functions in the individual's mind. His research on child development led him to the important conclusion put forward in the frequently quoted citation:

> Every function in the child's cultural development appears twice: first on the social level, and later, on the individual level; first between people (interpsychological), and then inside the child (intrapsychological) (Vygotsky, 1978, p. 57).

The conclusion that all mental functions are first experienced socially (Moran & John-Steiner, 2003) has been influential in pedagogy and will be discussed later. Vygotsky argues:

> The internalization of socially rooted and historically developed activities is the distinguishing feature of human psychology, the basis of the qualitative leap from animal to human psychology (Vygotsky, 1978, p. 57).

The dialectical perspective on development is in turn reflected in the concept *externalization*, which is used to explain how individuals use their psychological capacity to act upon their social surroundings and change them.

> Internalization is related to reproduction of the culture; externalization as creation of new artefacts makes possible its transformation (Engeström & Miettinen, 1999, p. 10).

Figure 3.2 is a visual representation of how Vygotsky's sees personal and cultural developments to be dialectically interwoven.

Individuals are born into a given culture of their time and participation in their social environment is a prerequisite for their psychological development. Participation involves interacting with other people and learning to know and use tools and signs of that culture, such as language. Development of individual personality is based on internalization of cultural tools and social interactions (Moran & John-Steiner, 2003, p. 63).

> Internalization is not the grafting of a culture onto a personality but an engagement with existing cultural resources, which lead to newly realized aspects of the self (Moran & John-Steiner, 2003, p. 63).

Externalization is to be understood as individual creative participation in culture. Just like individual development depends on participation in social life, so too is development of culture dependent on the creative contribution of individuals.

> Externalization is the construction and synthesis of emotion-based meanings and cognitive symbols. Once expressed, these meanings and symbols are embodied in cultural artefacts – creative products – that endure over time to be used by future generations. The dynamic constructions that result from externalization are materialized meanings, composed of shared ideas, beliefs, knowledge, emotions and culture (Moran & John-Steiner, 2003, p. 63).

Vygotsky's theory on mediated activity means that in the process of internalization an individual must be actively engaged in interpreting the social world, and in the process of externalization actively engaged in transforming the social world through actions. This is the basis for Vygotsky's cultural-historical theory. The emphasis placed on externalization indicates the importance of active participation of humans in their cultures, and the importance of the concept of agency in Vygotsky's theories (Daniels, 2001, pp. 44-45).

Experience and emotion

Vygotsky's concept of experience is helpful for understanding how the student teachers experienced participation both in the community of the programme and their home schools and the importance of taking this into account in analysis. Moran and John-Steiner (2003) have developed a visual representation based on Vygotsky's dialectical conception of development and creativity (Figure 3.2). Experience is a key concept for individual development. The concepts *artefacts*, *tools,* and *signs* are important for social/cultural development, the concepts *meaning* and *sense* demarcating the social and the individual reminding us of how personal experience plays an important role when individuals make sense and derive meaning from their relationship with the environment. The English word *experience*, or sometimes *emotional experience*, is used to translate the Russian concept *perezhivanija*, although it does not capture its exact meaning, which comes closer to the German word *erleben* or lived experience (in Icelandic *upplifun*) (Vygotsky, 1994). The lived experience plays an important role in linking the inner self to the outer self in the transformative processes of internalization and externalization. This linking is dependent on the use of signs, particularly the use of language (Langford, 2005, pp. 108-109).

The influence of the environment upon an individual at a given time in his development depends on the kind of emotional experience he encounters (or experiences) in his engagement with it. Vygotsky was keen to find out how to study the role of the environment in development, and proposed that emotional experience could be seen as a prism through which an individual refracts the environment. He reiterated the importance of dynamic and relative interpretation of the environment, and how different aspects of human development are in different relations with the environment (Vygotsky, 1994, pp. 346-347).

> we are always dealing with an indivisible unity of personal characteristics and situational characteristics, which are represented in the emotional experience [*perezhivanija*] (Vygotsky, 1994, p. 342).

Emotional experience involves a unity of personal and environmental features and may therefore be used to examine the relationship between people and their environment (Moran & John-Steiner, 2003, p. 77).

Culture
Creative outcomes

Development
Internalisation

Creativity
Externalisation

Artefacts

Tools and
signs

Social

Meaning

Individual

Sense

Experience
(Pereshivanija)

Functional systems
(including creative
management)

Personality
Will and commitment

Time
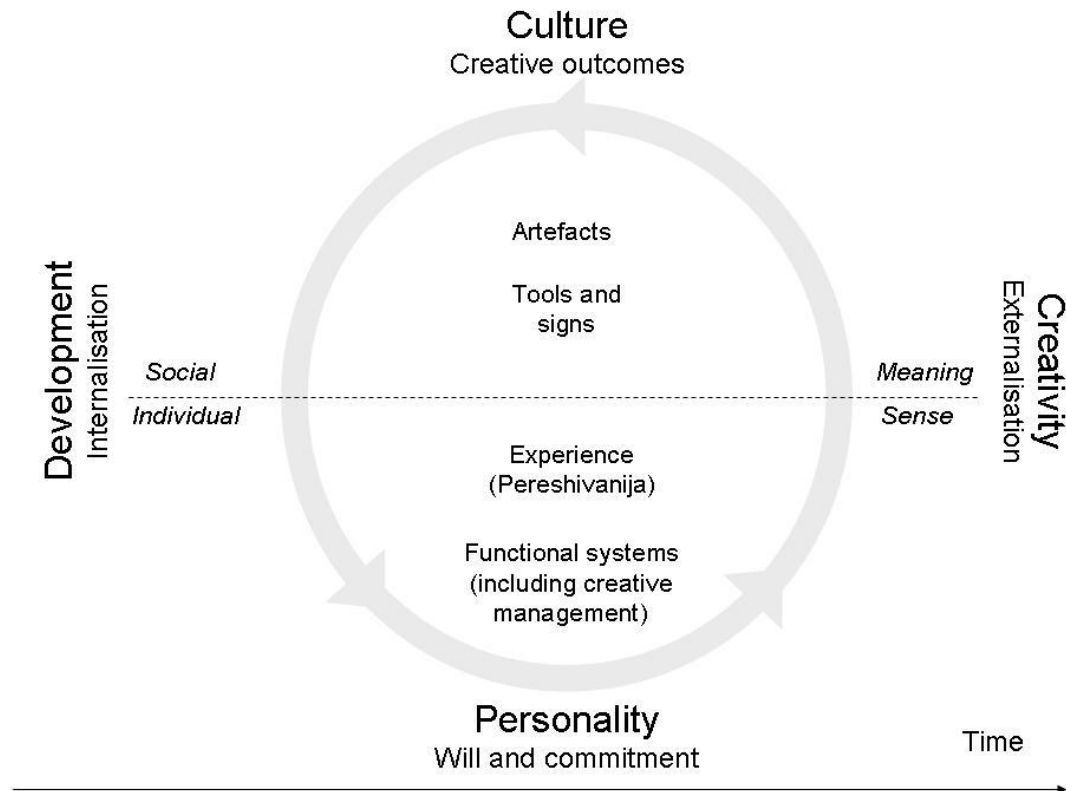
Figure 3.2 A visual representation of Vygotsky's dialectical conception of development and creativity (modified from Moran and John-Steiner 2003, p. 64).

Agency

The fact that human beings have invented tools to aid their activities affects the way they participate and act in their communities. Consequently people must be regarded as agents, as their possibilities for participation in activity depend on agency and freedom of action. However, agency is not equivalent to 'free will'.

> Agency is always and everywhere constrained by social groupings, material and symbolic resources, situational contingencies, and individual or group's capabilities and so on (Lantolf & Torn, 2006, p. 238).

In other words, agency is contingent upon people's competence, as well as their socio-cultural circumstances, which make actions possible or prevent them. It revolves around the relationship between the individual and the social, which is constantly renegotiated. It is the primary focus of activity theory because it helps explain people's actions and the reasons for them (Lantolf & Torn, 2006, pp. 238-239). Focusing on subjects' agency means investigating their potential for enacting 'free will' in their activities. Vygotsky's approach connected human freedom to mediation by cultural artefacts, tools, and signs, and emphasized how agency and tool-mediated actions were interrelated (Yamazumi,

2007, pp. 20-22). The concept of agency focuses the attention on how the potential of human freedom may be enhanced by configuring settings in the socio-cultural environment, thus providing people with access to cultural tools, enabling them to cope with constraints in their immediate situations.

The importance of people's agency for functioning in socio-cultural settings requires us to look at constraints or affordances for student teachers' participation in their home schools and in the programme.

Ideal form

The importance of the concept of the ideal in changing practice and development directs attention to the role of visions and future models in reforming practice. In examining the role of environment in child development Vygotsky starts out by asking what is specific about the relationship between environment and child development, and concludes that:

> in child development that which is possible to achieve at the end and as the result of the developmental process, is already available in the environment from the very beginning (Vygotsky, 1994, pp. 347-348).

Language is a good example of this, as it exists in an ideal form in the child's environment and as such it acts as a model for a child that is learning to speak.

> The greatest characteristic feature of child development is that this development is achieved under particular conditions of interaction with the environment, where this ideal and final form (that form which is going to appear only at the end of the process of development) is not only already there in the environment and from the very start in contact with the child, but actually interacts and exerts a real influence on the primary form, on the first steps of the child's development. *Something which is only supposed to take shape at the very end of development somehow influences the very first steps in this development* (Vygotsky, 1994, p. 348).

The concept of the ideal is important in dialectical historical materialism. Marx explains how the ideal form distinguishes human activity from that of animals by comparing the bee and the architect when building a cell. The architect has an image of the cell in his head before he starts constructing whereas the bee acts on instinct. The images in the heads of social human beings are the ideal forms that direct their work (cited from Marx's *Capital* and Ilyenkov in Jones, 2001). Ilyenkov, who has written most thoroughly on the ideal within activity theory (Jones, 2001; Davydov, 1999), explains the ideal as the subjective being of the object, and Marx explains it as the material

transposed into the heads of people (Jones, 2001, p. 289). Vygotsky stresses the material origin of the ideal when he says:

> An ideal or final form is present in the environment and it interacts with the rudimentary form found in children, and what results is a certain form of activity which then becomes a child's internal asset, his property and a function of his personality (Vygotsky, 1994, p. 353).

Davydov (1999a) addresses the need to take theories of the ideal into account when activity is analysed since people's ideal images, that is their possibility to foresee the outcome, always play an important role in the activity process. He argues that people's internal images, needs, and goals can be united in the concept *ideal*, which he defines in the following way:

> The ideal is the existence of an object in the phase of its formation, in the subject's activity manifesting itself as a need and a goal (Davydov, 1999a, p. 50).

Jones (2001) gives an overview of the ideal as a concept in cultural-historical activity theory and explains how its importance relates to understanding the interactions of human minds with activity. Jones says:

> We must study how and why it is that in the course of the social production of objects to satisfy their needs, people also produce a whole world of special objects, termed *ideal* (Jones, 2001, p. 286).

Jones suggests that it may be 'easiest to think of it initially as the idea, the conscious goal or aim that people work towards and realise in the course of labour activity' (2001, p. 287). It is also important to understand how the ideal originates in material production, developing dialectically through an interaction of the material and the ideal.

> There is, then, a dialectic of ideal and material in human social production. The ideal exists within material production as a 'nonmaterial image' dialectically reacting back on its material matrix, the whole process realising itself in a cyclic or spiral movement (cf. Ilyenkov 1960/1982) in which the material is idealised (translated into symbols, images) and the ideal in turn is converted back into matter (Jones, 2001, p. 307).

Van Huizen, van Oers, and Wubbels (2005) claim that, from a Vygotskian perspective, ideal forms are based on values and goals attached to the core activities in an activity system. Ideal forms direct the subjects and mediate their actions on the object of activity. They may enhance understanding of people's relation to their environment and

the motives of their activity. Van Huizen et al. argue that Vygotsky's concept of *zone of proximal development* pre-supposes the presence of 'ideal forms' (2005, p. 274).

Everyday concepts and scientific concepts

In analysing the learning of student teachers, situated in schools while studying in the university programme, the theory of the connection between academic and practical knowledge is highly relevant, especially the later addition to Vygotskian theory emphasizing the importance of linking the theoretical to the procedural. This interrelation of academic and practical knowledge is also useful in understanding the interaction of schools and teacher education institutions on a systemic level, through focusing attention on what kind of theoretical knowledge is needed for developing practice in schools, and what kind of knowledge of practice in schools is needed for developing theoretical knowledge in the university department.

It is characteristic of Vygotsky's methodological approach to focus on the inter-functional relation between two phenomena, e.g. between tool and sign, thought and language, natural maturation and cultural development (Kozulin, 1986). This method was also used when exploring the relationship between developments of scientific concepts with that of everyday concepts. The broader context for his study on this matter was to understand better the relation between school instruction and mental development (Vygotsky, 1986, p. 174).

> Everyday concepts derive from everyday personal experience, they are tied to situations and practice and are unsystematic, often unconscious, and may be misconceptions (Karpov, 2003; Vygotsky, 1986).

> Scientific concepts represent the generalization of the experience of humankind that is fixed in science, understood in the broadest sense of the term to include natural and social sciences as well as the humanities (Karpov, 2003, p. 66).

On the basis of their research Vygotsky (1986, p. 205) and his collaborators confirmed that the difference between scientific and everyday concepts is an absence of system in the latter. Everyday concepts play an important role in school learning (education), for in order to learn scientific concepts everyday concepts must have reached a certain level. It may be compared to learning a second language, where a solid competence in the mother tongue is the basis on which a second language is founded. In the same way as the mother tongue is the mediator for learning a second language, everyday concepts function as mediators for learning scientific concepts. Learning a second language

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enhances people's consciousness and understanding of their own language by making it more abstract and generalized (Vygotsky, 1986, pp. 160-161). Vygotsky argued that similar relations exist between scientific and everyday concepts and that '…the new higher concepts in turn, transform the meaning of the lower' (ibid, p. 202).

> In the scientific concepts that the child acquires in school, the relation to an object is mediated from the start by some other concept. Thus the very notion of scientific concept implies a certain position in relation to other concepts, i.e. a place within a system of concepts. It is our contention that the rudiments of systematization first enter the child's mind by way of his contact with scientific concepts and are then transferred to everyday concepts, changing their psychological structure from the top down (Vygotsky, 1986, pp. 172-173).

Everyday concepts (sometimes called spontaneous concepts) develop by everyday experience whereas scientific concepts are learned systematically where some kind of instruction plays a leading role. Because of the importance of instruction in acquisition of scientific concepts Vygotsky was concerned about the practical importance of studying their relationship to improve understanding of the relationship between instruction and mental development in general. His research resulted in the following conclusion:

> The formal discipline of scientific concepts gradually transforms the structure of the child's spontaneous concepts and helps organize them into a system: this furthers the child's ascent to higher developmental levels (Vygotsky, 1986, p. 206).

Karpov (2003) explains the idea Vygotsky put forward in the theory plainly:

> Students are taught scientific concepts in the course of systematic instruction and acquire them consciously and according to a certain system. Once scientific concepts have been acquired, they transform students' everyday life knowledge: The students' spontaneous concepts become structured and conscious (Karpov, 2003, p. 66).

By learning scientific concepts students get a tool by which they mediate their tasks, in a way that frees them from their immediate personal experience and makes it possible for them to approach a task theoretically. A '… reflective consciousness comes to the child through the portals of scientific concepts' (Vygotsky, 1986, p. 171) making children able to better control their behaviour by logical thinking. They have acquired a tool they can use to *break away* from the constraints of an immediate situation (see also Chapter 3.3.3 where Vygotsky's suggestion of double stimulation by providing instruments for breaking away from such double bind situations is discussed).

Karpov (2003) discusses the role of Vygotsky's doctrine of scientific concepts and covers the shortcomings of Vygotsky's theory on this matter, the most serious being his underestimation of procedural knowledge. This has been worked on and improved by his Russian followers, who emphasized that in order to function as mediators in learning, scientific concepts have to be supported by procedural knowledge in the relevant subject domains (Karpov, 2003, p. 68). Pure verbal knowledge based on definitions of concepts, which often is the case in traditional school instruction, is insufficient.

Zone of proximal development

In analysing the development of individual student teachers when practicing in schools the zone of proximal development reminds us of the importance of affordances for social practice and collaboration with more developed professionals in schools. In the same way social practice and professional guidance are important for supporting individual learning in the programme.

Having realised the social nature of human development Vygotsky became critical of how child development was assessed. He argued that traditional methods, which investigate the potential of children by testing them individually to find out what they are able to do on their own, are insufficient because:

> what children can do with the assistance of others might be in some sense even more indicative of their mental development than what they can do alone (Vygotsky, 1978, p. 85)

This is especially relevant when studying the relationship between learning and development and is of crucial importance for education. Vygotsky suggested that research should focus on what children are capable of in real situations where they are supposed to perform tasks with the help of what the environment affords: tools, signs, and other people. This kind of research resulted in the concept *zone of proximal development*, which Vygotsky defined in the following way:

> It is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. […]

> The zone of proximal development defines those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state (Vygotsky, 1978, p. 86).

Through his research Vygotsky was able to enhance understanding of the developmental possibilities underway in the child and how the environment could be organized to make it flourish. This was a radical shift from a former belief where education was supposed to adjust to the stage of the child's development as traditionally evaluated (van der Veer & Valsiner, 1993, pp. 336-341). Vygotsky argued that by doing so teaching and learning is oriented towards a developmental stage the child has already reached. He suggested that the notion of *zone of proximal development* enables us to understand how education may be organized to stimulate development (Vygotsky, 1978, p. 89).

> We propose that an essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers (Vygotsky, 1978, p. 90).

According to Vygotsky human development originates in social interaction. Therefore the key to enhancing individual development lies in affordances in the social environment. The zone of proximal development, was meant to explain why teaching should be directed towards maturing psychological functions rather than towards those already developed (Chaiklin, 2003, p. 57). It is therefore important for educators to understand the relation between maturing functions and the social situation for developing new formations, and to move to the next developmental stage in a given age period. In order to evaluate the developmental stage of an individual child, assessment should be focused on what the child is capable of in natural social settings, because what she is able to do with assistance today she will be able to do by herself in the future. This is based on Vygotsky's theories, which assume that performance in social settings precedes internalization.

Now the attention will be turn to some aspects in development of cultural-historical activity theory, especially the approach developed by Engeström who has expanded the use of Vygotsky's concept of zone of proximal development into analysing collective system level development. Since I am keen on exploring possibilities for system

development in schools and teacher education and its interplay with individual development this theoretical aspect is highly relevant.

3.3 Cultural-Historical Activity Theory; a theory in development

3.3.1 Introduction

Cultural-historical activity theory as a theoretical paradigm has its origins in Russia in the wake of the revolution in the 1920s and 1930s, where Vygotsky and his colleagues, the most prominent being Alexei Leontiev (Leontiev, 1978) and Aleksander Luria (Luria, 1976), were working on the project of developing a Marxist theory of human and social development (Engeström, Miettinen, et al., 1999; van der Veer & Valsiner, 1993). Their research was originally focused on child development and the psychology of learning. The name cultural-historical activity theory (CHAT) brings together the theory developed by Vygotsky, who called his theory cultural-historical theory, and the theory developed by Leontiev, who is considered the founder of activity theory. Recently Cole and Engeström (2007) have insisted on the importance of looking at these two threads together. Since the 'basic impulse underlying a CH/AT approach is to reject this either or dichotomy' (ibid, p. 485), Vygotsky and Leontiev should be regarded as adherents of the same school, where different emphases in their contributions have complemented and enhanced the development of the theory.

Researchers continued after Vygotsky's death to develop the cultural-historical and activity theories in the Soviet Union, mostly within psychology and child development, focusing on play and learning and teaching in schools (Engeström, Miettinen, et al., 1999). The theory started to spread in the West when the foundations were published in English; *Thought and language* by Vygotsky in 1962, *Cognitive development. Its cultural and social foundations,* by Luria in 1976 and *Activity, consciousness, and personality,* by Leontiev in 1978. The first international congress for research in activity theory was held in Berlin in 1986, and the following year an international scientific society (ISCRAT, later changed to ISCAR – International Society for Cultural and Activity Research) was founded (Engeström, Miettinen, et al., 1999). The theory has since then been applied in diverse fields of research, such as second language acquisition (Lantolf & Torn, 2006) and use of computer technology (Kaptelinin & Nardi, 2006), all the while being developed further. Since the foundation of the theory, deriving from both Marx and Vygotsky, was that practice is essential for testing and

improving theory, it should be no surprise that it has been greatly used in intervention research for developing practice (Cole & Engeström, 2007).

Yrjö Engeström and his colleagues at the Center for Activity Theory and Developmental Work Research (from 2009 called CRADLE, Center for Research on Activity, Development and Learning) at the University of Helsinki have been developing the use of activity theory to support development of work practices (Engeström, 2005a; Engeström, Lompscher, & Rückriem, 2005). They call their method *developmental work research*, which is a mixture of workplace research and developmental projects, where interventions aimed at developing work practices are implemented and studied, and new forms of work are theorized (Engeström, 2005a; Engeström, Lompscher, et al., 2005). Engeström has contributed to the development of the theory, especially with his *theory of expansive learning* (Engeström, 1987, 1999b), the usefulness of which has been tested in collaboration with different kinds of workplaces, aiming to develop their practices (Engeström, 2005a; Engeström, Lompscher, et al., 2005).

This line of cultural-historical activity theory seems to be appropriate for my study on student teachers, who are developing their teaching practices while working as teachers in schools, at the same time as they are students in a distance learning programme where they participate in an academic community working with theories concerning their practice. I am interested in understanding how their familiarity with theories opens up possibilities for developing their practice, as well as how moving between the school where they teach on the one hand, and the teacher education programme on the other hand, supports their practice as students in the programme and as teachers in the schools. The analytical tools developed by Engeström and colleagues in Finland, some features of which will be discussed in the following chapters, appear to be appropriate for my study.

3.3.2 Activity as a unit of analysis

Vygotsky emphasized the importance of focusing on how human activity is mediated by tools, signs, and social relations, afforded in the relevant culture. For him it was important that the unit of analysis was holistic and included historical development and cultural context. Leontiev identified as a shortcoming of Vygotsky's model (see Figure 3.1) of the unit of analysis, depicted in the triangle of goal directed action mediated by

tools, that it focused on the individual and did not account for the social nature of human activities (Cole & Engeström, 1993). Like Vygotsky, Leontiev worked with the assumption that higher forms of human consciousness originate in socially meaningful activity (Lantolf & Torn, 2006), and like Leontiev, Vygotsky emphasized the importance of activity as the context of mediated actions (Cole & Engeström, 2007). Leontiev's contribution was to explain how the social context of individual practice, i.e. the community, had to be taken into consideration as an important explanatory factor when analysing individual development. Leontiev drew attention to the *collective activity* and suggested the term *activity system* as the context in which individual and collective human actions should be analysed. His theory was known as *activity theory*.

The concept of *activity* is the English translation of the Russian concept *deyatel'nosti* (German *Tätigkeit*, Icelandic s*tarfsemi*), which includes dialectics such as thinking and doing, or knowing and performing. The English word activity is too broad and does not quite succeed in encompassing these dual aspects. Therefore there is a need to clarify how the pioneers understood it and how it is still being explored (Davydov, 1999a, 1999b; Engeström, 1999a; Lantolf & Torn, 2006).

> The initial form of activity is the production of material tools that help people produce objects satisfying their vital needs (Davydov, 1999a, p. 40).

Davydov explains that activity can be regarded as 'an initial category that determines the specific character of people's social being' (ibid, p. 41) and that true activity is always connected to the transformation of reality. Drawing on Hegelian and Marxist dialectics Leontiev emphasized the transformation of objects of activity; how humans by their actions change their natural and social conditions. For Leontiev 'activity is a systemic formation in constant internal movement' (Leontiev, 1978). He defines activity as follows:

> Activity is a specific form of the societal existence of humans consisting of purposeful changing of natural and social reality. […] Any activity carried out by a subject includes goals, means, the process of moulding the object, and the results. In fulfilling the activity, the subjects also change and develop themselves (cited in Davydov, 1999a, p. 39).

Davydov (1999a, 1999b) claims that the fundamental kind of activity is work and that action is the key component in activity. He explains that different disciplines classify different kinds of activities, e.g. for educational scientists play and learning are the principal kinds of activities they deal with. Davydov examined the characteristics of

educational, or learning, activity and claims that an educational task, which is the basic unit in educational activity, is fundamentally different from other activities in that its goal and result is a change in the subject, not in the object on which the subject is acting like in many other kinds of activities (Davydov, 1999b; Davydov & Markova, 1983).

Another aspect of activity relates to the development of individuals with age. People participate in different kinds of activities at different ages. Leontiev suggested the term *leading activity* to describe the dominant form of activity for a given age in the relevant culture. In developing activity it is important to take age and the respective leading activity into account since it is claimed to be a powerful source for motivation. To give a crude example: play is a leading activity for children until formal learning in schools becomes their leading activity in cultures with developed school systems. Peer relations are the leading activity of teenagers and work the leading activity of adult people (Cole & Engeström, 2007).

Leontiev explored the structure of activity and argued that it includes needs, motives, goals, actions, and operations, where need is the basis for activity calling for motives that in turn direct the activity, the object of activity being its true motive (Leontiev, 1978). He suggested that in analytical work a difference should be made between three levels: activity, actions, and operations, characterized by a) what it is directed at and b) the performers (Figure 3.3).

Activity, which is at the top level, is carried out by a community or society directed by a motive. Actions are carried out by individuals or groups directed by a goal. Operations are individual actions that have become conditional, i.e. can be realised without reflection.
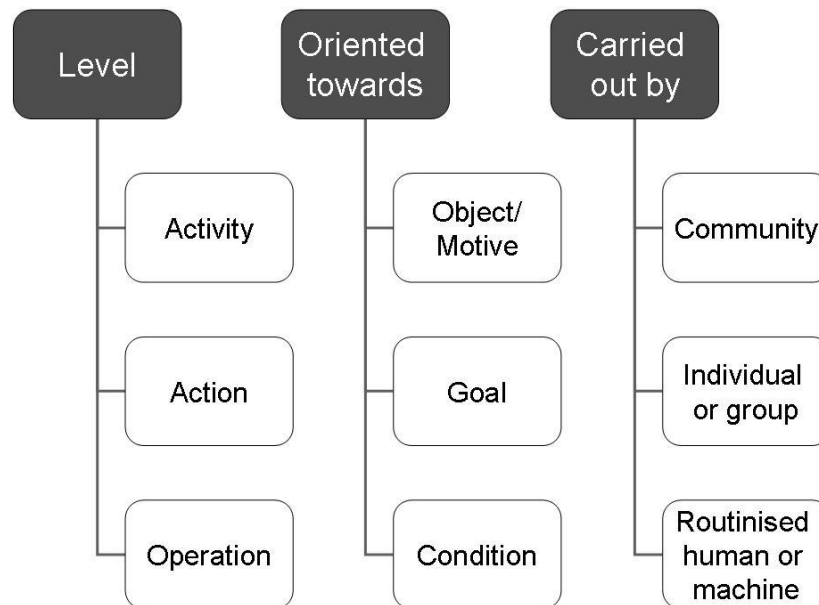
Figure 3.3 Leontiev's three-level hierarchical structure of activity (modified from the website of CRADLE, 2009)

Although this suggestion has been controversial among cultural-historical activity theorists there is general agreement on Leontiev's proposal of *object-related practical activity* as the proper unit of analysis (Roth & Yew-Jin, 2007). This is based on the understanding that:

> the thought structures of individuals and communities are tied to the social and material conditions of their everyday practice. Situated social interaction connected to concrete practical activity is the source of both individual and cultural development, and in turn, cultural-societal structures provide affordances and constraints that cultivate the development of specific forms of consciousness (Lantolf & Torn, 2006, p. 213).

The importance of the activity as an analytical concept is that it can be used to analyse the interplay of individual actions with the socio-cultural environment where, according to the theories of Vygotsky, individual development originates.

> The activity concept has been so important within the cultural-historical tradition because it provides a way to characterize those aspects of social practice that is believed to provide the conditions for psychological development (Hedegaard, Chaiklin, & Jensen, 1999, p. 19).

The concept of activity is still being explored. Davydov claims that since the concept is interdisciplinary in nature, perspectives of multiple social and human disciplines are needed for developing it (Davydov, 1999b).

Engeström's triangle model

Leontiev's suggestion of including the community in the unit of analysis called for further elaboration of how to analyse the community. Engeström (1987) systematised Leontiev's activity theory, putting forward a model describing the social context of human activities in activity systems. He suggests that in activity theory the basic unit of analysis is a collective, object-oriented activity system, e.g. an institution or a workplace, where the learning of individuals, and the systems of which they are parts, are intertwined.

> An activity system is a complex and relatively enduring 'community of practice' that often takes the shape of an institution (Engeström, Engeström, & Kärkkäinen, 1995, p. 320).

> Activity systems are best viewed as complex formations in which equilibrium is an exception and tensions, disturbances, and local innovations are the rule and the engine of change (Cole & Engeström, 1993, p. 8).

Engeström's point of departure is Vygotsky's theory on mediated activity, presented in the triangle made of stimulus, response, and mediating instrument leading to outcome, which is labelled the first generation model (Figure 3.1). Leontiev's contribution, later elaborated on by Engeström and presented in a triangle model (Figure 3.4), is considered to be the second generation of activity theory (Engeström, 2001). Engeström's model includes the division of labour and rules characterizing social institutions in developed societies. His model depicts how individual actions mediated by tools are themselves mediated by the activity or institution in which they take place.

Institutional factors have to be analysed to better understand how trajectories of individuals and the activity systems in which they are acting are intertwined. He claimed to be developing a model of an activity system that incorporated 'both the object-oriented productive aspect and the person-oriented communicative aspect of the human conduct' (Engeström, 1990, p. 79). The activity system as modelled by Engeström is explained on the website of CRADLE, Center for Research on Activity Development and Learning (2009):
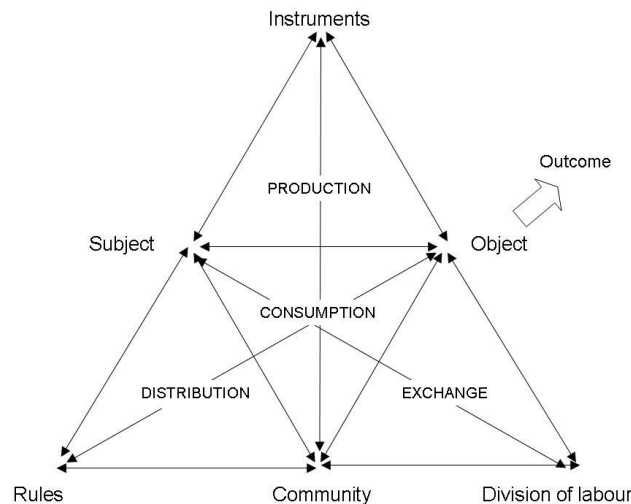
Figure 3.4 Engeström's triangle model of human activity (modified from Engeström, 1987, p. 78)

> In the model, the subject refers to the individual or sub-group whose agency is chosen as the point of view in the analysis. The object refers to the 'raw material' or 'problem space' at which the activity is directed and which is moulded and transformed into outcomes with the help of physical and symbolic, external and internal mediating instruments, including both tools and signs. The community comprises multiple individuals and/or sub-groups who share the same general object and who construct themselves as distinct from other communities. The division of labour refers to both the horizontal division of tasks between the members of the community and to the vertical division of power and status. Finally the rules refer to the explicit and implicit regulations, norms and conventions that constrain actions and interactions within the activity system.

The model makes possible the analysis of the relationship between the components of the triangle, while at the same time stressing the importance of the systemic whole. In Figure 3.5 an example is given of how Engeström's triangle model of an activity system may be used to describe a school from the perspective of teachers as subjects. A change in one node affects the other nodes in some way, thereby causing changes in the system as a whole. For example, by first looking at the upper triangle: A new tool changes the object of activity and in turn the changed object plays back on the subject and calls for changes in how the subject acts on the object (Davydov, 1999a). This causes imbalance that calls for changes in the lower part of the triangle, i.e. the community sharing interest in the motive/object of activity has to deal with the changed object collectively, which may call for changes in division of labour and rules regulating the activity.

Activity system
School practice
Perspective of teachers
as subjects

Tools
Curriculum
Teaching methods
Learning materials
Assessment techniques
Discipline approach

Outcome
Individuals competent
to cope with further
education; basic skills
Individuals able to to
control themselves act
with responsibility as
democratic citizens

Teachers   Pupils
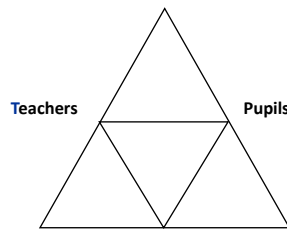
Rules
Teacher as classroom
manager
Timetable
School curriculum
National curriculum
Trade union
agreements
Municipal school policy
School buildings

Community
The professional community
The workplace community
The classroom community
Home-school partnerships

Division of labour
Teacher as subject
specialist
Teacher leadership
DoL – who are experts
Tech./prof. support
Role of advisers
Role of parents

Figure 3.5 Example of using the triangle model for describing a school as an activity system

When proposing the model of the activity system Engeström (1987) argued that it was
the smallest and most simple unit that preserved the essential unity of human activity,
and that it could be used to analyze inner dynamic relations as well as historical change
of human activity systems. However, when taking an activity system as a unit of
analysis, its interplay with multiple neighbouring activity systems has to be taken into
account, as depicted in Figure 3.6.
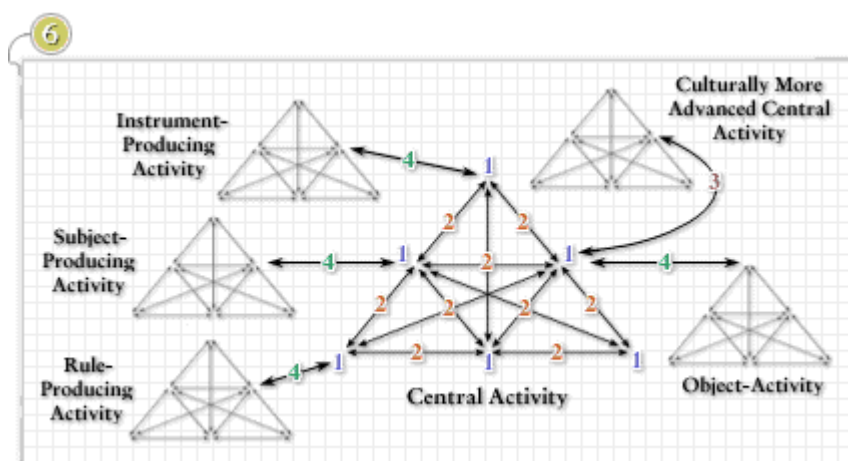
Figure 3.6 A network of human activity systems. The numbers refer to four levels of contradictions (a copy from the web of CRADLE, 2009).

Each component in the triangle can be seen as an outcome of another activity system,
e.g. material tools produced in an activity system of factories, teachers as subjects are

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the outcome of an activity system of teacher education programmes, or pupils may be viewed as outcomes of their families. Later Engeström suggested that the minimal unit of analysis should be two interacting activity systems (Engeström, 2001). Before elaborating on that idea his theory of expansive learning is discussed.

3.3.3 The expansive learning theory

Engeström follows the principle of object orientation central to activity theory and *expansive learning* is conceptualized as stepwise expansion of the object (Engeström, 1987, 1999a, 1999c, 2001).

> Expansive learning refers to processes in which an activity system, for example a work organization, resolves its pressing internal contradictions by constructing and implementing a qualitatively new way of functioning for itself (Engeström 2007, p. 24).

The theory of *expansive learning* defines the kind of learning that is initiated when some individuals involved in collective activity begin to question existing practice, resulting in a debate and a search for ways to overcome the contradictions causing the tensions in the current state of affairs, which might again lead to new forms of the activity as a result of resolving the tensions caused by the contradictions. The theory assumes this to be the way new historical forms of social activity emerge.

Looking at contradiction as a driving force in human development is based on Hegelian dialectics, which Marx elaborated on in dialectical historical materialism, claiming that economic and societal development is driven forward by tensions caused by pressing internal contradictions and human efforts to solve them. The dialectical perspective on development requires that all phenomena are studied as processes in motion, driven forward by contradictions inherent in the unit being investigated (Blunden, 1997; Ilyenkov, 1977). Based on Hegel's dialectical philosophy, development is explained in terms of how people overcome the constraints of a situation by *breaking away* and transforming it (Skirbekk & Gilje, 1999, p. 486). In such circumstances people may find themselves in a *double bind* situation, meaning that they receive contradictory messages to which they are unable to react (Engeström, 1987). Double bind, as a theoretical concept used by Engeström in his expansive learning theory, derives from Bateson and colleagues who used it to describe inner contradictions (ibid, Chapter 3).

Marx introduced the concepts *use value* and *exchange value* and claimed that a contradiction between them causes the most pressing tensions in capitalist societies and pervades all elements of society. Historically it was brought about by the division of labour, when the development of exchange of commodity among people gave the product of work not only its use value but simultaneously an exchange value. This resulted in a dual nature of the commodity, possessing at the same time the two contradictory values. As a consequence the labour of individuals acquires socially a two-fold character, the one being the usefulness of work to satisfy social needs, the other to satisfy individual needs, which are nonetheless dependent upon social bonds expressed as exchange value, i.e. to get money for their individual needs individuals need their work to be valued for exchange.

> The essential contradiction is the mutual exclusion and simultaneous mutual dependency of use value and exchange value in each commodity. This double nature and inner unrest is characteristic to all the corners of the triangular structure of activity (Engeström, 1987, Chapter 2).

Engeström (1987) claimed that by analysing tensions in activity systems and identifying their underlying contradictions it is possible to foresee emerging or possible development in collective human activities. The approach Engeström suggests by his theory of *expansive learning* is a combination of methods that can be traced to Marx and Vygotsky. By analysing what children were capable of doing with support of other people Vygotsky claimed that it was possible to anticipate the development of the child, the subterranean development that would be emerging in their nearest future. That is what Vygotsky defined as the *zone of proximal development*. Engeström suggests that the expansive learning theory affords methods that can be used to define the *zone of proximal development* for activity systems defined in this wider context as:

> the distance between the present everyday actions of individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions (Engeström, 1987, Chapter 3)

The *double bind* refers to tensions or disturbances caused by contradictions in the activity systems that have to be resolved to get the system going. Vygotsky developed the *functional method of double stimulation*, where a mediating tool is made available to the subject for mastering such situations (Vygotsky, 1978, p. 74) with the aim of enhancing agency and self-regulation of subjects. In a similar way Engeström suggests

that the method Vygotsky developed through research on individuals can be applied to enhance agency in collective activities such as workplaces. He explains that we can think of:

> the potential second stimulus as something that has culturally appropriate general affordances but also sufficient ambiguity and malleability so that the subject will have to transform it into a situationally effective mediating device by 'filling' it with specific content (Engeström, 2007b, p. 374).

The methods suggested in the theory of expansive learning were developed for use in developmental work research where the expansive learning cycle (Figure 4.1) is used as analytical tool for identifying the zone of proximal development in activity. The analyses are supposed to generate insights in the form of concepts, visions, hypotheses and tools for use as double stimulation for people developing their practices in workplaces (Cole & Engeström, 2007). However, it can also be used as a framework for analyzing innovative learning processes and transformations in activity systems, which is the way I intend to use it as accounted for in Chapter 4, *Methodology*.

Contradictions in four levels

Contradictions play a central role as sources of change and development in activity systems (Engeström, 2005b), and for development of individuals, since 'people are learning because they face challenges and solve problems vital to their activity' (Toiviainen, 2003, p. 36). Systemic innovations are looked upon as 'stepwise construction of new forms of collaborative practice' (Engeström, 1999b), when new forms of activity emerge as solutions to the preceding conflicts.

> Contradictions are not the same as problems or conflicts. Contradictions are historically accumulating structural tensions within and between activity systems. […] Contradictions manifest themselves in disturbances and innovative solutions (Engeström, 2005b, p. 314).

By revealing inner contradictions in an activity people become conscious of their existence, which in turn becomes a driving force in bringing about change and development (Roth & Yew-Jin, 2007, p. 203). Engeström developed a method for analysing contradictions in activity systems and proposed the expansive learning cycle (Figure 4.1) as a model for analysis which presupposes that four levels of contradictions may be detected (Engeström, 1987).

Primary contradictions are identified within each node of the activity system. They are explained by the inner conflict between use value and exchange value. Such contradictions have been identified as the discrepancy between the ideal type of work and the reality in practice (Engeström, 2007b; Pasanen, Toiviainen, Niemelä, & Engeström, 2005). The classical example for illustrating primary contradictions is that of the doctor, where curing patients represents the use value and his salary the exchange value. In Leontiev's words:

> The doctor who buys a practice in some little provincial place may be very seriously trying to reduce his fellow citizens' suffering from illness, and may see his calling in just that. He must, however, want the number of the sick to increase, because his life and practical opportunity to follow his calling depend on that (cited at CRADLE's homepage 2009).

Secondary contradictions appear between the elements of the activity when new elements enter into it, e.g. between a new or changed object and old rules, or new tools and conventional division of labour.

Tertiary contradictions arise when new models for practice are being implemented and they meet resistance in the system. Then it causes problem in the practice when some subjects act according to a new model while others act according to older model of the practice.

New way of functioning within one activity system may initiate disturbances in neighbouring activity systems. *Quaternary contradictions* thus arise on a systemic inter-organisational level, where interacting systems need to find a way to coordinate their activities in order to develop a qualitatively better way of functioning for the related systems.

> An expansive transformation is accomplished when the object and motive of the activity are reconceptualised to embrace a radically wider horizon of possibilities than in the previous mode to the activity. A full cycle of expansive transformation may be understood as a collective journey through the zone of proximal development of the activity (Engeström, 2001).

The methodology developed for contradiction analysis in expansive learning is further discussed in Chapter 4.

3.3.4 Horizontal and inter-organizational dimensions of learning

Quaternary contradictions reveal tensions between the central activity in focus and its neighbouring activities. To solve these tensions the activities of the neighbouring systems have to tune their interactions on a systemic level in response to tensions and double binds experienced by participants in the relevant activity systems. This has revealed the need for expanding the minimal unit of analysis to include two interacting activity systems.

Further exploration of the human condition in the contemporary context resulted in the third generation of activity theory, where Engeström suggested that two interacting activity systems should be the minimal unit of analysis (Engeström, 1996, 2001). The unit is depicted in a model of two triangles with partly overlapping objects between them indicating a shared or partly shared object (Figure 3.7).
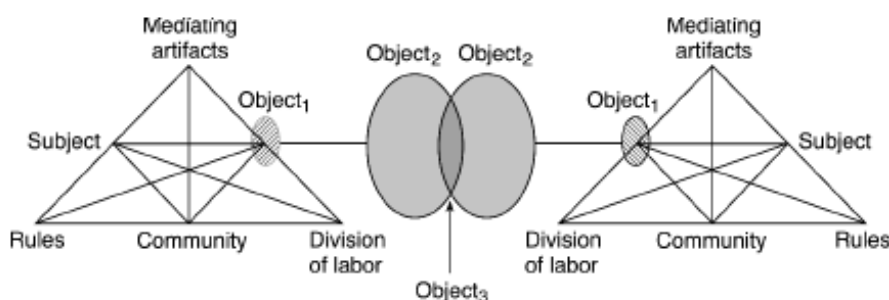
Figure 3.7 Engeström's model of two interacting activity systems (a copy from Engeström, 2001, p. 136)

One of the main principles of activity theory is a focus on the object of activity (Engeström, 2005c) and the theory of expansive learning as an application of activity theory is 'foundationally an object oriented theory' (Engeström & Sannino, 2010, p. 4) focusing on the transformation of the object (ibid, p. 8). The model draws attention to the object of activity from both individual and systemic perspectives, and how individual and systemic learning and development are intertwined. Object 1 is the object of an activity system interpreted in its situational context, from the perspective of individual or collective subjects. In analysing schools and a teacher education programme as interacting activity systems the objects of the schools as activity systems on the one hand, and the programme on the other, are examined from the perspective of the student teachers as teachers in schools, and as students in the teacher education

programme. Object 2 refers to a collectively meaningful object constructed on a systemic or institutional level by the relevant activity systems; here the schools and the teacher education programme. Object 3 refers to potentially shared and jointly constructed objects dealt with on an inter-organizational basis. The model suggests that interacting systems, like schools and teacher education institutions, look at possibilities for collaboration on a systemic level, where they negotiate on potentially shared objects.

In order to understand the possibilities for development, historical development of the relevant systems must be taken into account and contradiction analysis is proposed as an approach to unveil the *zone of proximal development* on a systemic level. Formerly Engeström had identified three principles for analysis, i.e. a collective activity system as a unit of analysis, historical analysis of the activity, and contradiction analysis, including sources of tensions, innovative changes, and development of the system (Engeström, 1990, p. 77). He later proposed that an activity system in networked relation to another activity system should be the unit of analysis, and multiple perspectives within an activity system should be addressed (Engeström, 2001, pp. 136-137). The step of taking two interacting activity systems as the minimum unit of analysis has opened up the possibility for research into inter-organizational learning and networks of interacting activity systems (Engeström, 2001). This development of the theory will be discussed towards the end of the chapter.

Boundary crossing

It is becoming the norm that individual subjects are participants in more than one system, and work in contemporary societies is increasingly characterized by polycontextuality (Engeström, et al., 1995; Ludvigsen, Havnes, & Lahn, 2003). As a consequence the possibilities inherent in the situation, when individuals participating in diverse activity systems move across boundaries, have become a matter of interest in research. In teacher education it alerts us to analyse the knowledge of the schools as workplaces, as well as the knowledge of university departments of education, and how student teachers, when moving between the systems, are using the knowledge they gain in one system in the other, that is, how practical knowledge from the workplace is used in academic studies and how theoretical knowledge from the university is used in practical situations in the schools.

In order to better understand both individual movements between systems and interaction of activity systems, researchers have explored and developed appropriate analytical concepts. In his study on communities of practice, Wenger (1998) proposes the concept of *brokering* to describe connections that people provide when they, as members of multiple communities of practice, move between them introducing elements of one practice into another (ibid, p. 105). It focuses the attention on the analysis of knowledge and the use of knowledge across contexts (Havnes, 2008). Good brokers may open up new understanding of the practices of activity system in which they participate.

> The job of brokering is complex. It involves processes of translation, coordination, and alignment between perspectives. It requires enough legitimacy to influence the development of practice, mobilize attention, and address conflicting interests (Wenger, 1998, p. 109).

Wenger (1998) sees the periphery as a very fertile area for change (p. 118), and he explains how *brokers* are in the ambivalent situation of being both members and not members of the communities, and their strength being the distance that makes it possible for them to bring different perspectives. This suggests that constraints of specific contexts may be overcome with the help of people who have access to new contexts, where they are able to develop new ideas and insights, which they in turn bring into the other community of practice. Wenger also talks about *boundary practices*, which he analyzes as a form of collective brokering, aimed at sustaining connections between practices by addressing conflicts or reconciling perspectives (ibid, p. 114). Boundary practice presupposes that the objects of activity of two systems are overlapping.

The concept *boundary crossers* is generally used for people who move between communities of practice or activity systems in which they are simultaneously participating. Engeström et al. (1995) refer to studies of creative thinking that have pointed to the promise of transferring ideas between different domains when people move between them, explaining, however, that when entering a new terrain the unfamiliarity of the new context might prevent their access. They suggest that *boundary crossing* is used to signify the act of entering unknown areas, and presupposes that people formulate new mediating concepts as they interpret the community in order to find out how to function there. In explaining how the process of formulation of new mediating concepts might be initiated the notion of *boundary object*, put forward by

Star (1989) has been useful. She identified boundary objects as some kinds of representations, artefacts, or concepts containing the reality of the interacting systems, thereby enabling interpretation when crossing boundaries between different activity systems. Wenger (1998) agrees on the importance of *boundary objects* when people who are members of multiple communities of practice have to learn to move successfully between them.

Theories and concepts dealing with crossing boundaries between activity systems are relevant for studying school-based student teachers who simultaneously participate in two activity systems and constantly move between them. Brokering directs the attention to how student teachers may transfer ideas, skills, and knowledge from one system to another, and boundary objects may be used to analyse what supports or hinders the transfer.

Expansive learning in boundary work

In developing his theory of expansive learning to make it better suited to cope with horizontal and inter-organizational dimensions of learning Engeström argues that the most demanding and promising developments are associated with the emergence of co-configuration work and knot-working in social production (Engeström, 2004, 2005b, 2007a; Engeström, Engeström, & Vähäaho, 1999). He emphasizes the importance of understanding how historically new forms of work call for new forms of learning. Referring to Victor and Boynton (1998, cited in Engeström, 2004), who defined the historical development of work as evolving through stages from crafts to mass production, and now the emergence of co-configuration work, Engeström promotes co-configuration as an emerging historically new type of work characterized, among other things, by:

> multiple collaborating producers that need to operate in networks within or between organizations; mutual learning from interactions between the parties involved (Engeström, 2004, p. 12).

Creation of services that adapt to changing needs of users is a critical prerequisite in co-configuration work since products and services are made more responsive to each user, and the customer is actively involved in creating what he or she needs from the producer; they become partners (Engeström, 2004). Co-configuration work assumes multiple interacting activity systems operating in networks where mutual learning from

interactions requires flexible knot-working. Engeström (2004, 2007a) claims that the theory of expansive learning provides a framework for analysis of learning processes in co-configuration settings.

> expansive learning for co-configuration work is transformative learning that radically broadens the shared objects of work by means of explicitly objectified and articulated novel tools, models, and concepts (Engeström, 2007a, p. 33).

The mediating artefacts needed are complex, multilevel toolkits, with interplay among different kinds of tools, models, concepts or visions. Part of co-configuration work is to form these kinds of toolkits where design and modelling are important to explicitly objectify the mediating artefact. This tool construction and reconfiguration of tool use is an ongoing process during the co-configuration work. Dynamic instrumentality is used for mediating horizontal dialogical learning where crossing boundaries between interacting activity systems creates new knowledge and transforms the activities by tying knots between them. Actions taken in this kind of boundary crossing take the form of bridging, exchange, and negotiation, i.e. knot-working between the systems (Engeström, 2007a).

Engeström and colleagues have been especially interested in exploring negotiated knot-working as an emerging form of developmental work (Engeström, 2005b; 2008, p. 208; Engeström, Engeström, et al., 1999). In knot-working collaboration between partners is crucial, though more improvised and initiated by practitioners without predetermined rules or central authority. Knot-working is connected to co-configuration, yet Engeström suggests that co-configuration is a form of collaboration characteristic of the transition from mass production to social production while knot-working will characterize social production, which he claims to be the next developmental stage of work, emerging for example in development of open source products (ibid, p. 224-233). Co-configuration work assumes that organizational authorities are involved in the boundary work, while knot-working is based on the individual and collective agency of practitioners where success is based on deviation from standard procedures and the challenge is to attain distributed agency (Engeström, 2008).

Expansive learning for boundary work, be it co-configuration and/or knot-working, takes a point of departure in historical development of work. Co-configuration work and social production are emerging as historically new types of work (Engeström, 2004, 2005b, 2007a, 2008). Participation in this kind of work requires personal engagement to

bridge the gap between designs based on visions for the future of the practices and their implementation in practice. The experience of encountering tensions in activity systems when working out contradictions to overcome disturbances is suggested to support bridging. Engeström (2007a) puts forward the hypothesis that 'experiencing' is a bridge between design and implementation, inferring that learning by experiencing is only a proposition for stimulating research and theoretical development (ibid, p. 38). Vasilyuk defines 'experiencing' as encountering and overcoming contradictions in maintaining human activities (cited in ibid, p. 37) and experience is one of the most important concepts in Vygotsky's theories (Chapter 3.2.3). The expansive learning theory affords methods for analysing the experience of individuals, collectives, and systems, in overcoming contradictions in activity systems.

I am interested in examining the experience of the student teachers in the schools and in the programme and how they develop their professional practice by dealing with tensions and overcome contradictions; an experience that might make them important actors in developmental boundary work between schools and the teacher education department.

3.4 Appropriateness of the activity theoretical framework

The theories of Vygotsky and cultural-historical activity theory are clearly appropriate for research aiming to better understand the possibilities for both individual and system development. I want to understand how the situation of school-based student teachers, working as teachers while concurrently studying for an academic teacher qualification in a distance programme, may support them both as students in the programme and teachers in the schools. The theories of boundary crossing on an individual level are suitable for looking into transfer of ideas, skills, and knowledge between systems (Wenger, 1998). However, the activity system as the unit of analysis allows us to take into account the interrelation of the individual and systemic development (Engeström, 1987). Vygotsky's dialectical conception of development of individuals as internalisation and externalisation (Chapter 3.2 and Figure 3.2) suggests that a contribution to development of the culture in which the individual lives is part of their developmental processes, and at the same time development of culture is dependent upon individuals' contributions.

Engeström's theory of expansive learning (Engeström, 1987, 1999b; Engeström & Sannino, 2010) is based on this dialectical understanding, and has been developed to better analyse how activity systems develop when individuals and collectives contribute to their practices. His first generation expansive learning theory, put forward in 1987, is useful for analysing development of individuals in interrelation with system development in one system. Applying it in my research allows me to analyse the student teachers as subjects in the schools where they work and relate it to analysis of school development. In the same way I can analyse their individual participation as students in the distance programme as related to development of the programme.

To then understand how it may support simultaneous participation in both systems I need theories that allow me to study the connection between the systems. Vygotsky's theory of double stimulation (Engeström, 2007b; Vygotsky, 1978) seems to be appropriate for examining how experience gained by participation in one system might be used to overcome contradictions in the other, i.e. the affordances of boundary crossing between two systems where experience gained in one system can function as a double stimulation for developing practice in another system. Engeström has argued for the importance of boundary crossing as a source for double stimulation and suggested that expansive learning can be regarded as boundary crossing (Engeström, 2009b; Engeström & Sannino, 2010). Here the relationship between academic knowledge in the teacher education programme and practical knowledge in schools echoes Vygotky's idea of the way scientific concepts may function as double stimulation in developing practice in everyday situations.

I am interested in exploring the relationship of the schools and the teacher education programme on a systemic level, and how inter-organisational collaboration might enhance development of teacher education in both places. The expansive learning theories afford models for examining interacting activity systems (Engeström, 2001). Engeström has developed the historical dialectical method by looking at historical development of work, and elaborating his theory of expansive learning for use in boundary work, both system level co-configuration work and knot-working in distributed agency (Engeström, 2004, 2005b, 2007a, 2008). His theories draw attention to dynamic knowledge creation, both vertical as between theory and practice, and horizontal as between activity systems when dealing with the same level of knowledge.

I argue that Engeström's approach is fruitful in exploring the relationship between the schools and the teacher education programme. It is challenging to explore the possibilities for horizontal transfer between systems that are conventionally regarded to be in a vertical relationship. Engeström's approach is, to me, appealing in how it relates to historical and dialectical ways of thinking.

Cultural-historical activity theory is based on the legacy of Vygotsky and the development of appropriate research methods have gone hand in hand with development of the theories. Therefore it is necessary to discuss different research paradigms and the development of methodology for expansive learning because it affects the way my research questions are formed. This issue will be discussed in the next chapter.

CHAPTER 4: RESEARCH PARADIGMS AND METHODOLOGY OF EXPANSIVE LEARNING

4.1 Introduction

The aim of the chapter is to explain how the use of cultural-historical activity theory as a research framework is an alternative to nomological and interpretative research paradigms that are often used in social research. I start by explaining the shortcomings of the positivist and interpretative paradigms and why CHAT as a theoretical framework may be used for proposing an alternative research paradigm. Development of research methodology was an integrated part of Vygotsky's work and is inherent in the development of cultural-historical activity theory. Here I will describe the research methodology which has been part of the development of Engeström's expansive learning theory and discuss contradiction analysis according to the expansive learning cycle and its use as a method for analysis. I finish the chapter by linking my research aims to the methodology of expansive learning and present my research questions.

4.2 Traditional research paradigms

The division of research into quantitative and qualitative paradigms is well known and accepted despite competing views on their significance in generating knowledge. Wardekker (2000) explains the value of cultural-historical activity theory in developing a research paradigm that overcomes the dualism of these two. He points out the significance of the image of human subjects (practitioners) as receivers of research results and its implications for research methodology. This connects to learning theories since practitioners are expected to learn from research results and therefore, although not explicitly stated, learning theories are implied in all research methodologies. This has consequences for the way in which criteria for good research are rationalised since methods and criteria are based on ideas of how humans learn and what affects actions and behaviour.

4.2.1 The positivist paradigm

In the positivist paradigm often based on quantitative methods although not exclusively – Wardekker talks about the nomological paradigm – it is assumed that human subjects are rational and act according to the knowledge they possess. The role of researchers is

to provide knowledge which is assumed to be valid and reliable when it is not limited to place and time and can be used in situations not foreseeable when the research was conducted. The nomological paradigm presumes that the production of knowledge and the use of it are separated (the empirical separated from the practical) and therefore the usability of the produced knowledge is not taken into account in the criteria set out for evaluating quality. The quality criteria developed to assess the process of knowledge creation are limited to the researchers and how their procedures may be measured in terms of validity, reliability and generalizability. This presumes the image of the human actors as being uncritical using new knowledge in their practice without doubting its truth as long as the criteria for the quality of the research processes are met. The problem here is that there is no space left for human agency and the way in which people interpret and make sense of new knowledge and its usability in their circumstances is ignored. It is de-contextualized knowledge. Vygotsky developed his theories to overcome these kinds of shortcomings in research on human behaviour.

4.2.2 The interpretative paradigm

The way people interpret and make sense of knowledge and contextualize it for use in their situations is of crucial importance. This has led to the development of another research paradigm, the interpretative or qualitative paradigm, that may be looked upon as the antithesis of the positivistic (nomological) paradigm. The image of the human subjects within this paradigm is that of interpretative actors who attach meaning to phenomena in the world and their interpretations are assumed to regulate their practice. In this view knowledge is not something general to be discovered but each individual constructs her or his own meaning out of knowledge they encounter which can only affect behaviour when it is contextualised in real situations. That is the view of constructivism (or constructionism). However, within the paradigm there is no unity in how meaning should be theorized which has implications for research and has lead to numerous sub-paradigms developing their own quality criteria for research based on their interpretation of human beings and how they learn and develop their practices, i.e. learning theories.

From the perspective of the interpretative paradigm, knowledge produced within the positivist paradigm can only affect our practice on the premise of heuristics and such knowledge is in no way privileged with regard to other sources of knowledge. The

criteria for good knowledge would then be if it is likely to affect people's practice; if a certain interpretation of the world presented in a research report is likely to add to people's practical knowledge which depends on their situations and life-stories. Research within this paradigm therefore focuses on finding out which knowledge people construct, how they construct meaning and how that guides their actions, aiming to provide heuristic schemes that people might use as support in their sense making of the world, eventually enhancing their practice or bettering their life.

The quality of such research results depends on whether people make use of it and implicit criteria are often based on researchers' projections of what they think is likely to be useful for practitioners or users. Wardekker (2000) argues that the interpretative paradigm lacks potential for explaining why people arrive at certain conclusions about interpretations and meaning, and in particular what constrains peoples' interpretations. This shortcoming has the consequences that the receivers of knowledge generated in such research are left with the 'freedom' of interpreting its usefulness since the paradigm does not provide methods for evaluating what kind of interpretation might be more appropriate than another. Wardekker claims that the paradigm lacks a realistic theory of learning, i.e. how meaning is learned, which makes it vulnerable to criticism of relativism that seems to be inbuilt in the paradigm.

4.3 Cultural-historical activity theory as an alternative research paradigm

Learning processes are inherent in cultural-historical activity theory which explains how individuals use their agency to make sense of their participation in activities and change them. The theory explains how interpretations of knowledge or artefacts that individuals encounter in their activity relate to the way in which participation in practice is supported. People change their interpretations when and if it makes them able to enhance their participation for making practice better and what is better depends on their understanding of the object and motive of the practice (Wardekker 2000). Thus the dialectic of the individual and the activity is central when investigating developmental processes.

In both the positivist and interpretative paradigms concerns about how people use knowledge is lacking. In both paradigms it is assumed that changes, i.e. learning, will follow in the wake of research results while in cultural-historical activity theory the change process and its consequences are the research object and the condition of the

individuals and the community is itself perceived as a result of historical development. The aim of such research is to investigate possibilities for development of practice. Research results reveal an understanding of change processes in certain circumstances and generate knowledge that may or may not be used in other circumstances where it can serve as means or instruments for developing practice. Results are not conceived of as finished products but rather as the provision of a toolkit to be used in developmental work.

The role of research results are best understood in light of Vygotsky's method of double stimulations which assumes that people use their agency to make sense of how to use the results in their practice to develop activities for better serving their purposes (Engeström, 2007b; Vygotsky, 1978, pp. 74-75). As Giest (2008, p. 104) points out; in activity theory the basic idea is 'revolution', that is a change of the environment for making human conditions better. Therefore the most adequate criteria for quality in such research depend on the usability of research results in developmental work in practice.

Cultural-historical activity theory assumes that human subjects are active creators of their reality. As actors in social circumstances people have the capacity to make sense of what they are doing by interpreting in which way they might in their practice use the meditational means afforded in the situation. This implies that at all stages of the research process it is a key-issue to take the agency of people into account. This shapes the whole methodological framework of research, first when deciding the aim and purpose of the research, and in turn setting the goal for the research outcome and forming research questions. Activity theory provides a comprehensive framework for generating and interpreting data, and an alternative understanding of what generalization means, and how the results are put in use among practitioners.

4.3.1 Methodology of expansive learning

In 1987 Engeström put forward his theory of expansive learning 'as a synthesis of several lines of theoretical and methodological thinking inspired by the classics of cultural-historical activity theory' (Virkkunen, 2009, p. 146) (Chapter 3.3.3). In the theory Engeström has developed the theories of Vygotsky for application in research on collective learning and development of activity systems. His interest concerns the processes of new knowledge creation by which humans change their conditions and his

aim is to reveal the possibilities people have for gaining agency to change. This vision is in accordance with Vygotsky's image of humans as agentive creators of their circumstances. In the same way Engeström follows Vygotsky in understanding tool use as the prototype of human knowledge which implies that knowledge is generalized in tools and the usability of the tools becomes the criteria for good knowledge. Development of knowledge is understood as a dialectical interplay between creation of generalizations and their use in practice (Leont'ev, 1990 cited in Virkkunen, 2009, p. 148).

4.3.3 The expansive learning cycle and contradiction analysis

In activity theory it is assumed that the activity under study is in a process of development which means that the historical dimension is always part of the object of research. This implies that historical analysis of previous phases of the activity is done in order for participants to perceive its actual state as a phase in historical development and the purpose of analysing the actual state of affairs of the activity are done for directing future development. Historical and actual analyses are done for generating developmental hypotheses which are tested in experiments in developmental work with practitioners. It is important to use the historical analysis as a lens when analysing the present form to keep sensitivity for the direction of the developmental process of the activity when envisioning its future possibilities, i.e. the *zone of proximal development* (Mäkitalo, 2005).

Activity systems are constantly dealing with outside influences that have to be appropriated and modified to internal factors in the relevant systems (Engeström, 1990, 2001a). This process of appropriation causes disturbances in the systems as contradictions arise in the wake of intruding elements. Contradictions in activity theoretical terms are historically accumulating structural tensions that become noticeable in disturbances and innovative solutions (Engeström, 2005a, p. 314). The imbalance has to be dealt with by the systems, keeping them going and in constant development. In this way, historically new forms of social activity emerge when internal contradictions are resolved (Engeström, 2007a).

Contradiction analysis

Contradiction analysis as a method is based on ascending from the theories of inner contradictions inherent in all human activity to concrete disturbances in practice within activities (Engeström, 1999a) (Chapter 3.3.3). Contradictions act as driving forces for expansive learning when new or changed objects of activity are recognized and the need of the new object is turned into a motive for meeting that need (Leontiev, 1978, cited in Engeström & Sannino, 2010). In expansive learning the method of contradiction analysis is embedded in the expansive learning cycle which presupposes that four levels of contradictions may be detected. The cycle depicted in Figure 4.1 is used as a framework for understanding development in activity systems.

The cycle begins with individuals questioning or criticizing the practice of the activity of which they are part. The questioning reflects a need for change in the practice because of tensions or disturbances caused by primary contradictions. The need state of an activity system arises from primary contradictions which may be identified within each element of the activity system. The most important primary contradiction is inner conflict within the object of activity as when a task calls for actions that seem to be incompatible and the subject has to overcome the problem by developing practice in a way that synthesises the contradictions (Engeström, 1999b, p. 383). Primary contradictions within tools may manifest themselves in negative side effects of new otherwise useful tools. Primary contradictions are recognized as inner conflicts between use value and exchange value and are reflected in conflicts between an ideal type of work and reality in practice (Pasanen, Toiviainen, Niemelä, & Engeström, 2005).

The second step is initiated when people experience a double bind situation when tensions caused by secondary contradictions disturb the practice. Secondary contradictions arise between the nodes of activity systems and Engeström (1990) claims that they are the driving force behind disturbances and innovations. For example, changed objects or new tools with an unchanged division of labour or rules cause disturbances and prevent development of the activity. Pressure for developing practice is usually initiated by secondary contradictions (Engeström, 1990) which arise between two components in the activity system, e.g. changed object and conventional tools or vice versa, or changed tool and conventional division of labour or rules.
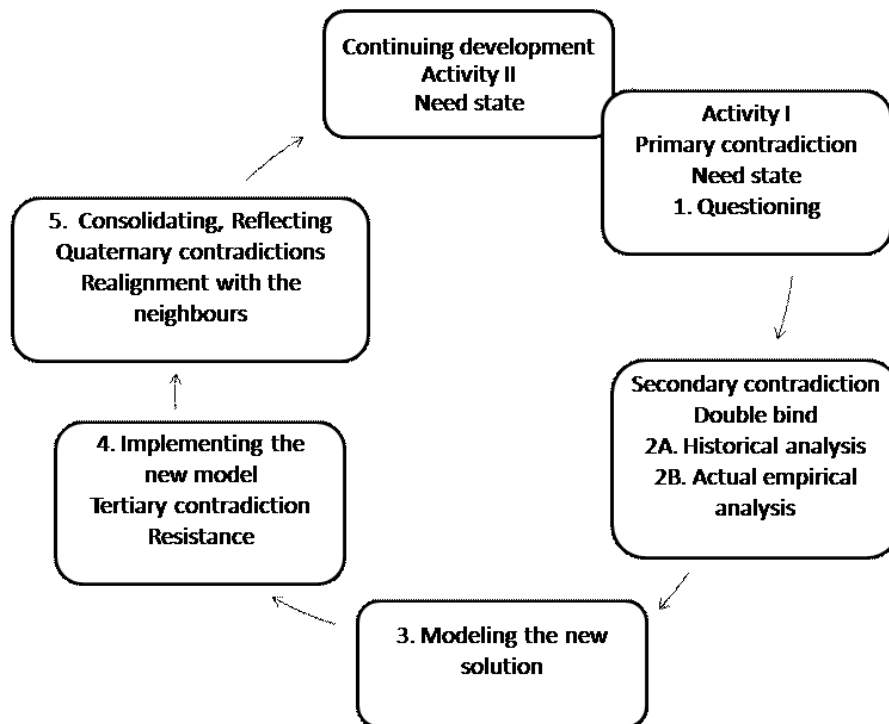
Figure 4.1 The expansive learning cycle (adapted from Engeström, 2001)

The double bind situation puts a pressure on people to search for solutions to overcome the troubles e.g. by developing new tools, reorganizing division of labour or revising the rules. Individuals learn and develop as they face and resolve such contradictions (Toiviainen, 2003, p. 36).

The third step includes forming new models for enhanced practice by re-conceptualizing the object and motive of the activity or forming new ones in search of future oriented innovative solutions to the problematic situation. The fourth step is the implementation of the new model which in turn may cause tertiary contradictions to arise between new and old forms of practice when some practitioners resist reforms or there is a resistance in the system where the conventional activity continues to be the general practice. The process of appropriation of novelties into an activity system causes imbalances and disturbances which have to be dealt with on a collective basis so that all elements and their interplay are reconsidered because:

> every new mode of man's action in production, before becoming generally accepted and recognised, first emerges as a certain deviation from previously accepted and codified norms (Ilyenkov, 1982, pp. 83-84).

The last step in the expansive learning process is evaluation and consolidation of the new form of practice. A new way of functioning of one activity system may however

initiate disturbances in neighbouring activity systems calling for a need to coordinate the practice of the two interacting activities. Quaternary contradictions thus arise on a systemic inter-organizational level where interacting systems need to collaborate on co-configuring their activities for developing a qualitatively better way of functioning (Engeström, 2001a, 2005b). Resolution of contradictions opens up for qualitatively better functioning activity systems which need to be consolidated in a new transformed practice labelled Activity II in the cycle model in Figure 4.1. The new activity then continues to develop by dealing with new contradictions deriving from ongoing societal changes.

Using contradiction analysis systematically within the framework of the expansive learning cycle opens up an opportunity to work with the development of individuals and collectives in the context of their activities, in this thesis the student teachers in the context of the schools and the distance programme. Analysing quaternary contradictions between two interacting systems is done for enhancing understanding of the *zone of proximal development* for inter-organisational development, such as partnerships of schools and universities.

4.3.3 Application of the expansive learning methods

Typically the interventionist-researchers form a Change Laboratory with a small group of practitioners either within a workplace that is facing transformation or as a boundary-crossing laboratory with representatives from activities that are engaged in partnership or collaboration.

> Activity theory takes the subjects, the participants, and the local practitioners very seriously. But it does not assume that the researcher has a magic formula […] the practitioners themselves are asked to look at, comment on, and make sense of the researchers' initial data and provisional analysis (Engeström, 2009b, p. 325).

Collaborative work with practitioners is built on ethnographic data from the workplaces where the intervention takes place and researchers usually explore the field by observing, shadowing and interviewing and other means of generating data in authentic or real environments. Disturbances and tensions in the activity that have been identified by analysing the data are brought to the change laboratory as the first stimuli, thought of as a 'mirror material' for participants when reflecting on and finding ways for overcoming the problems. Models, concepts and tools brought into the situation by the

researchers are put forward as double stimulations for supporting practitioners in formulating their own concepts, models and tools for use in developing the practice (Engeström & Sannino, 2010).

Developmental work research

The theory of expansive learning has been developed and applied in intervention studies called *developmental work research* where academic researchers in collaboration with practitioners in workplaces collaborate on developing practices and make people qualitatively better at engaging in their object of activity (Engeström, 1987, 2005a; Engeström, Lompscher, et al., 2005). This method is suggested to be the paradigmatic method of the expansive learning theory although it can and has also been used in more traditional research designs as I do in this thesis. I will however, briefly explain the model of developmental work research since it brings forward the central idea behind the theory of the relationship of the theoretical and the practical. The idea behind the collaboration of researchers and practitioners is built on Vygotsky's theory of the relationship of scientific and everyday concepts where scientific concepts gain meaning when generalized in everyday practice and people have the possibility to restructure everyday concepts when they are invited to interact with scientific concepts.

> In the case of scientific thinking, the primary role is played by initial verbal definition, which being applied systematically, gradually comes down to concrete phenomena. The development of spontaneous concepts knows no systematicity and goes from the phenomena upward toward generalizations (Vygotsky, 1986, p. 148).

In developmental work research the knowledge and skills of the researchers as well as theories, concepts and models they bring from their academic environment are proposed as double stimulation (Engeström, 2007b; Vygotsky, 1978) for the development of practice. It is presumed that the researchers enter the workplace where they begin with some provisional analysis and put forward hypotheses about the *zone of proximal development* for the workplace. The hypotheses may be in the form of tools in both material and conceptual form that may be used as double stimulation for supporting the generation of multilevel toolkits (Engeström, 2007a) to be elaborated and tried out in practical implementation of changes. Engeström reminds us of the importance of noting that in Vygotsky's method of double stimulation 'the second stimuli, the mediating means, were not necessarily given the subjects in any ready made form' (Engeström,

2009b, p. 320). Concepts are regarded as very important tools because of their relative explanatory power.

> New concepts and forms of knowledge that have more explanatory power than the previous ones are needed in order to master the expanded objects of human activities and the increasingly complex and tight relationships between activities (Virkkunen, 2009, p. 148).

The practical experience is in turn valuable in refining the hypotheses and scientific concepts, adding to their generalization capacity. Thus the theoretical framework and methodology assumes the necessity of a relationship between theory and practice to be reciprocal. Also in addition to vertical movements there are horizontal movements in concept formations where multiple perspectives or multivocality are worked with in order to draw on different points of view and different understandings of the object of the activity in question (Engeström, Pasanen, Toiviainen, & Haavisto, 2005).

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The expansive learning cycle as a framework for data analysis

The expansive learning cycle (Figure 4.1) was developed for use in guiding formative interventions but has also been used for analysing learning processes as dialectical

development of individuals and activity systems (Engeström, 1999b, 2009a). The cycle presumes the interrelationship of individual and systemic development and use of multilevel analysis distinguishing between individual and collective actions and system level changes. In this kind of analysis 'Movement between a systems view and a subject view is of crucial importance' (Engeström & Sannino, 2010, p. 6). It invites a method of stepwise contradiction analysis for conceptualizing the experience of individuals when dealing with tensions and disturbances in their workplaces, learning to break away from double bind situations and developing practice.

The cycle has been used as a framework for analysing expansive transformations in relatively large scale processes of development over longer periods of time such as analysing three expansive cycles in a project aiming at integrating child care institutions and an elementary school (Nilsson, 2003) and analysing a development of a nursing home over a period of 25 years (Mäkitalo, 2005). Large scale expansive learning cycles however include small cycles and such miniature cycles may be distributed among participants in the activity. 'Small cycles may remain isolated events, and the overall cycle of organizational development may become stagnant, regressive, or even fall apart' (Engeström, 1999b, p. 385).

When the expansive learning cycle is used for analysing empirical data it is presumed that the researcher identifies epistemic learning actions for explaining developmental processes (Engeström & Sannino, 2010). Conflicts, disturbances or tensions in the systems are the analytic focus and are explored to identify contradictions and their resolution by people when developing their practice. Responding to disturbances being experienced is an important source for development of both individuals and activities and is a driving force for change whereas a lack of resolution limits development leaving people in the double bind situation. Learning actions are indicators of learning.

When the cycle is used as an analytical tool it should be kept in mind that: 'The occurrence of a full-fledged expansive cycle is not common, and it typically requires concentrated effort and deliberate interventions' (Engeström, 1999b, p. 385). However, such cycles include smaller cycles of learning actions, and such micro-cycles may be identified as part of innovative practice as potentially expansive or they may remain isolated or even become stagnant (ibid, p. 385). The term 'defensive cycles' is used for describing the state of art in an activity when a need for changes has been recognized

without practitioners having taken action to respond to that need (Engeström, 2010a). Identification of defensive cycles may be used to enhance understanding the kind of support that would be useful for breaking away from such situations, i.e. suggest the kind of double stimulation that might be used in the circumstances.

4.3.4 The form of findings

Findings of research within the framework of expansive learning methodology are presented in the form of new concepts, models and hypotheses and their generalizability is a 'question of practical relevance for other activity systems facing similar contradictions in similar developmental phases' (Mäkitalo, 2005, p. 105), that is, if the findings may be used as double stimulation for supporting design of 'locally appropriate new solutions'.

The results of the analysis should be presented as theoretical assumptions that may be inferred from the empirical data. The researcher goal is to use theories for generating new concepts for use in developing practice. The results of the analysis are expected to have characteristics of dynamic multilevel toolkits to be further developed and generalized in developmental work carried out by practitioners in workplaces. The hypothetical concepts are often depicted as intermediate concepts for indicating that they will be refined in practice where expansive concept formation is a collective endeavour.

Hypothetical generalizations are put forward for capturing what is essential, *the germ cell*, in the case under investigation. The *germ cell* in activity theory is a concept used for understanding the basic tension and driving force behind development (Engeström, 2007a, 2009b; Engeström, Pasanen, et al., 2005). The challenge is to capture *the germ cell* which could serve as a visionary model for directing the future development of the activity. Germ-cell models are 'meant to capture in a simplified form the basic internal relations and tensions of the activity that make the participants understand their history and strive for possible expansive change in their activity systems' (Engeström, Pasanen, et al., 2005, p. 58).

The formation of concepts aims to describe what is important in the actual situation by creating images or prototypes (Engeström, Pasanen, et al., 2005, p. 58).

> The concept takes shape at *different levels of conceptualization*, ranging from situation-specific images and prototypes to general germ cells. The different levels of conceptualization pose and answer *different epistemic questions*, from '*what?*' to '*where to?*' (Engeström, Pasanen, et al., 2005, p. 60)

The emphasis on the multi-level nature of such concept formation indicates the importance of the interplay of the theoretical and the practical; the importance of materially anchoring the theoretical models. The research is not finished until the hypotheses have been elaborated on in practice by formative intervention experiments where the aim is transformation and expansion of the object (Engeström & Sannino, 2010).

> This complex process of generalization through practice-bound hybridization represents an alternative way to look at generalizability (Engeström, 2009b, p. 325).

Concepts emerging from the analysis are put forward to embody issues of concern and importance in the situation. Finally the emerging concepts pointing towards issues of concern are used for directing the proposal of hypotheses for use as double stimulations in developing practice.

A key outcome of formative interventions is agency among participants (Engeström & Sannino, 2010, p. 15). Thus the agency of people to interpret and make sense of research findings is taken to be part of the research process where its quality can be evaluated first by practitioners in the workplace.

4.4 The research questions

With his concept of *zone of proximal development* Vygotsky emphasized the importance of assessing the development of children in real-life situations, e.g. in normal social settings. He claimed that by examining what they were capable of in a real environment, where they were supported by both available tools and other people, it was possible to identify what they would be capable of alone in the near future. Knowing this, the teacher should direct his or her teaching towards the future possibilities of the child.

In his theory of expansive learning Engeström developed a method that can be used to assess the *zone of proximal development* for activity systems and in the third generation of activity theory the developmental possibilities for interacting activity systems can be

identified. In the same way as teachers need to consider the possible future development of children to be able to direct instruction to enhance their development, those who plan teacher education need to consider the possible future development of the systems where teacher education is placed. In my study of school-based distance students the interrelation of the two places, schools and teacher education, is emphasized.

In using the expansive learning theory the purpose of theoretical analysis is to explore possibilities for future development of the activity systems under investigation; to reveal the *zone of proximal development* of activity systems in networked relationships. The aim of my research is thus twofold: first, to reveal the developmental possibilities of the student teachers examined as participants in and boundary crossers between the two activity systems, the schools and the programme and second, to reveal the developmental possibilities of the schools and the programme as institutions and interacting activity systems.

My research questions are:
1. What is the zone of proximal development for individual student teachers in relation to the activity systems of the schools in which they were situated?
2. What is the zone of proximal development for the schools as activity systems?
3. What is the zone of proximal development for the teacher education programme as an activity system?
4. What is the zone of proximal development for the schools and the programme as interacting activity systems?

The value of this research is twofold: On the one hand the findings may be used immediately in the development of the alternative model in school-university partnership. On the other hand the methodology can be adopted for use in other developmental work where collaboration on a shared object between workplaces and universities is essential.

According to the expansive learning methodology, research findings are expected to provide concepts and hypotheses that may be used in developing practice in schools, in the university programme and in school-university collaboration. Findings will be put forward in the form of concepts and hypotheses that have been generated from the

analysis with the aim of capturing what is important in the situation in the distance programme and in the schools. The purpose is to make important issues overt and manageable, thus supporting practitioners in coping with them. In other words, the answers to the research questions are proposed for use in developmental work with, school leaders and programme leaders, teachers working in schools and university lecturers and student teachers participating in school development and programme development.

Although a developmental work sequel is not included in the research presented in this thesis, the results will be presented in the form of concepts and hypotheses that may be used as double stimulations, in initiating developmental work proposed for encouraging the kind of collaboration between researchers and practitioners assumed in expansive learning methodology. The hypothetical concepts are often referred to as intermediate concepts for indicating that they are supposed to be further developed and generalized by practitioners in practice grounded developmental work.

CHAPTER 5: METHODS

5.1 Aim of the study and research settings

The object of the thesis is teacher education in a distance programme where the student teachers are school-based, living and working in rural Iceland. The aim of the research is to reveal the developmental possibilities of student teachers in the schools and in the programme as well as the developmental possibilities of the schools and the programme as institutions and interacting activity systems. To do this I explore how student teachers develop their practice as teachers in their workplace where they learn to be teachers and how they learn to participate as students in the programme. Furthermore, possibilities for system development inherent in the interaction of the schools and the teacher education programme are explored.

This assumes two settings for the distance students in the study, the university programme and the schools where they were situated while enrolled. The distance programme for compulsory school teachers of the Iceland University of Education was selected since when I started working on the research it was the only distance programme offering teacher education in Iceland. A coastal region in rural Iceland was selected as the site for studying schools and school-based student teachers. In this region there had been a lack of qualified teachers for a long time and school authorities and people from there played an important role when the distance programme was initiated in 1993. In the region all five schools have been my field of study. Three of them were chosen as cases when focusing on development of three student teachers developing their practice in the schools.

5.1.1 Short presentation of the region

The region consists of three small fishing villages with around 300 inhabitants, which I call Marwick, Creek and Cove; one larger town with approximately 1000 inhabitants, which I call Coastline; and the largest town with around 3000 inhabitants, which I call Waterside. As a rule the economy of the villages is mostly based on fishing and the bulk of the work force works in high tech fishing factories. In recent years the district's population has been decreasing, while at the same time immigrant workers have moved in to work in the fishing industry. Tourism is of increasing importance for the economy. The largest town, Waterside, serves as a service centre for the region, with trade centres,

an airport, a hospital, an upper secondary school, and a centre for further education, supporting a growing number of distance students. A university centre was established in Waterside in 2005 for the purpose of providing contact between residents in the district and institutions of higher education. Its most important function is supporting distance learning. Some research institutes have operational units in the region, such as the Marine Research Institute, the Icelandic Fisheries Laboratories, and a Multicultural Centre. Since 2007 the University of Iceland has had a regional research centre in Coastline, focusing on geography, biology, and natural resources, with a regional emphasis.

In each village or town there is one compulsory school serving pupils from ages 6 to 15 in grades 1 to 10. The number of pupils ranges from 30-50 in the small schools up to 500+ in the largest town. The schools have diverse histories of having teachers who are at the same time student teachers enrolled in a distance education programme. In Marwick all the teachers but one got their initial teacher education through distance education. During the time of my fieldwork some of them had been or were enrolled in graduate-level distance programmes offered by the Iceland University of Education. In the bigger schools, in Waterside and Coastline, there were always some teachers enrolled in the teacher education distance programme ever since the programme's inception in 1993. Many of those who were in the first groups of distance students have since continued into graduate studies, specializing in various areas of the teaching profession, such as special education, information and communication technology, and school administration. Some of those people now hold senior positions, such as principals, vice-principals, or other professional roles in the schools. During the school year 2003-2004 Creek School had its first experience of having employees enrolled in the distance programme, when two student teachers were studying for teacher certification. In Cove two student teachers were admitted to distance programmes for the first time in the school year 2004-2005, one at the Iceland University of Education and the other at the University of Akureyri. The University of Akureyri first offered a teacher education distance programme in 2003.

As a result of immigrants moving to the district, all the schools have been dealing with the challenge of teaching pupils with different cultural backgrounds. Up to 30% of the pupils in one of the schools did not have Icelandic as their first language, and some of them start school not yet able to speak Icelandic.

5.1.2 General description of the distance programme

In 2002 160 distance students started in the teacher education programme (46 percent of new student teachers), in 2003 they were 91 (41 percent of new student teachers) and in 2004 120 students were admitted (42 percent of new student teachers). In October 2004 45 percent of all student teachers enrolled in the compulsory school teacher education faculty were enrolled in the distance programme. In 2004 the percentage of distance students living in rural districts was 57 percent (Kennaraháskóli Íslands, 2006), and 42 percent of all distance student teachers were employed as teachers in schools alongside their studies (Björnsdóttir, 2009).

During the years of fieldwork for this study in 2003-2006 (the last interviews were conducted in January 2006, Appendix I) the distance programme organisers assumed that it would take four years to finish the teacher education degree compared to three years in the conventional programme. However students could take longer to finish which was quite common. Students usually spent the first two years of the programme taking diverse general courses, such as general pedagogy and curriculum studies, sociology of education and school history, and developmental psychology. The organisation of these courses assumed that the whole cohort enrolled each year were taught together in one class.

The university year was divided into two semesters. The fall semester started in late August and December was a period of exams. The spring semester started in the beginning of January and lasted till the end of April with exams in May. In general each semester included one-week face-to-face sessions on campus, one at the start and another in the middle of the semester. The one-week sessions were divided between several subjects. The final exams could be taken on campus in Reykjavík and in schools and adult educational centres in the countryside.

The distance programme was launched in 1993 when new possibilities had opened up with the Internet and use of email for correspondence. When data for this study was generated (mainly in 2004 and 2005), the practices within the programme were in an ongoing process of development. Generally a website was created for each course on WebCT and lecturers as well as students had access to support in using the system. The online course management system WebCT offered by the media centre had been

adopted by most lecturers as part of general practice in distance teaching and learning. However, lecturers could use other means for online communication if they so wished.

Distance student teachers were supposed to follow the same route as conventional on-campus students in practice teaching; three weeks in the first year, four weeks in the second year and five weeks in the third year. Rules on practice teaching expected school-based student teachers, in general, to not do practice teaching in the school where they taught. However, exceptions were quite common and rules adapted to personal needs, such as family situations, permitting some students to undertake practice where they were working as teachers. Because of expenses, university lecturers did not visit the schools where the distance students took their practice teaching if they were living in the countryside.

5.2 Selecting the cases

Inherent in cultural-historical activity theory is looking at individual as well as system development as historically evolving phenomena. Activity theorists argue that a qualitatively better form of an activity always begins as an exception from the rule (Engeström, 1999a; Ilyenkov, 1982). The distance programme chosen for this study deviates from the conventional form of teacher education in Iceland.

Historical analysis of the programme formation and implementation in response to a long standing need for licensed teacher in rural Iceland is my starting point. The historical phase chosen for analysis is the first 3-4 years from 1993-1996 when the first cohort of student teachers was enrolled.

For the analysis of the actual situation in the schools in 2004 and 2005 I chose three schools, Waterside and Coastline, where several distance students were teaching and Creek that for the first time had distance student teachers in the school year 2003-2004. In Marwick all teachers had teacher certification and in Cove those who were teaching without a professional degree had not yet been admitted to the programme when I was selecting the cases, despite applying several times. The three schools could be regarded as representatives for typical Icelandic schools in small fishing villages as well as bigger towns along the Icelandic coastline. In each of the schools I selected one student teacher who was prepared to be a main participant letting me stay in contact with them for a period of two or three years for monitoring their experience. Two of them, Lilith in

Waterside and Sarah in Coastline, were in their second year in the programme 2003-2004 when I started to focus on distance education in my fieldwork and the third, Sam in Creek, had just finished his first year when I met him for the first interview in the spring 2004.

For analysing the actual situation in the programme in the years 2004 and 2005 three courses were selected for analysis and narratives of the experience of the three main participants in these courses, Lilith, Sarah and Sam were analysed. When I selected courses to follow in the spring semester 2005 the criteria was that one of the three, Lilith, Sarah and Sam, was enrolled in them and secondly that they were diverse in both content and setup. One of the courses, ethics, was part of the obligatory courses for all, expected to be taken in the second year, in which Sam was enrolled with around 70 students. The second course analysed was on arts and crafts, a part of the specialisation for arts and crafts teachers in which Sarah was enrolled with a group of 16 student teachers and the third was on science and creative art in the lower primary school specialisation in which Lilith was enrolled in a class of around 50 student teachers. Figure 4.2 provides an overview over the cases, the data used for analysing each case and the chapters where the findings are presented.

Cases	Data	Chapters
The historical phase: the first 3-4 years of the distance programme starting in 1993	Written documents. Interviews with three former distance students placed in three schools: Elisabeth in Waterside Jenny in Coastline Helen in Marwick.	Chapter 5: The inception of the distance programme and the experience of the first cohort
Three school-based student teachers in 2003-2005 defined as three separate cases: Lilith in Waterside School Sarah in Coastline School Sam in Creek School	Interviews: Lilith in Waterside School, Sarah in Coastline School and Sam in Creek School. Ethnographic fieldwork in the schools including observations and open interviews with student teachers, principals and other staff.	Chapter 6: The experience of three school-based student teachers in three schools
The distance programme in 2003-2005. Three courses and the same three student teachers for analysing the distance programme as a case.	Three online courses monitored. Face-to-face on-campus sessions attended. Interviews with three student teachers: Lilith in Waterside School, Sarah in Coastline School and Sam in Creek School.	Chapter 7: Development of teaching and learning in the distance education programme.

Figure 4.2 Overview over selected cases, data and chapters presenting findings

5.3 Methods for generating data

The main methods used for generating data come from an ethnographic approach. The general strategy of ethnography is characterized by the researcher's participation in real life situations for a certain time, watching and listening and gaining insight by informal talk with people as well as collecting information that seems to be useful in throwing light on the research object (Flick, 2006; Willis, 2007). This approach is recommended as the first step in the expansive learning methodology and this was the method I used when I visited the schools and stayed for several days, and when observing the face-to-face sessions in the programme. In addition I used text-based data such as diverse written documents and transcripts of online courses.

My main method however for generating data was open interview or dialogue with participants. Within the theoretical framework of cultural-historical activity theory language is assumed to be the most important mediating instrument for humans engaging with the world. Language is the tool we use for making sense of the environment both when communicating with other human beings as well as when using inner speech; language is the tool we use for mediating learning and development. Such an understanding implies that dialogue is part of the meaning making process in Vygotsky's theories of the inter-relationship of thought and language which has implications for epistemology (Vygotsky, 1986). He criticised those who identify thought and speech and also those who look at thought and speech as separable and regard 'speech as an outward manifestation, the mere vestment, of thought' (Vygotsky, 1986, p. 3). He suggested that in order to understand their relationship they had to be studied as a unit whole of verbal thought, a 'unit which contains thought and speech interrelated' (ibid, p. 6). His research led him to the following conclusion:

> In order to convey one's experience or thought, it is imperative to refer them to some known class or group of phenomena. Such reference, however, already requires generalization. Therefore, communication presupposes generalization and development of word meaning; generalization, thus, becomes possible in the course of communication (Vygotsky, 1986, pp. 7-8).

The interrelation of generalization and communication was a focus of interest in Vygotsky's research and like always he stressed the importance of holism where:

> [the unit of analysis is] a dynamic system of meaning in which the affective and the intellectual unite […] It [the unit of analysis] further permits us to trace the path from a person's need and impulses to the specific directions taken by his

thoughts, and the reverse path from his thoughts to his behaviour and activity (Vygotsky, 1986, pp. 10-11).

Research by Vygotsky on this revealed an understanding of the relations between thought and words as 'delicate, changeable relations between processes, which arise during the development of verbal thought' (ibid, p. 254). Words bear meanings and are understood as direct expressions of human consciousness and their basic characteristic is a generalized reflection of reality.

Doing research against this theoretical background clearly excludes the view of interview conversation as some kind of pipeline for transporting knowledge. Holstein and Gubrium (2004) discuss the use of interviews in qualitative research and suggest that researchers:

> embrace the view of the interview as unavoidably active and begin to acknowledge and capitalize upon interviewers' and respondents' constitutive contribution to the production of interview data (ibid, p. 142).

I agree with them and look upon my interview data as generated in dialogue between the interviewee and myself as two active participants in meaning making. Thus when the teachers enrolled in the first cohort recall their memories from 10 years earlier I talked to them I am not concerned whether they recall things 'correctly' but how they in their narratives make sense of what participation in the programme meant for them and their situation. In the same way when talking to the participants in the actual phase I am concerned about how they attach meaning to their experience of being actors in the two interacting systems; their schools and the university programme.

Both the interviews and the observations were guided by activity theory. I was concerned that the unit of analysis was the relevant activity system and I strived for generating information that would allow me to describe the practices in which the student teachers participated in the framework of the triangle model of the activity system. Repeated interviews and observataions over time generated a clearer picture of the student teachers development and insight into their situation both as teachers in their schools and students in the distance programme.

5.4 Overview of data

5.4.1 Data for the historical analysis

For the historical analysis of the programme presented in Chapter 5, I had access to written documents in the university's archive on its preparation and inception and reports such as evaluation reports on the first cohort (J. Jónasson, 2001). The description of the pioneers' experience is based on interview data collected during field visits to compulsory schools in the coastline district which is the field of the study, in April 2003 and in February and May 2004. The first visit in 2003 provided insight into the situation of the schools in the region, and generated an interest in the affordances that distance education might have had for school development. During the visits in 2004 three former distance students, enrolled in the first cohort in 1993-1996 and at that time working in three different schools, were interviewed and asked for recollections of their memories of the experience of being pioneers in the programme (Figure 4.2, overview of data generation in Appendix I). At the time of fieldwork they were teachers or principals in the same schools as they had been when they studied in the distance programme. Their narratives were used to analyse the development of the distance model from the perspective of student teachers.

5.4.2 Data for analysing the student teachers in the schools

The empirical data used for constructing the narratives of the experience of the three student teachers in 2004-2006 were generated by interviews and observations during ethnographic fieldwork in the schools (Appendix I). My fieldwork in the coastal region entailed five visits where I stayed for several days in the district, visited the schools and talked to people concerned with distance education and school development (Appendix I for an overview). My first visit was in April 2003 with the group of researchers focusing on use of ICT in the schools and in that visit my interest quickened in researching the meaning and importance of the distance programme for the schools as well as individuals in the region. In the spring term 2004 I visited the region in February and May and in 2005 I spent several days there in April and late May and beginning of June.

I felt it was easy for me to gain access to schools. Teachers and other school staff were welcoming and willing to let me visit them during lessons if I asked for it or let me

participate in informal talk in the staffrooms. However, during the visits to the school I focused my attention especially on the three student teachers, Lilith, Sarah and Sam. I observed their classroom teaching and followed them during their daily work in the schools and had formal open interviews with them several times.

In between these visits I met the three main participants when they were attending face-to-face sessions on campus and some of the formal interviews were conducted during their stay on campus. During the ethnographic fieldwork I talked to fourteen distance students who were enrolled in the distance programme in Iceland University of Education. In relation to the research on use of ICT in which I was involved I interviewed teachers and pupils and principals in four of the five schools involved, i.e. all except Creek School (Appendix I for an overview of fieldwork). The descriptions of the institutional characeristics of the schools are based on observations in school visits, official documents available, for example on the schools' websites and interviews with principals and student teachers.

For generating a better understanding of the schools as institutions where the students were based I had formal interviews with the principals in two of the schools, Waterside School and Coastline School. In Coastline School I interviewed two principals since in 2005 the one I had interviewed the year before had been replaced; it turned out to be a benefit to have the perspectives of both. In Creek School there had been problems in the school management and there was a new principal each year. I met two of them and had an informal talk with one of them but since the situation was problematic it was not appropriate to ask for a formal interview. However, an interview I had with a school counsellor at the district school office helped in understanding the situation in the school. The purpose of interviewing her was, however, to discuss the issue of school-based distance education for teachers from the perspective of school authorities responsible for running the schools in the district.

All the formal interviews were open ended; they were audio-taped and transcribed for analysis (Appendix I for an overview).

5.4.3 Data for analysing the development of the programme

Transcripts of online courses, observation during some face-to-face sessions and interviews with student teachers formed the basis for the analysis of courses in the programme.

The courses

In the spring term 2005 three courses in the programme were observed, both face-to-face sessions, and online sessions, as performed on the courses' websites. During the term I had access to the online platforms for the courses, which permitted me to observe transactions and communication between students and lecturers. When the courses were finished I printed out all the material from the course management system for further analysis. It consisted of all the entries on the discussion web and private mail between teachers and students; assignments and directives from the teachers and student teacher assignments shared online.

Several of the face-to-face lessons in the relevant courses were observed. The descriptions of the courses are generated from the transcription of the online courses as well as fieldnotes from observations in the face-to-face sessions. As a step in preparing fieldwork, I had attended some lessons during an on-campus session in the spring 2004 where student teachers were presenting their practice teaching experience. Since I had a position as a researcher in the Iceland University of Education and had also been teaching in the programme it was easy for me to get permission from classes to be present in their lessons.

The experience of student teachers

The descriptions of the three student teachers' experience in the distance programme have been generated from interviews with them during the years of fieldwork (mainly in 2004 and 2005, the latest in January 2006). Since each of them was enrolled in one of the analysed courses their contribution there could be drawn on. Also some of the portfolio material they were working on in their studies was accessible.

5.5 Methods for analysing the data

5.5.1 Steps in generating and analysing data

Wettstein and Thommen (2009) discuss the need for dynamic methods in educational research assuming that education is a dialectical process where reciprocal interactions between learners, educators and their situations have to be taken into account. Based on diverse social or socio-cultural theories they argue that education must be conceptualized as social construction and point to the important distinction between culturally constructed systems such as educational institutions and environment.

> Education is a social and cultural event in which meaning is being constructed, imparted and partially constituted as a tradition (Wettstein & Thommen, 2009, p. 377).

They suggest that the first step of analysis is for the researcher to produce a narrative based on either observations of behaviour or verbal communication. Narratives may be constructed by the research subjects themselves from which the researcher construct his or her narratives; i.e. the first task of the researcher is to construct second order narratives, or description with as little inference as possible. The descriptions form the empirical data which are the foundations for theoretical analysis and interpretations. This is very much in line with Davydov's thinking when he talks about the work of researchers formulating narratives from their ethnographic fieldwork as the generation of empirical data on which to base their interpretation and generalizations. In this way empirical knowledge is developed through the narratives and theoretical knowledge in the analysis (Davydov 1977, quoted in Nilsson, 2003, p. 79).

The theory of expansive learning provided me with tools appropriate for generating empirical data from the fieldwork as well as for analysing and theorizing from the data. I used both the triangle model of an activity system (Chapter 3.3) and the expansive learning cycle (Figure 4.1), as descriptive and analytical tools. The method of contradiction analysis in the expansive learning cycle is appropriate for analysing tensions in dialectical relations of individual practices and system development and for analysing possible development of the schools and the programme as interacting activity systems.

When approaching the distance education programme as a research object I used the expansive learning cycle to guide the steps I took. Therefore when entering the field I

turned my attention to the inception of the distance programme as an innovation in teacher education exploring what need state in the schools in Iceland led to formulation and launching of the programme in 1993. When formulating the descriptions, i.e. generating empirical data I used the expansive learning cycle for providing a comprehensive account of the conception of the distance programme as an innovation in teacher education in Iceland.

In Chapters 7, 8 and 9, my focus is explicitly on the learning trajectories of the student teachers in interaction with development of the activity systems in which they are participating. In Chapter 7 the individual learning processes of the three student teachers are focused on individually and their development is described and analysed as learning to be teachers in the schools. In Chapter 8: *Development of teaching and learning in the distance education programme,* the student teachers are regarded as subjects in the activity and the focus in on the learning processes of distance student teachers as a group. In Chapter 9, *Deviations from the conventional: contradictions as sources of change in teacher education* the same empirical data is used for accounting for the interaction of the schools and the programme by looking at distance student teachers as boundary crossers between the two activities (see Figure 4.2).

5.5.2 First phase: Generating the narratives

The student teachers in the schools

The cultural-historical activity theory in general and the expansive learning theory in particular provided me with lenses and tools through which I made sense of the data. In Chapter 7 the triangle model of the activity system (Engeström 1987) was used to organize the descriptions of each case from the perspective of a student teacher as subject situated in the activity system of his or her school. Formulating the descriptions according to the stucture of the model opened up an understanding of the interplay between the perspectives of the student teachers as subjects and the systemic perspective. This method of analysis allowed a movement between a system view and a subject view which is of crucial importance for understanding both the system view and the perspective of the people acting within the system (Engeström and Sannino 2010, p. 6).

For each case the unit of analysis is presented in a matrix (see Figures, 7.1, 7.2 and 7.3) used to depict each activity in a nutshell in addition to the narratives provided in the text. The organization of the matrix is as follows:

In the middle there is a triangle. The desired outcome directing the subject's actions is also placed here. Usually the outcome is placed outside the model of the activity system and my decision to place it in the middle here is both because of lack of space outside the matrix but also to emphasise the central role of the intended outcome or goals for directing action level practice within the activity. In the left cell of the middle row there is a description of the student teacher as subject. The analysis was focused on his/her actions as a class teacher within the school. The object of activity is described in the cell to the right of the triangle model.

In the top row of the matrix the tools that a student teacher used to mediate actions as a teacher in the school were placed. Here I have identified material and conceptual tools used for class teaching, usually textbooks and all kinds of learning materials, and conceptual instruments such as teaching methods. The development of material and conceptual tools interacts in a way that new material tools call for new methods and vice versa (see Chapter 3.2.3).

Here I also placed other kinds of mediational means which student teachers have access to as members of the school community, i.e. social practices and professional guidance. Vygotsky's theories explain how social practices open up possibilities to draw on other peoples' perspectives, knowledge and competences. Each student teacher's access to those kinds of practices in each school is described. Being members in a school community opened up the possibility for the school-based student teachers to get to know professionals as models for their development or guide their development as more advanced peers. This relates to Vygotsky's theory of the role of adult guidance or more capable peers (1978, p. 12). In this scenario support was found in professional guidance, which practitioners drew on when cooperating with more advanced peers, and professional specialists who took the role of guiding individuals to develop professional competency. As role models, professionals may direct the student teachers' development towards an ideal form for practice. Vygotsky's idea of the *zone of proximal development* presupposes that there are ideal forms for practice in the

environment that serve the role of directing the development of individual and collective subjects (van Huizen, et al., 2005).

In the bottom row of the matrix the institutional factors, *rules*, *division of labour* and *community* were identified. Access of student teachers to social practice and ideal forms for practice was dependent on institutional factors. Rules and cultural norms regulated the activity of each school and division of labour has developed over time, contingent on both traditions and developments in society, such as the demographics of the school district. The community of an activity consisted of those people who share an interest in the object and motive of the activity which in schools is the education of school children. School staff, pupils and parents were all considered as belonging to the school community, although how actively they participated might vary. The school community was the environment in which the actions of the school-based student teachers were being carried out. Their emotional experience of being participants in their school community plays an important role in how they thrive. This in turn has an effect on how they are able to develop their practice as teachers (Moran & John-Steiner, 2003; Vygotsky, 1994).

The distance programme

The same method as described above is used for analysing the courses and the experience of the three student teachers in the programme. In Chapter 8.2 the activity system of each online course is the unit of analysis, and the focus is on the student teacher actions in the course websites. In Chapter 8.3 the programme as experienced by each of the three student teachers is regarded as an activity system and their participation in the programme is described from their perspective.

In the upper row the tools available to student teachers in mediating the objects of activity of the courses were both material and conceptual, and the interaction of the two are examined (Vygotsky, 1978) (see Chapter 3.2.3). Course management systems such as WebCT offered different tools that support learning, and initiated and provided opportunities for certain methods for teaching and learning. Teaching methods were revealed in how lecturers planned student activities, by assignments for students to work on and in the form of actions taken by teachers in communication with students. The actions and voice of lecturers in the activity system were important since they function as an instrument for student teacher learning. Teaching methods also affected the

possibilities for social practices which were viewed as intellectual resources for mediating learning, by opening up or constraining possibilities for communication and collaboration (Daniels, 2001) (see Chapter 3.2.3). These issues describe mediating tools subjects were afforded when acting on the object of activity and are depicted in the upper part of the triangle model (see Chapter 3.3.3).

In the bottom row of the matrix systemic or institutuional characteristics in which the subjects' actions were embedded were depicted. Rules and cultural norms regulated the activity of the university as an institution and division of labour was a result of cultural and historical development where lecturers and students have and keep certain roles. Rules were both explicit and implicit and they were an important part of regulating communication between lecturers and students, and also affected student-to-student communication. Principles put forward as rules within each course revealed the mindset and the values held (and/or stressed) by the lecturers. Students also developed their own rules for online communication, which may be based on different values. The community refers to the social environment in the distance programme and has to do with the atmosphere that developed among participants, where students and lecturers were central actors. Individual and collective actions, as described in the upper row of the matrix, were mediated by the systemic characteristics described in the triangle's lower component (Cole & Engeström, 1993; Engeström, 1987) (see Chapter 3.3.3). Using the model provided an opportunity to describe an activity on both individual and systemic level and enhanceed awareness of how development is a function of their interplay.

5.5.3 Second phase: Theoretical analysis

In the second phase contradiction analysis as suggested in the expansive learning cycle (Figure 4.1) was used for theoretical analysis. Individual and collective learning actions taken by the student teachers as actors in the programme and in the schools were identified and taken to be indicators of how they develop their practice within the activity systems where they are situated (See Chapter 4.3.4). The contradiction analysis using the expansive cycle as an analytical tool revealed the interplay of individual/-collective and systemic development and revealed at which stage in the cycle resistance to development lay. In other words it was used for uncovering the *zone of proximal*

development thereby directing developmental work. The result of this step in theoretical analysis brought to light some emerging concepts for use in developmental work.

Contradiction analysis of the three school-based student teachers

In Chapter 7 the expansive learning cycle (see Figure 4.1) was used for directing analysis of the learning trajectories of Lilith, Sarah, and Sam as interacting with school development in the respective schools. The use of the cycle allowed the analyst to make sense of the situation in terms of 'epistemic learning actions' taken by actors when dealing with problems and challenging situations in their practice (Engeström & Sannino, 2010, p. 11). By following the learning processes of the student teachers in the schools the aim was to develop an understanding of the kinds of challenges that they as participants in activity systems were faced with and what kind of support they were able to use when taking actions for developing their practice in learning to be teachers.

The expansive cycle assumes that development is dealt with both on individual and system level. Since the developmental processes of the student teachers interact with system development in the schools, the conditions in the practice of each school were the point of departure in the analysis (Figures 7.2, 7.4 and 7.6). I explored how the student teachers proceeded when taking actions for developing their own model of classroom practice; how they encountered problems stepwise, finding ways to develop their practice, or how they were stuck and unable to react to a problematic situation (the dark gray boxes in the figures). Such problematic situations are considered as the first stimuli for taking actions and in such situations Vygotsky proposed the method of double stimulations (Engeström, 2007b; Vygotsky, 1978) which assumes that subjects are afforded mediators to make use of for overcoming the difficulties. The analysis therefore explored the meditational means that student teachers were afforded in their situation as school based student teachers (the light gray boxes in the figures).

Since the teachers developing their practice in this case were student teachers enrolled in an academic distance programme the possibilities inherent in their position of boundary crossing was considered. Engeström (2009b) has argued the importance of boundary crossing as a source of second stimulation:

Boundary crossing provides material for double stimulation. It requires negotiation and re-orchestration. It is the most obvious aspect of the horizontal or sideways dimensions of development (p. 314).

Recently Engeström and Sannino (2010) suggested that expansive learning can be regarded as boundary crossing and network building and discuss an example from boundary crossing between teacher education and schools.

Contradiction analysis of the distance programme

In Chapter 8 the distance learning programme was analysed as a system in constant development, where contradictions and their resolutions were the driving force for change (Figure 8.7). Since the developmental processes of the distance students interacted with system development in the programme, the conditions in the practice of the programme when they started their studies was the point of departure in the analysis. Then I explored how the students proceeded by taking actions for developing their participation: how they encountered problems (the dark gray boxes in Figure 8.7) and found ways to overcome problems supported by affordances they were able to use as double stimulation (the light gray boxes in Figure 8.7), and how their improved participation contributed to development of the programme (Chapter 4.3.4). On the other hand I analysed what constrained them in reacting to a problematic situation which is considered as the first stimuli for taking actions.

Vygotsky proposed the method of double stimulations for supporting people in such situations (Engeström, 2007b; Vygotsky, 1978) where auxiliary means or mediators are afforded for subjects to make use of for overcoming the troubles. This is the foundation of the expansive learning theory and in the analysis I explored the mediational means that students were afforded in their situations; here the focus was turned to the affordances within the activity system of the programme but also looked at how the distance students could draw on their situation as school based student teachers, boundary crossing between their home schools and the university programme. This matter will though be dealt with more explicitly in Chapter 9.

5.6 Presenting the findings in the form of concepts and hypotheses

The purpose of the theoretical analysis is to explore possibilities for future development of the activity systems of the schools and the teacher education programme as well as the *zone of proximal development* for student teachers as actors in those institutions.

The analysis of the school-based student teachers in Chapter 7 revealed the *zone of proximal development* for individual student teachers situated in their home schools as well as the *zone of proximal development* for the schools on a system level. In the same way the analysis of the programme in Chapter 8 revealed the *zone of proximal development* for the teacher education programme. Chapter 9 revealed the zone of proximal development for the schools and the teacher education programme as interacting activity systems (see the research questions in Chapter 4.4).

5.7 Criteria for quality

Since the hypothetical tools will not be tried out in actual practical work their validity will not be tested by their usefulness in practice, neither will there be a possibility to elaborate on the hypothetical instrumentalities since they will not be worked with in practical development within the limits of the doctoral thesis.

Wardekker (2000) discusses credibility within transformational collaborative research paradigms such as cultural-historical activity theory and reiterates that their purpose involves the possibility of developing the practice under investigation. The researcher's focus is on the possibilities for enhancing the dialogue between practitioners and researchers and the intention of research 'is to establish a 'discursive rationality' in which alternative practices are discussed and tried out' (ibid, p. 270). Researchers want to optimize the impact of their research beyond the limit of a specific research project and the criteria for quality aim at maintaining that purpose. There are no such generally accepted criteria within the cultural-historical activity paradigm that I know of, but as it is a research paradigm under development some suggestions have been put forward that may be used as preliminary signposts. Wardekker (2000, p. 271) refers to an intervention design where the research project is a collaborative endeavour of researchers and practitioners when he puts forward four suggestions for quality criteria which I summarize below:

a) The role of researchers is to be both participants and analysts; working toward a better practice at the same time as evaluating the results, they need to find a balance between participation and distantiation. They are expected to be stimulating partners in dialogue, but not carried away by their enthusiasm.

b) In research aiming at development of practice, sustainability of change is a criterion for quality. Participants in a change process should be able to continue the developmental work after the researcher has left.

c) To have impact beyond the situation of the research project being investigated the research results ought to have 'generative power' which means that they could be used in similar situations

d) Publications and presentations of research projects should 'offer enough ideas and heuristics so that others may be inspired to try something along the same lines'.

Although the first two points do not apply in my work since I have not been working formally on change with practitioners, they were helpful in guiding the way I presented the findings of my study which I have assumed will be used in developmental work with practitioners. Point 3 and 4 urged me to generate concepts and models from my empirical data that persuade practitioners of their usability beyond the investigated situation. I also keep in mind the way in which Vygotsky (1978) presented instruments as double stimulations for people assuming that they would use their own agency to make sense of the usability of the stimulus in their situations.

In qualitative research it is recommended that research results be presented to the participants in the study to give them opportunity to have their say on interpretations. As the study has proceeded I have done that and their acknowledgement has supported the validity of the research findings, although the papers written in English have limited the possibilities for full discussion. Other criteria for the credibility of qualitative research results are related to the reception by prospective users, in this case both practitioners and researchers. Throughout the research process I have presented the preliminary results at conferences both in Iceland (Jóhannsdóttir, 2005a, 2006a, 2008d, 2010c) and abroad, among them both Nordic and International ICSAR conferences (International Society for Cultural and Activity Research) (Jóhannsdóttir, 2004a, 2005b, 2006b, 2006c, 2007b, 2008a, 2008b, 2008c, 2010a, 2010b, 2010d) where I have had the opportunity to get responses from colleagues both abroad and at home (for an overview see Appendix III).

Some articles have been published in Icelandic conference proceedings (Jóhannsdóttir, 2004b, 2005c, 2007a) and three articles have been published (Appendix III). In the starting phase of my research a colleague in North Norway and I wrote a paper where

we compared the inception of distance education for teachers there and in Iceland and the results were published in Norwegian and English (Jóhannsdóttir & Skjelmo, 2004; Skjelmo & Jóhannsdóttir, 2004). Towards the final phase of my research process I participated in a conference on socio-cultural perspectives on teacher education in Oxford University where I presented a paper on my results (Jóhannsdóttir, 2008b) and I was invited to write an article in a book edited by Viv Ellis, Anne Edwards and Peter Smagorinski with the title *Cultural-Historical Perspectives on Teacher Education and Development* published by Routledge in January 2010 (Jóhannsdóttir, 2010b). This article is Chaper 9 in the thesis. I claim that these articles and presentations have allowed me to support the credibility and trustworthiness of my research results and interpretations.

Writing in English

Because of the smallness of the Icelandic community I decided to write the thesis in English to reach out to international experts in the field of educational research in general and connoisseurs of cultural-historical activity theory in particular. Since 2004 I have had the opportunity to present provisional results of the study in international conferences. That had not been possible if I had been writing in Icelandic. I have however, also presented and published conference papers in Icelandic during these years (Jóhannsdóttir, 2005c, 2007a).

All interviews are of course in Icelandic and therefore I had to translate the quotations I use in the descriptions of the cases. Since there might be some nuances in utterances that get lost in the translations I have made an appendix with the quotations in Icelandic together with the English translations as information for Icelandic speaking readers (Appendix IV).

5.8 Ethical issues

In gaining access to the fields of study the principals in the schools gave me permission to enter the schools, first as a part of the research group studying the use of ICT and later also for studying distance education. The people I interviewed formally were informed of the context and their rights and all accepted participation. For access to the courses I got permission from the lecturers to monitor the online webs, WebCT, as well as to observe the face-to-face sessions. When I entered the face-to-face sessions in each of the three analysed courses in the beginning of the term I presented myself and my

study for the students and asked them orally for permission to monitor their actions. However, I told them that I would send them each a private letter in the mail (Appendix II) in the WebCT and ask them formally for permission which I did and they responded all positively.

In writing and presenting the results of the study I have used pseudonyms; which is the most general practice in qualitative research. However, because of the smallness of the Icelandic community it is possible to identify the schools I visited although they represent school types that could be found all around the Icelandic coastline; an issue I make an effort to emphasize. As for the courses monitored they are presented with their real names but without identifying the lecturers. The lecturers were asked to read the analyses of their courses and have approved my descriptions. I have presented my analysis to some of the other participants, but because of language barriers I have not asked them to read through all the analyses in English. In May 2009 I visited Waterside School and Coastline School and presented the state of affairs in the study and provisional results for the main participants and the principals.

CHAPTER 6: THE INCEPTION OF THE DISTANCE PROGRAMME AND THE EXPERIENCE OF THE FIRST COHORT

6.1 Introduction

The purpose of this chapter is to account for the inception of the distance programme as a new form for teacher education in Iceland since by its advent it became possible to complete a full degree for compulsory school (pupils age 6-15) teacher education at a distance. The aim is to describe the origin of the distance programme and enhance understanding of why and how it was launched. Furthermore, I wish to describe and analyse the first phases in its development. The expansive learning theory follows the Vygotskian tradition which assumes that when researching the development of human activities the analysis of the actual state of affairs reveals its possibilities for future development, i.e. for identifying the *zone of proximal development* (Vygotsky, 1978). An awareness of the historical development of the relevant activity is important for better understanding development as historically evolving processes (Chapter 3.3.3). Therefore, before turning to the analysis of the state of affairs in of the distance teacher education programme in 2003-2006, I explore its inception in 1993.

The expansive learning theory (Engeström, 1987, 1999b; Engeström & Sannino, 2010) is used as a comprehensive framework for analysis and interpretation. Guided by the expansive learning cycle (Figure 4.1) I looked at the distance programme as an innovation in teacher education responding to a need state and have striven to explain what need state in the schools in Iceland led to the formulation and launching of the programme in 1993. I describe its main features and what made its realization possible.

The analysis is based partly on documents, published as well as unpublished, accessed in the university's archives, which provided information and shed light on the interaction of different factors at play in Icelandic society when the distance programme was taking shape. A valuable resource on the first years of the programme was an evaluative research project on the first cohort from 1993-1996, where both quantitative and qualitative data were collected from start to graduation (J. Jónasson, 2001).

Further data was generated by interviews with pioneers carried out during field visits. Three former distance students were interviewed and asked to recollect their memories of the experience of being pioneers in the programme (Appendix I). Their narratives

were used to describe the first steps in the development of the new distance model from the perspective of student teachers, challenges they met and the way in which they overcame problems and learned to function as school-based distant student teachers.

In Chapter 6.4, the expansive learning cycle is used as a framework for interpreting the descriptions constructed in Chapters 6.2 and 6.3. The chapter concludes by calling attention to some concepts generated from the analysis and important for understanding the first phases in the developmental process of the new model.

6.2 Launching a full B.Ed. teacher education programme

6.2.1 The need state and the lifelong learning movement

Despite the success of the flexible programmes (Chapter 1.3.2) the lack of teachers continued to be a problem in the sparsely populated districts. The problem was the greatest in the coastline region which is the field of the study, where in 1992-1993 50% of teachers were without formal qualifications (Stefánsdóttir & Mýrdal, 1993). The schools had a poor reputation, and results from standardised national examinations confirmed that pupils' achievement was amongst the lowest in the country which the community felt was not acceptable. The problem also existed in other districts, and the heads of regional educational offices, in cooperation with school principals and teachers without qualifications, called for a different form of teacher education, since many teachers were not in a position to move to Reykjavík for the regular, on-site programme.

In the years preceding the 1990s the ideas of lifelong learning and the need for continuing education for the workforce in general, were being put on the agenda internationally. Society's need for enhancing the knowledge and qualifications of citizens, in order to serve the emerging new era of the information or knowledge society, was to be addressed through lifelong learning. Distance learning was promising as a means to that end all over the world, and the success of the Open University in the United Kingdom was an important model (J. T. Jónasson, 1987). It had been 'founded [in the 1960s] on the belief that communications technology could bring high quality degree-level learning to people who had not had the opportunity to attend campus universities' (The Open University, 2009). New technologies presented possibilities for putting these ideas into practice. Without question this international wave affected how

the Iceland University of Education, as well as the Icelandic authorities, responded to the need for qualified teachers in the rural areas.

In Iceland the Ministry of Education established an Executive Committee for Distance Teaching (Icelandic: Framkvæmdanefnd um fjarkennslu) in 1986, charged with the task of exploring the feasibility of initiating distance education in Iceland and evaluating which subjects should be prioritized (J. T. Jónasson, 1987). The terms of reference mentions teacher education along with the Icelandic language, knowledge and skills about computers for the general public and education concerning fish products. The committee proposed a teacher education distance programme for in-service teachers as feasible, as well as shorter teacher certification programmes. The experience of the Iceland University of Education in offering flexible programmes to serve the need for teacher education was mentioned and the importance of supporting that initiative was highlighted.

6.2.2 The organisation of the B.Ed. programme

In 1989 the Iceland University of Education (IUE) responded to the call for an alternative form of teacher education by forming a working group on decentralized and flexible teacher education. The idea was to build on the experience the IUE had of enabling people living in the countryside to pursue studies through unconventional routes (Stefánsdóttir & Mýrdal, 1993). In late 1989 the group proposed that the IUE would offer a full Bachelor of Education (B.Ed.) degree via distance education. Sigurjón Mýrdal, the first coordinator of the distance education programme, explains why this was the view of the group:

An important objective of our project is to eventually eliminate the number of unqualified teachers in our basic schools, by offering teacher education to a pool of fairly educated people living in the rural communities. This was the primary reason for the propelling of this relatively large distance education programme and maybe explains why it was given priority over some other smaller or less complicated courses, for example in further education or in-service education of teachers (Mýrdal, 1994b).

In January 1993 the programme was launched with the same entrance requirements as for the traditional programme. To begin with applicants from rural areas with a teacher shortage had priority, although it was not a formal rule for admission. An emphasis on

maintaining similar standards to the traditional programme was stressed to avoid speculation that the distance programme was of poorer quality (Mýrdal, 1994b). It was organized as a part-time course over three and a half years, with three semesters each year, equivalent to three years of full time studies. The first cohort started in January 1993 with graduation planned for summer 1996.

The organization was such that there was a two-week session on campus in the beginning of January each year and 3-6 weeks during four summers (Stefánsdóttir & Mýrdal, 1993). Otherwise the programme was planned as independent study, where Internet connections were supposed to be the main medium of communication between teachers and students. Since the technology was new to both teachers and students it was assumed that ordinary mail and telephone would be used alongside email. The face-to-face sessions were considered necessary to present an overview of the learning material and explain learning tasks for the students, as well as for giving lectures and taking exams. The experience showed that the time on campus was also used for student collaboration and social fellowship, and both students and teacher educators came to appreciate the face-to-face sessions for that purpose (J. Jónasson, 1997; Kristinsdóttir, 1995).

The distance programme followed the same curriculum as the on-campus programme, although electives were somewhat fewer. The majority of the student teachers worked as teachers alongside their studies.[1] If that was not the case the IUE and the district services collaborated on arranging home schools for them where they were supposed to do their practice teaching and other practical assignments related to their studies (Stefánsdóttir & Mýrdal, 1993). The distance programme, like the on-campus programme, allotted 14 weeks for practice teaching. Even though the school-based student teachers generally took their practice teaching in their home schools, programme staff strongly encouraged them to complete at least one period in another school. However, it depended on the circumstances, both in the schools and of the student teachers. For the majority of students the programme was in effect a school-based apprenticeship model for teacher education based on a kind of partnership between schools and the IUE. The local schools and regional education offices took on the responsibility of supporting their employees while they were studying.

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[1] In a questionnaire from 1996, which was a part of the evaluation study conducted by Jón Jónasson

6.2.3 The Internet as a mediating tool

The development of new information and communication technology played an important role in the realization of the programme. The promises and possibilities of the Internet actuated the vision of enhancing access to education for marginalized groups of people, such as those living outside the periphery of the universities. In Iceland a grassroots movement of small schools in sparsely populated districts had started to build up Internet connections. This movement grew fast and in 1992 it became formalized in a nationwide network; the Icelandic Educational Network (Icelandic: Ísmennt). This network became an important supporter as well as promoter of distance learning for enhancing education, especially in the countryside (J. Jónasson, 2001). These Internet pioneers were interested in the possibilities inherent in the new information and communication technology for enhancing collaboration by connecting schools and widening access to educational institutions. The interplay of new technology and the emerging ideas on social justice and lifelong learning facilitated the launch of the distance programme, although the primary motive was the need for teachers with appropriate education in compulsory schools (Mýrdal, 1994b).

It is evident that Ísmennt, as a movement of teachers, also played an important role as responsible supporters of the distance programme. Ísmennt had become a movement arousing general interest, and in the spring of 1993 80% of all schools in the country had been linked to the Internet through the network (Stefánsdóttir & Mýrdal, 1993). The enthusiasm of the innovators ensured that the distance programme could rely on their support, and they took responsibility for ensuring that distance student teachers had access to the network, either from the schools where they worked or from their homes. Ísmennt also offered the students courses on using the Internet before they started. Most of the network's staff members were teachers, which ensured a better understanding of teachers' needs and circumstances. This was a crucial matter in creating a supportive community around the new technology (Stefánsdóttir & Mýrdal, 1993).

The IUE and school district offices also reached agreements stipulating that the offices would, as a rule, support student access to necessary computer devices in the respective home schools (Kristinsdóttir, 1995). The offices were also important promoters of this educational opportunity for rural schools. The offices and local schools took on the responsibility for assisting in planning practice teaching and providing venues for

examinations. In this manner the schools, the district offices, and Ísmennt, in combination, provided pedagogical support for distance student teachers.

6.2.4 The first cohort

In the first cohort that started in the spring term 1993, there were eighty-three students, 75 women and eight men. They had been chosen from 194 applicants. Most of them started in January (65) but several students (18) were admitted in April, since there was political pressure to take in more and additional funding made it possible (Stefánsdóttir & Mýrdal, 1993). The prerequisite was having sufficient preparatory education, but applicants with experience of being school teachers where there was a lack of certified teachers were prioritised.[2] In this first cohort there were student teachers from all over the country, although most of them came from regions where there had been teacher shortages and very few were from Reykjavík and the surrounding area. Around 80% or 67 students had some teaching experience, 10 of them having a decade or more of experience, while 15 had no teaching experience at admission (J. Jónasson, 2001, p. 76). Age was higher than in the on-campus programme and the age range more widely distributed, with the oldest born 1934 (59 years old when she started) and the youngest born 1970 (23 years old when she started) (J. Jónasson, 2001, p. 73). Around 70% of the group, 54 students, all women, graduated in June 1996.

Admission guidelines for the distance programme were based on a societal need for qualified teachers, especially in the rural areas. This resulted in the community of distance students being relatively homogenous; it was made up of females from the countryside, average age 30-40, with teaching experience and a formal education equivalent to a matriculation examination or more. Some had a university education in the school subjects they had been teaching. It can be assumed that they were enthusiastic and ready to sacrifice a lot to get an education, because at the time there were no funds or resources to pay for travel and board in Reykjavík at least six weeks per year. Most of them had a full-time job and family commitments; although the advice of the programme committee was that enrolled student teachers should have maximum 50% job obligations (J. Jónasson, 2001).

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[2] Although in effect that was the case there were exceptions e.g. an applicant living in Reykjavík with no teaching experience. The University stressed the importance of keeping the rules for admittance open while there was a pressure from politicians to prioritize applicants from the sparsely populated districts.

6.3 The experience of three student teachers enrolled in the first cohort

Three teachers who were enrolled in the first cohort in 1993-1996 were asked to recall their experience of being pioneer distance students. They were asked to reflect on why they wished to participate in the programme, what they learned and how they used what they learned to enhance their professional practices, and how it may have eventually affected school practices in general. The narratives below are based on their memories.

6.3.1 Three student teachers in the first cohort and the situation in their schools

Helen had been teaching in Marwick School, situated in a small fishing village, when she started in the distance programme. At that time there were five teachers and approximately 30-40 pupils in the school and the principal was the only one who had teacher certification. When the opportunity opened up to get initial teacher education via distance learning the principal encouraged the teachers to apply. Helen and one of her colleagues started in the first cohort in 1993. The other two followed their example and within a few years all the teachers in this small school had got their qualifications through the distance programme. When interviewed in 2004 Helen held the post of principal in the school and planned to enrol in the Educational Administration graduate programme at the IUE, offered via distance learning.

Elisabeth had been teaching for several years in Waterside School, with more than 500 pupils and about forty teachers, located in the district's main town. She had graduated from the University of Iceland with a B.A. degree in two subjects, which she taught at the lower secondary level, but did not have teacher certification. Several other women teaching in the school were in similar situations, had various educational backgrounds at university level but were without teacher certification. Elisabeth explains that at the time the school had a poor reputation in the community. Results in standardised national examinations, where pupils were repeatedly below average, were linked to the high percentage of teachers without certification. Elisabeth and her colleagues thought the situation was unacceptable and started to search for ways to improve their situation as professionals, thereby hoping to change the situation in the school. They were not able to enrol in the on-campus teacher education programme: '… we all had our families here… could not or did not have the courage to move to Reykjavík at that time.' Elisabeth was in 2004 a vice principal in Waterside School, where a number of teachers had been enrolled in the teacher education distance programme, as well as in graduate

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programmes in recent years. She had been taking courses in the Educational Administration graduate programme and was near completion.

When Jenny started in the distance programme she was a teacher in Coastline, a small fishing industry town where the school had approximately 150 pupils and 20 teachers. She had studied at the University of Iceland for one year when she got the opportunity to become a lighthouse warden for a year, together with her fiancé. After that they settled in their hometown and she got a job as a teacher in the school. When the opportunity came to continue her studies in the teacher education programme via distance learning she seized the opportunity. She described it as an inner need to continue to learn even though the circumstances were difficult. When interviewed in 2004 she was head of teaching in the upper primary, ages 10-12, as well as being enrolled in graduate-level courses in general didactics and information and communication technology education, through distance learning.

6.3.2 The reasons for participating in the distance teacher education programme

The overview of the three women and their situations illustrate that both personal circumstances and lack of qualified teachers in the schools created the need for a non-traditional form of teacher education. Elisabeth explains why she and her colleagues took the initiative to call for an opportunity to access the teacher education programme and get formal teacher certification:

> We simply wanted to enhance professional discussion in the school, and yes, to be able to title ourselves as teachers. We were women who were really interested in teaching and we had been reading articles and books, etc. So we talked to Peter, who at that time was the head of the school district office, had many meetings with him and he fought for this and made it possible (Interview, May 2004).

The six women in Waterside had been questioning practices in their school before commencing studies. Elisabeth narrates how it was their intention to change the school, and that they saw the teacher education programme as a supporting element in that endeavour:

> What we wanted to do was to change the situation, change the image of the school in the community. We wanted to increase respect for the school in the community, and get rid of some negative aspects that had created an unpleasant atmosphere in the school; […] … make the school better, the pupils happier and

that we could look at the group leaving the 10th grade standing here outside the school and look proudly into the future (Interview, May 2004).

It is apparent that the women had visions for their schools, and enough self-confidence to believe that they were able to change them; that a precondition would be to be accredited as qualified teachers. In Waterside community as well as in the region as a whole there was general agreement on the need to improve the schools. Since the percentage of qualified teachers had for a long time been the lowest in the country it was obvious that something had to be done to change that. Both the school authorities and the unqualified teachers agreed on the matter and were willing to do something about it. From the interviewee's standpoint there was no question that the support and initiative from the school district office, alongside the encouragement of its director Peter, was crucial. Helen recalls this:

> He really encouraged everybody, phoned the schools asking if we weren't ready to do it, to try to get into the distance programme to get a teacher education, which would make it possible for us to continue living in our home towns and to keep our work as teachers (Interview, February 2004).

Helen also remembers that the principal in Marwick where she was teaching encouraged the teachers to apply, gave them her recommendation and contacted the programme administrators at the IUE to push for their admission. The principals and Peter at the school district office seem to have formed an effective pressure group for the district and as a result about 23% admitted in the first cohort came from the district (Mýrdal, 1994a); an act which clearly recognized the difficult situation there.

6.3.3 Support for student teachers participation in the programme

Like most of the student teachers in the first cohort, Helen, Jenny and Elisabeth were all teaching in their schools alongside their studies – generally a full-time job – besides having family obligations with young children at home. For understanding their learning as related to their circumstances is important to consider what supported them in participating in the programme, what was challenging, and how they managed to overcome the challenges and continue. Support from within the programme and from the home district will be examined.

The technology

The programme was planned as independent study where students worked on their studies from home, supported by mail correspondence with lecturers as well as on-campus sessions twice a year. The possibilities that opened up when the majority of schools were connected to the Internet were of crucial importance in realizing the distance education programme as an online distance programme. All distance students were secured access to an Internet-connected computer, either in the school where they worked or in a nearby school if they were not teaching. However, as Elisabeth recalled:

> There was a sort of a tension linked to it, something was always going wrong. We had only this one computer at the school which we could use; we didn't have it at home (Interview, May 2004).

But the technology and the access developed fast. Already in the third year of the programme many had got themselves personal computers with an Internet connection in their homes.

Although the Internet was supposed to be the main medium of communication between teachers and students, ordinary mail and telephone were also used. In the beginning email was mainly used for students to receive assignments and submit solutions to teachers, although bigger essays, where the page layout mattered, were sent by ordinary mail. This was before sending attachments was an option in email software. The women all stated that it was primarily independent study, except for the on-campus sessions. It mattered a lot however how the lecturers handled their teaching tasks. The technology was new to students and teacher educators alike. This caused tensions when teacher educators were not using it effectively, as Jenny mentions:

> The email was very primitive and something we were not familiar with. And not all the teachers were capable of using the email. From some of them you never heard a word (Interview, February 2004).

The teacher educators

The pioneer distance students all agreed that it mattered a lot how the teacher educators handled computer communication. In some cases they had little to no contact between face-to-face sessions. They remember the feeling of being ignored, that the teachers had forgotten them or did not have time for them; still other teachers were always prepared to help. Helen explained the importance of good contact with the lecturers in general terms:

It doesn't matter how old you are. If you have a task and someone is the manager, you have to be in contact with that person. You have to get some feeling… not only through the computer. And some of them [the teacher educators] gave us great access to them, saying like: Just send me questions any time, or you just phone me, etc., while others had a scheduled time for such questions. Most of them, though, were easy to access (Interview, February 2004).

This lack of contact with some of the teachers at the IUE led to tensions, which made the distance students feel isolated and frustrated. Elisabeth reflected:

If I had been alone with so little connection to the teachers, I would have just given up with such a disaster (referring to an incident when assignments had got lost in computer communication) (Interview, May 2004).

Collaboration and peer support

The students reacted to tensions caused by a lack of contact with some teacher educators by sticking together and collaborating. In Waterside, where six women were part of the programme, they would meet to collaborate and support each other in reading and doing assignments. Elisabeth describes how they 'made strong personal connections and helped each other a lot, met and pulled each other ashore and battled' (Interview, May 2004).

In the latter part of the programme new collaboration groups were formed and students learned to collaborate with their schoolmates no matter where they were living. By then they had gotten to know students from other places, and were in groups based on subject specialization. Elisabeth recalled:

When we started to separate we helped, got phone calls, one of us chose English and collaborated with a student in the East (Interview, May 2004).

Helen also talked about how they learned from meeting people from other rural regions, in similar situations, and started to collaborate with people in the programme, independent of their location. The collaboration was not only around the studies; since most of them were teaching they started to support each other in their teaching jobs. Helen explained:

Look, if you just said; look; it is really working out well with me in mathematics if I teach it this and that way. Then someone would come and say: Oh god, can you help, I heard you were teaching this class, the 3rd grade. It is really going badly. What is it you are doing? And then you told them what you were doing, something like that and then that person went home strengthened …. And then

maybe you were sending them material and all kinds of things afterwards (Interview, February 2004).

Such conversations could happen in face-to-face sessions, or by contacting each other from their homes. Helen recalled using the phone even more than email. However, email was used to exchange texts, whether it was regarding study assignments or for the exchange of school assignments used in their own teaching.

The face-to-face sessions in Reykjavík were of crucial importance for making personal contacts, both with peer students and lecturers, as well as for learning to work together. Helen illustrated this well:

> When we met in Reykjavík we stayed together as a group a lot, met a lot outside school and things like that, eating together in the canteen, collaborating on assignments in the library. Things like inviting the teachers to dinner with us. I still keep in touch with many of them. It was often really fun. It was interesting to hear what all the others were doing. This opened up so many things, opened up so much, you see, because they were all teachers. Because more or less they were teachers in small schools, so you could ask them what they were doing. You could get a lot of information, share a lot. […] And then you return home, not only with the knowledge from the teacher programme, but also what the others were doing, and in that way you were adding to your knowledge all the time (Interview, February 2004).

This is a good example of how the distance students explained how they were learning not only from the formal learning tasks they were supposed to perform as part of their studies, but also from their schoolmates being in similar situations, teaching in local schools in the rural areas.

Support in the home district

An agreement had been made that the school district offices would support the distance students, and all of them mentioned how important and supportive the head of the district office, Peter, was, and thanked him, both for making the programme a reality and for continuing encouragement. Initially his intention was to provide books that the distance students would need and they could come to the office to read and discuss them. In reality it was more like being invited for coffee and cakes, he was always willing to listen and provide support when needed and that was appreciated.

All three mentioned that the support they got from colleagues in the schools where they were teaching while studying was important. Elisabeth thought that the experience of teaching, together with the support she had in her home school, were the preconditions

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for her being able to succeed in the programme. Helen indicated the importance of having a supportive principal, who had herself recently graduated from the on-campus programme, and encouraged her to try out things she was learning with the pupils. This possibility was an important advantage of working as a teacher at the same time as learning to become a professional. Helen explained how this functioned for her:

> You would always adapt to your own situation. Look, this was your world, the school, where you were teaching and you applied all the material you got. You were always trying to apply, asking: How can I use this in my teaching? And immediately when we had learned how to make a teaching plan and things like that; integrate – make social studies by integrating geography, history, home economics and things like that, then you could organize a tourist bureau here with the pupils. And everything worked out well and you went back happy [to the programme]. […] And then we shared, you always shared with the others right away (Interview, February 2004).

In Marwick, Helen, and her fellow student and colleague, used their newly acquired knowledge in their practice, thus bringing new ideas and practices from the programme to their school. Their changed practices in turn affected school development, as well as motivating the rest of the unqualified teachers to apply for the distance programme. In this case the importance of the culture of the school being receptive to new ideas brought from the activity of the programme is crucial.

In the beginning it was the principal who was supportive and encouraged the student teachers to bring knowledge from the programme into their school practices. They were given agency and space to try out ideas from the programme, be they from teachers or schoolmates. Later, the pioneer distance student teachers supported those who followed in their footsteps. They then understood the situation and what they were going through and could help and provide support.

> Ellen [a colleague and distance student] maybe phoned me and said: Helen, I need to talk to you, I really do. And then we'd chat; yes, but you could write about for example […]. And then she had got some catch phrases which made her see the light at the other end of the tunnel you know. […] And then, the next morning she would show up saying: 'Look I just sat all night and everything worked out well, so I just finished it, it was just great!' […] Sometimes it is enough just to pat someone on the shoulder saying: 'Oh, I know what you are talking about'. Often that's quite enough, you know (Interview, February 2004).

The example shows an atmosphere supportive of the distance student teachers being cultivated in the school.

6.3.4 How participation in the programme supported school development

It is of interest to learn, when looking back, how the former distance students experienced the programme as supporting them in their professional development as school teachers. How did the academic studies in the university programme work as relevant resources for them in developing their practice in the schools and how did their participation in the programme influence school development? Helen recalled that developmental psychology was useful, while mathematics was difficult, and that students did not find the cultural history of Romans especially relevant to their work as teachers. Elisabeth analyzed how the programme affected their self-confidence and gave them strength to pursue change:

> The teacher education we got at that time made us more secure and enhanced our position as teachers. We began to come forward, the teachers without professional teacher education, just finishing a course in didactics of social studies and knew perfectly that we were talking about something that made sense, knew how we wanted to do this and said that we were not satisfied with how things were done now, and we wanted it this way (Interview, May 2004).

Elisabeth continued and described how the atmosphere in Waterside School gradually changed:

> I think that when these six women started their studies then the other teachers began to talk together more than before… there was a kind of renewal. There was a group of qualified teachers here but when the rate of unqualified is so high a professional discussion doesn't thrive. We are quite sure that this [enrolling in the programme] has totally changed the school. The school ethos and the attitude of the community towards the school have changed (Interview, May 2004).

She realized that there may be many interrelated factors affecting school development and explained that the advent of a new principal was believed by many to have made the difference but:

> the situation had begun to improve before he came. […] We were maybe not thanked for that, but we want to say that it is because we got that opportunity (referring to enrolling in the distance programme) (Interview, May 2004).

In her estimation, the school was moving towards a more professional mode of fulfilling its role. She mentioned, for example, how discussion in the staff room changed, how they started talking about pupils as children and individuals and taking professional responsibility for their education, wellbeing and future.

We stopped talking about how tedious Jacob could be and difficult, 'just like his grandmother used to be.' Instead we began talk about what we could do to make Jacob feel better, and how we could organize our teaching so that the slower pupils could manage their learning tasks somehow (Interview, May 2004).

6.4. Development of the distance education programme referring to the expansive learning cycle

Now the inception of the distance programme and the first phases in its development as experienced by the three pioneers will be analysed with reference to the expansive learning theory. The expansive learning cycle (Figure 4.1) explains development in terms of how the object of an activity is expanded and new model developed when individual subjects or collectives start questioning existing practice and call for change. That is termed the need state (Chapter 4.3). When the object of activity is changed it calls for developing new kind of practices, new mediating tools, and different division of labour. In other words, a changed object initiates secondary contradictions that manifest themselves in disturbances, problems and tensions in the activity which participants need to overcome to keep the system functioning. Secondary contradictions are also initiated when new elements such as new mediating tools are presented for use in an activity system (Engeström, 1987; Engeström & Sannino, 2010). The expansive learning theory is based on Vygotsky's method of double stimulation (Vygotsky, 1978) and in analysing developmental processes the affordances that subjects were able to draw on as second stimulations in their circumstances are identified for understanding what supports people in overcoming troubles and developing practice. Here the first phases in the emerging new model for teacher education in Iceland will be examined as a foundation for the analysis of the actual stage of the programme ten years later.

6.4.1 The need state

The distance education programme was launched in response to a persistent lack of qualified teachers in compulsory schools in rural Iceland, especially in certain sparsely populated regions. Unsatisfactory results from standardised national exams of pupils leaving compulsory school put a pressure on school authorities to recognise the problem. The teacher education was based in Reykjavík and short term efforts offered for uncertified teachers in rural schools had not sufficed. Responding to this situation, regional school authorities, principals in school suffering from a lack of qualified

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teachers and the uncertified teachers put a pressure on national school authorities and the Iceland University of Education for offering different forms for teacher education for meet the needs of both the schools and individuals wanting teacher education without moving to Reykjavík. Their collective effort is argued to have been important and may be taken as a symptom of collective responsibility of people at different levels of the school system for improving the situation in the schools. They needed double stimulation to support development of practice in the schools and called upon the teacher education institution to support them and offer a new model for teacher education.

6.4.2 The new online technology

The interplay of new information and communication technology and ideas on life-long learning and social equity in access to learning had opened up new possibilities for organising distance learning. The enthusiasm of Ísmennt as a grassroots movement of teachers in small rural schools and general belief in the possibilities of the technology were important in launching the programme. Thus the Internet with possibilities for online communication along with future visions of its role in education was the instrument that made the idea of distance teacher education feasible.

Engeström (2007a) has addressed the importance of understanding the interplay between conceptual and material tools and claims that there has been a tendency to introduce new digital tools in a ready made form without taking into account that there is more to it. He argues for the need to better analyse their qualities and potentials as mediating instruments. In this case, even if the technology was a supportive tool, it also brought new problems. In the new distance programme two important factors had changed from the conventional teacher education. The student teachers where different from conventional pre-service student teachers since most of them worked as teachers in schools, and the Internet was a new mediating tool for teaching and learning.

Both lecturers and the student teachers needed to learn to use the new technology which in the beginning was primitive and technical problems were causing tensions. A lack of lecturers' know-how in communicating on the Internet could be frustrating and the
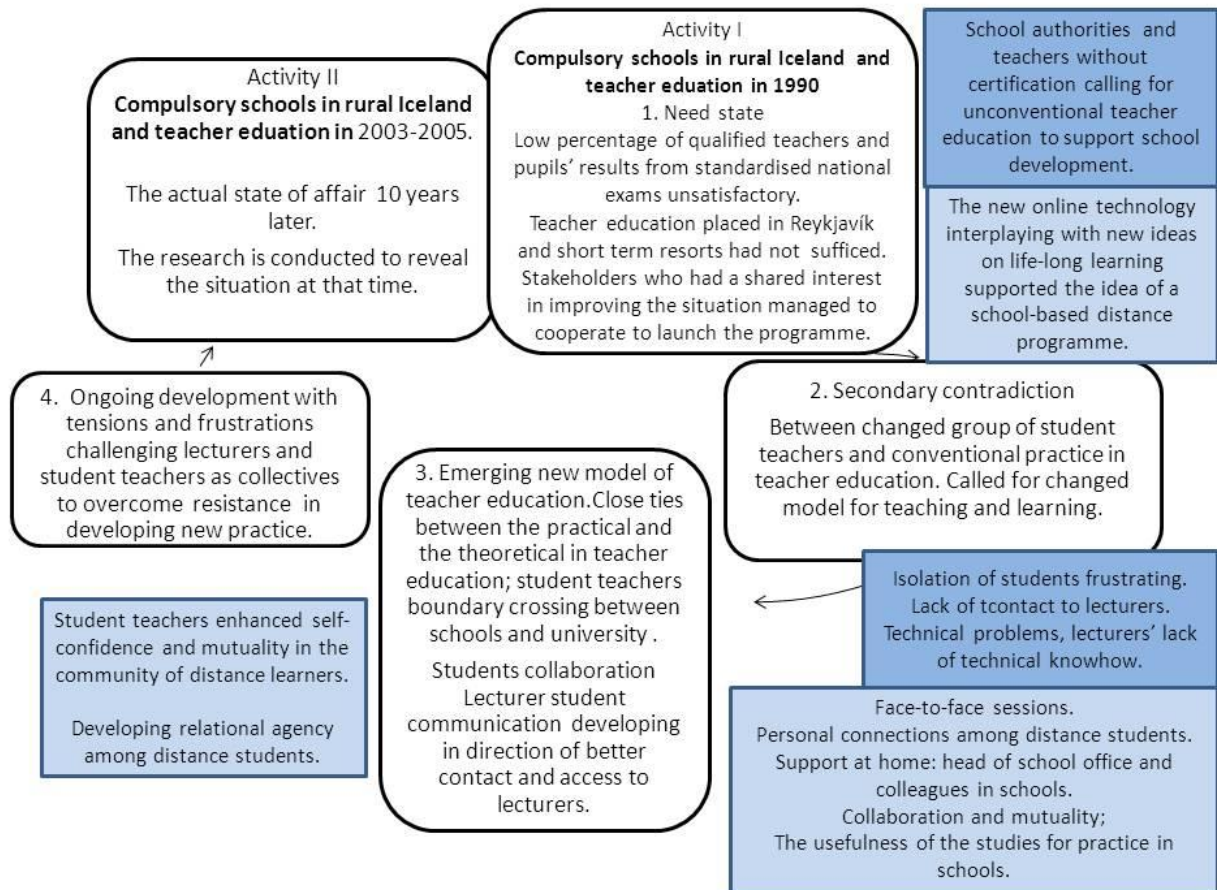
Figure 6.1 Early development of the distance education programme in relation to the expansive learning cycle

student teachers complained of isolation and lack of contact to some of the lecturers. Both student teachers and lecturers were learning to function in a new model that had been set off when the distance programme was launched and encountered contradictions that caused tensions among subjects.

Several factors supported the student teachers in overcoming such tensions which may be interpreted as double stimulation afforded in their situation. The face-to-face sessions in campus in Reykjavík were of critical importance. There the student teachers and the lecturers got to know each other, formed personal contacts and built a community where they learned to collaborate and share solutions. The atmosphere of mutuality supported the distance students when dealing with frustration and feelings of isolation during the online sessions where the fast evolving communication possibilities and better access to the Internet served as an important tool. The support that the distance students got at home both from colleagues in the schools and district school authorities was also important support for not giving up when things got frustrating. In the description above

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it is also apparent that the usefulness of the studies for their practice in the schools was an important stimulation encouraging students to keep on going despite at times frustrating circumstances.

6.4.3 An emerging new model of teacher education

In the form for teacher education that was being developed from 1993 onwards the ties between the theoretical and the practical were closer than in conventional teacher education since the student teachers were school-based while enrolled in the university programme. The narratives of the pioneer student teachers give a vivid picture of how they tried out in practice right away methods and ideas they had been learning about in the programme. This relates to Vygotsky's theory of the relation between scientific and everyday concepts (Vygotsky, 1986) and extended by his followers who concluded that in order to enhance learning, scientific concepts need to be supported by procedural knowledge (Karpov, 2003) (Chapter 3.2.3). According to the theory it was an affordance for the distance student teachers to be simultaneously participating in the schools and the university since the boundary crossing enabled them to link the theoretical to the procedural and vice versa.

From the descriptions of the pioneers it may be seen that student networking and collaboration were becoming an important characteristics of the emerging new model. Not only were the distance student teachers forming networks for supporting each other in the studies, they were also collaborating for supporting each other in developing their teaching. Edwards (2005b) has suggested the concept *relational agency* to describe how people learn to work collectively when dealing with expanded objects by recognising and accessing the resources of each other. 'Relational agency involves a capacity to offer support and to ask for support from others' (ibid, p. 168). According to the narratives of the first distance students this kind of capacity emerged in the first cohort when they were dealing with transforming the practice of teaching and learning in the new distance model. This would be interesting to explore further although it will not be done here.

Lack of contact with lecturers was a problem during the first years. In emphasising the importance of good contacts between teachers and students the ideal form was described as lecturer-student communication based on a feeling of good contact and easy access to lecturers. Lecturers that were developing their teaching practice in this

direction helped the distance students to overcome frustrations and feelings of isolations and functioned as a double stimulation for students.

6.4.4 Contribution to school development

Not only does the placement of the distance student teachers in the schools facilitate the linking of theoretical and procedural knowledge and thus support their learning. They were also in a situation to bring new knowledge from the programme into the school on a regular basis. Their enhanced practice might be a contribution to school development, as reflected in the teacher narratives, where they describe how they were able to use ideas and knowledge they brought from their participation in the programme to initiate school development in their home schools. This is in accordance with theories of boundary-crossing that argue that the situations of individuals who participate in and move between systems open up possibilities for them to become brokers or change agents (Engeström, 2009b; Wenger, 1998). (See a more elaborate discussion in Chapter 8). However, the way in which knowledge moves from one system to another is not likely to be in the form of direct application or transfer. Engeström (2009b) has explained how boundary crossing provides material for double stimulation, requiring agency of subjects who need to re-arrange and negotiate what they bring from one system in order to use it for stimulating practice in the other (ibid, p. 314).

Here the development Elisabeth describes in Waterside school may be taken as an example of expansive learning. In her opinion the possibilities that opened up with the distance programme were crucial for initiating the change which in her description follows the expansive learning cycle (Figure 6.6).

The school practice had been questioned in the community because of unacceptable results in national exams. However, when the group of teachers to which Elisabeth belonged started to question the school practice it was initiated by tensions in the object of school activity and the role of schools between good results in exams related to instruction and upbringing related to pupil happiness and wellbeing and concern for their future.
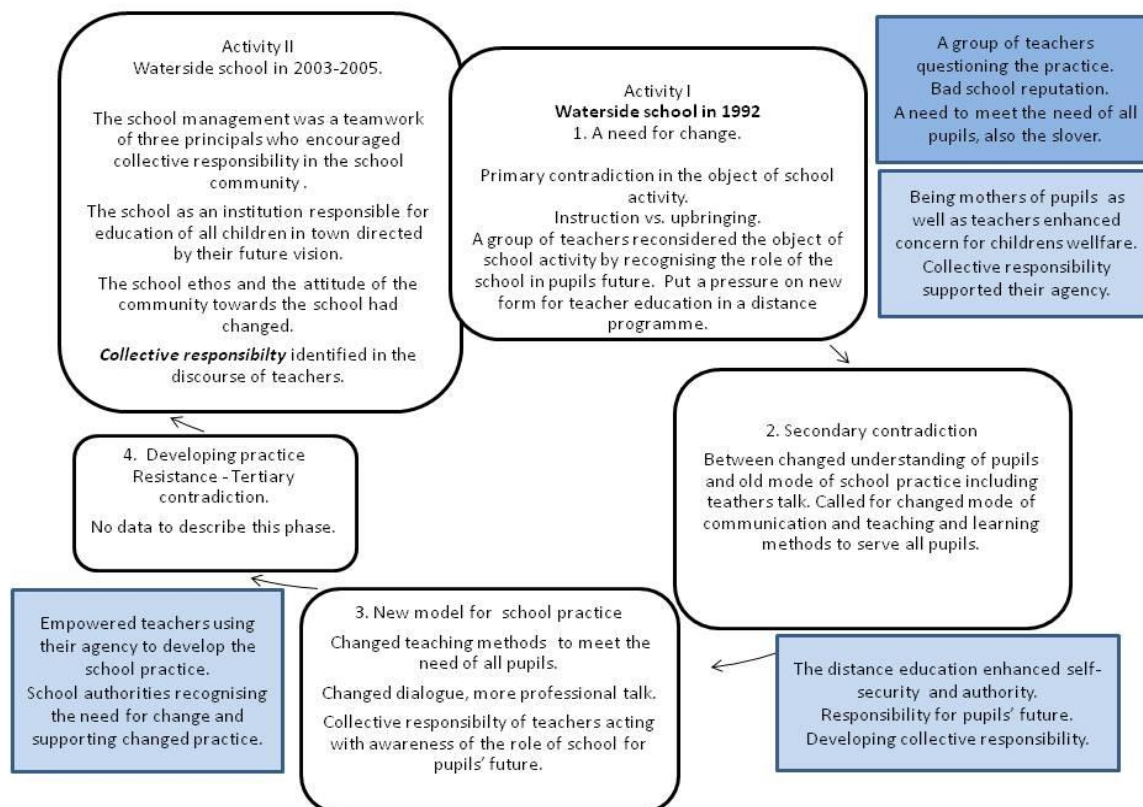
Figure 6.2 Development of Waterside School in relation to the expansive learning cycle

The student teachers were expanding their understanding of the object of schools by including upbringing and developing a responsibility for the role of teachers and schools in the future and general wellbeing of children. In Elisabeth's words they wanted to change the school to make 'the pupils happier, and that we could look at the group leaving the 10th grade standing here outside the school and look proudly into the future' (Interview, May 2004). It is suggested that what supported them in taking actions and asking for teacher education that suited their situation was that they were mothers that had their families in the town and they had ambitions for themselves as educated women. The school was an option for them to get a professional job. Being a group of six women in a similar situation enhanced their development of collective responsibility and agency for taking actions.

A changed understanding of the role of the school for pupils called for changed teaching methods as well as changed discourse among the school staff and Elisabeth described how their enrolment in the distance programme helped them work for change. She explained how participation in the programme enhanced their self-confidence as well as their professional authority when reasoning with others about the way in which they

would like to change practice. The new model the student teachers worked towards during their enrolment in the programme required changed teaching methods to meet the need of all pupils, changed discourse emphasising more professional talk and a new focus on what the teachers could do for pupils instead of refering to hopeless families that were unable to learn. From Elisabeth's account, *collective responsibilty* of teachers acting with awareness of the role of school for the pupils' future was being developed in the school. She felt that the *collective agency* of the six student teachers empowered by enrollment in teacher education had made the difference. Furthermore, school authorities had recognised the need for change and supported changed practice.

This analysis of the expansive learning in Waterside School is only based on an interview with one former distance student and no other empirical data is available for describing how the new model was accepted by teachers in general and applied at a system level. However, ten years lated when the school practice in Waterside School was analysed, characteristics of the model being developed at the initiative of the first distance students was evident (Chapter 6.2). At that time school management was a teamwork among three leaders. One of them was Elisabeth, who encouraged *collective agency* and *collective responsibility* in the school community. The practice of the school as an institution was characterised by responsiblity for education of all children which was identified in the discourse of teachers in general and in interviews with principals and school-based student teachers. It was generally accepted that the school ethos and the attitude of the community towards the school had changed. When interviewing a distance student teacher based in Waterside School in 2003-2006, it was noteworthy that she emphasised the role of teachers and schools in children's wellbeing and refered to responsibility for their future.

6.5 Findings

Several useful concepts which are important for understanding the conception of a new model for teacher education and the first phases in its development have emerged from the analysis.

6.5.1 Collective responsibility and collective agency

The most important factor in facilitating the conception of the distance programme was the collective responsibility of agents at different points within the school system in the

rural districts. Their responsibility motivated them in taking actions in response to the need for a deviant form of teacher education for making the schools better. The collective agency was important for forming a relationship and commitment among the student teachers, the local schools and the teacher education institution. In addition, the school district offices responsible for running the schools and the professional teaching support via Ísmennt made this first distance programme unusual. The problematic situation in the rural schools was acknowledged. Those stakeholders who had a shared interest in improving the situation managed to cooperate to the extent needed to launch the programme.

Furthermore, in developing school practice in Waterside collective responsibility and collective agency are suggested to be important for facilitating development.

6.5.2 Networking and collaboration

When the new programme had been launched the distance students were confronted with challenges where lack of contact with lecturers was a central problem. It is argued that in overcoming that problem they learned to form networks of fellow students where they supported each other, shared knowledge and experience and collaborated with each other. This new practice is suggested to have been an important contribution to the new model emerging in the first years.

6.5.3 Agency of practitioners

The example of the expansive development in Waterside School may be used as a reminder of the importance of taking agency of practitioners into account when thinking about the usefulness of educational programmes. By considering teacher education as a double stimulation in school development requires that agency of subjects is assumed: that people need to re-arrange and negotiate what they bring from one system to be able to use it for stimulating practice in the other.

6.5.4 Shared responsibility and partnership

The new model involved elements of a partnership model, where responsibilities for educating teachers were shared between university, compulsory schools and the teaching profession. Partnership models in teacher education are now widely being discussed and promoted as a preferable form for teacher education (Darling-Hammond,

2005; Edwards & Mutton, 2007; Furlong, et al., 2000). The development of the distance education programme at the Iceland University of Education will be examined in the next chapters where the research focus turns to the situation a decade later, in 2003-2005.

CHAPTER 7: THE EXPERIENCE OF THREE SCHOOL-BASED STUDENT TEACHERS IN THREE SCHOOLS

7.1 Introduction

A substantial part (about 40% in 2004) of student teachers enrolled in the distance programme for compulsory school teachers (age 6-15) have worked in schools while studying for teacher education degree. The aim of this chapter is to generate knowledge and understanding about challenges that school-based student teachers are confronted with when learning to be teachers. In schools in the coastline region under study there had been a shortage of teachers with teacher education for a long time.

In this chapter three cases are considered: Lilith in Waterside School in Chapter 7.2, Sarah in Coastline School in Chapter 7.3, and Sam in Creek School in Chapter 7.4. The narratives are generated from the ethnographic fieldwork and form the empirical data on which the theoretical analysis is based in the latter part of each chapter (see Chapter 5.5). To conclude the findings are presented in Chapter 7.5 in the form of concepts suggested for use in developmental work with practitioners in the schools. The concepts are used for guiding the proposal of hypotheses for use in developmental work in the conclusion.

7.2 Lilith in Waterside School

7.2.1 Waterside School

Waterside School is a big school with more than 500 pupils, situated in the biggest town in the region. There were over 50 teachers, and almost 80 staff members in all. The school buildings were old and overcrowded and the school has had to make use of nearby buildings not designed for teaching. However, the school library was rather spacious, centrally situated, and modern, with several Internet-connected computers and a remarkable collection of video-material, in addition to books. The library was considered an important support for learning, and during my field visits more often than not the librarian was busy helping pupils in an overcrowded location.

Information and communication technology was used for recording information concerning school management, both for intra-school management and cooperation with parents and the community. Teachers had access to eight Internet-connected computers in their workspace and the school had one computer classroom for pupils. In

the school year 2002-2003 up to 60% of the parents asked for a password to be able to track their children's performance on the school intranet. Class teachers had a list of parent email addresses, though it depended on the teacher how much it was used. Staff estimated that up to 90% of the parents had email. One of the student teachers graduating spring 2005 explained how she opened access for pupils to contact her outside of class, through the use of MSN instant messaging channels (Interview, Olga June 2005). The principal managed the school's website, where he also published school news for parents and other interested community members.

In Waterside the division of labour was built on clearly defined staff roles involving awareness of respective responsibilities (Figure 7.1). School management was in the hands of a principal assisted by two vice-principals. The principal's office was situated behind the teachers' work rooms, and teachers reported having easy access to him and claimed he was a good listener (Interview, Lilith January 2006). The vice-principals had their offices side by side outside the teachers' area. As a rule they kept their doors open to the hallway, where the oldest pupils would hang out during breaks. The vice-principals cooperated closely and communicated with pupils, who were always welcome in their offices for a chat (Interview, Elisabeth May 2004). Teachers were either class teachers for grades 1-7 or subject teachers in grades 8-10. Special subject teachers might also teach lower grades, such as ICT, arts and crafts, or physical education (PE). Teachers were expected to collaborate. Isolation of class teachers is a well-known problem in schools but here, since each grade was normally divided into three classes, the rule was that class teachers collaborate on curriculum planning and coordination of content and methods. The principal's opinion was that this cooperation was an important forum for student teachers to develop their ideas while learning to be teachers (Interview, Donald April 2005). The school had an official policy on inclusive education which meant that disabled pupils participated in general classroom practice. However, special teaching was also provided in separate classes. Depending on their disability pupils were often supported by teaching assistants, with whom the teachers collaborated, both in preparation and practice in the classroom.

There were several immigrant pupils at Waterside School. An interview with Olga, who had just finished her teaching degree through the distance programme, reflected a sense of responsibility and professionalism in how they were taken care of:

Certainly immigrant pupils have put their mark on the school culture, not least in our district. I think that this infusion has gone well and it has been very maturing for us natives to welcome new members to the community. […] I know this from my own experience as I taught a Polish girl last year. I had to contact her parents because of some problems at school. I could not phone the mother as she did not speak Icelandic or English, only Polish. And the nature of the problem was such that it was not appropriate to ask the girl to interpret. So I had to phone her work place and ask the boss to give her a message to meet me with an interpreter. That worked (Interview, June 2005).

The community, seen as the collective group sharing an interest in educating the children, includes both school staff and parents as well as pupils. Observations and interviews revealed that communication among different community groups was welcoming in nature and characterized by open channels across hierarchical boundaries. My experience in visiting the school such as stopping by the staffroom, gave a feeling of an open atmosphere, giving space for personal as well as professional discussion.

Waterside School has years of experience with student teachers being employed as teachers while studying. Since 1993 there have always been some teachers enrolled in the distance programme, at first only for teacher education, and later, when it became an option, for graduate studies as well. During the years 2003-2005 four or five of the teachers were enrolled in a teacher education distance programme, and seven or eight were enrolled in graduate-level distance programmes. Most of them studied at the Iceland University of Education, but some at the University of Akureyri, the second university in Iceland to offer a full compulsory teacher education distance programme and graduate-level distance programmes. The principal and one of two vice-principals were taking diplomas in educational administration, while the second vice-principal chose a graduate programme in special education. They explained how they deliberately chose different programmes in order to complement each other and broaden their education as a team (Fieldnotes, April 2005).

7.2.2 Description of Lilith as a school-based student teacher in Waterside School

Lilith was almost thirty years old when she started the programme in fall 2002 and she finished after five years in spring 2007. She had been living abroad for several years before she moved back to her hometown, along with her husband and child, about 10 years old at the time of the fieldwork (Figure 7.1). In the school year 2001-2002 she got a job as a teacher in Waterside School where she was responsible for ICT teaching. Being an ICT teacher meant that she got to know almost everybody in the school, as all

classes at the upper primary and lower secondary level had computer lessons with her. In addition she supported other teachers with computer use when needed. She soon got the reputation of being very helpful and willing to provide support to teachers (Interview, vice-principal February 2003).

When I first met her in February 2003 she was enrolled in the programme's first year. At that time she was responsible for ICT as a subject in Waterside School. When enrolled in her second year she had become a class teacher in the lower primary, teaching one of three 3rd grade classes. For the next two years she continued teaching the same pupils in 4th and 5th grade, as well as teaching several ICT classes.

She recalled that when she started teaching she was immediately fascinated by the job of being a teacher, and applied for the distance programme thinking that it was the easiest way to obtain teacher certification. Since she had a good basis in ICT and English she had thought she would select those areas of specialisation to make her studies easy. She found the studies very interesting, and when the time came to select a specialisation she wanted much rather to add to her professional knowledge instead of taking the easy way out. She chose primary level teaching, emphasizing arts and creative work. Examples of her products from the programme could be accessed on the Internet since she kept a homepage during her studies. She felt that she was able to apply what she learned in the programme, trying out different things with her class, as well as in ICT lessons (Interview, January 2005).

The object of activity for Lilith as a teacher in Waterside School

Most of the time while enrolled in the programme Lilith was a class teacher at the lower and upper primary level. The diverse group of pupils was of mixed ability, with different problems and strengths, and Lilith was expected to apply inclusive teaching methods in accordance with official school policy. Several pupils had behaviour problems and some did not speak Icelandic as their first language. There was one autistic pupil in the class, supported by a teaching assistant with whom Lilith collaborated in preparing lessons so it enabled the pupil to participate in a way that might also benefit the other pupils. The inclusive policy required Lilith to work with specialists outside the school regarding pupils with special needs. She cooperated with the two other class teachers teaching the same grade on curriculum planning and coordination of content and methods.

Mediating tools & practices			
Interacting material and conceptual tools		Affordances in the school community	
Learning materials	**Teaching methods**	**Professional models**	**Social practices**
Text books sometimes supported by web material and videos. Plants in the classroom used for teaching along with diagrams and maps. The school surroundings, both playground and nature, used as a learning environment. Work sheets sometimes used but Lilith prefers other approaches.	Lilith used dialogue with the class supported by books and pictures. Regular use of the 'carousel 'method which she felt opened up more diverse approaches. Play, movement and creativity important, all kinds of breaking up monotonous practice. Assessment: kept regular record of pupils' assignments for overview of each pupil's progress.	Collective self-confidence characterized Waterside School. Discussion of ideas with experienced colleagues. Supportive atmosphere. Management team was a good model for communication, listening and searching for solutions individually and collectively. One of the teachers got the President of Iceland award as an outstanding teacher in 2005, a model Lilith mentions.	Three class teachers teaching the same grade cooperated on curriculum planning, coordinating content and methods. Collaboration with a teaching assistant and specialists outside school concerning special needs pupils. Parent cooperation. As ICT teacher: communication with class teachers. Collaboration in the school in general.

Subject:		**Object**
Lilith: In her thirties, married mother of one child in upper primary. Started teaching 2001. First enrolled in the programme 2002. Classroom teacher and subject specialist.	*Intended outcome:* Pupils able to control themselves, both behaviour and learning, able to enjoy freedom and responsibility. ICT skills to better cope with present times.	Teaching lower primary class, pupils age 8-10 with diverse needs; some disabled, and behaviour problems; some ethnic backgrounds other than Icelandic. Subject teacher in ICT in upper primary and lower secondary level.

Systemic - institutional factors mediating actions of subjects		
Rules	**Community**	**Division of labour**
Each grade was divided into three classes and teachers cooperated on curriculum planning and coordinated content and methods. Values guiding the rules in general: being good listeners, supportive, positive attitudes to problems and motivating people, pupils and teachers, in the belief that they were able to cope. Lilith set rules for her class based on trust and personal contact, listening to pupils individually and discussing with the class about the connectedness of behaviour and wellbeing.	For Lilith the school community was collaborative and supportive, people consistently striving to do their work better; coherence in values guiding the practice, concern for the pupils' future and wellbeing. Management team listened to teachers and pupils, emphasising finding solutions to problems by talking together. Lilith could discuss new ideas from her studies with her colleagues who were helpful; maybe more willing to teach her than to learn from her. Long experience of having student teachers working as teachers while studying. Many enrolled in distance programmes, undergraduate and graduate studies, including the three in the management team. Characteristics: professionalism and caring for pupils.	A management team: principal and two vice-principals. Teachers were either class teachers in grade 1-7 or subject teachers in grade 8-10. Special subject teachers also in the lower grades, such as ICT, arts and crafts, or physical education. Other specialist professionals: personal adviser for pupils, librarians, special needs teachers, computer technician, etc. In all cases teachers were expected to collaborate with other teachers. Lilith collaborated with a teaching assistant in supporting a disabled pupil's participation in lessons. Lilith discussed the different roles of teachers and pupils with the pupils.

Figure 7.1 The activity system of Waterside School with Lilith as subject

Lilith felt it was important to plan well in advance since the pupils had such different needs (Interview, January 2005). In addition Lilith taught ICT classes as a specialist, which gave her the opportunity to communicate with the respective class teachers, and she expressed an interest in having time to work more closely with them. When asked about her motive and what would be the desired outcome of her work she said she would like to teach her pupils to be able to control themselves, both in terms of behaviour and learning, as well as to enjoy freedom and responsibility. As an ICT teacher, she added, she felt it was important for them to be competent users of new technologies to cope better with present times (Figure 7.1).

Lilith described the condition of the pupils and how sensitive they were when she first met them in 3rd grade. Some of them had headaches and stomach aches every day, because they could not cope with the noise, and those same kids could not handle it if somebody raised their voice with them.

> I use gestures a lot, a facial expression, a tone, and you know they learn it right away. When I interfere then I try to do it on an individual basis, not to scold them in front of the whole class. And even just walking over to them, laying my hand on their back, and saying: aren't you gonna do fine, love? And well, kind of training them to work together and sort things out for themselves (Interview, January 2006).

When teaching the class for the third year Lilith was pleased to see how much they had improved their conduct and wellbeing. Her aim had been to teach them self-control and bit by bit they became more successful. Her approaches had been based on listening to them individually, and then discussing with the whole class how behaviour affects other people's wellbeing.

> But then they come to me when I have been away and say: yes it is just that I felt so bad when this one was, because … And I ask why? This one was noisy and that one was noisy and there was no peace. […] We talk about things like that in class meetings, so they learn to understand that their behaviour affects the group and the wellbeing of others (Interview, January 2006).

In this way the pupils were learning to control themselves, even if Lilith was not there, but it had taken time and patience as well as insight. In order to be able to enjoy freedom of action pupils had to learn to be aware of the limits set by their social surroundings.

> You can let them loose inside the box but the box has to be clearly demarcated (Interview, January 2006).

Lilith saw it as the role of the teacher to support pupil self-control by giving them agency in their learning, for selecting assignments, proceeding at their own pace and moving freely around the classroom if they felt they needed. At the same time she made them aware of the limits set by the social circumstances in the school.

Teaching methods, learning materials and monitoring pupils' progress

Lilith likes to use dialogue where she leads a class discussion to enhance understanding of subject matter and concepts. She realized the importance of open discussion when teaching science once. The pupils were supposed to fill in a workbook after reading the textbook, and she found out that one really clever boy was desperate because he did not understand. She then reasoned that more pupils would not understand and there might be something wrong with the method she used. She started by reading the text carefully together with the class, and then they would all collaborate on filling in the workbook.

> Then I take the workbook and say, well kids, like you I have not done my workbook. Well, what do you think should be put into this box? What are we supposed to do here? And someone says here, and we help each other, and you know they take it as a given that I don't know what should be put where (Interview, January 2006).

She said she regularly used the 'carousel' method, where she organized work stations around the classroom for small groups, and then they rotate their tasks regularly. She felt that this method opened up for more diverse approaches, thus, as a rule, it was on the schedule four times a week. She also thought that it was important that pupils had an opportunity to select tasks and have some control over their learning. Therefore, instead of following the textbook, she strived to plan in such a way that they were given more agency to control for themselves (Figure 7.1).

> And I allowed them to choose, so if they wanted to choose enchantment they did so, and if they wanted to choose animals in Africa they did, and things like that. And if they wanted to do an assignment using a calculator they were allowed to, all depending on what they were comfortable with and what they wanted to do (Interview, January 2006).

With increasingly individualized or personalized approaches Lilith had fallen into the habit of regularly keeping records of small assignments that pupils worked on in lessons. In this manner she kept an overview of each pupil's progress, on which to base her final grading. Lilith valued collaboration, and strived to cultivate a supportive atmosphere among the pupils.

And those who are working in the same book can choose together, help each other and things like that. And they are really good at helping each other, and it doesn't often happen that they sit a long time with their hand up waiting for help. It hardly happens anymore because they just ask the next guy and if he doesn't know they ask the next one. And then if I say: you are not supposed to shout like that across the classroom they would say: yes but I needed help with maths and he knows how to do it.

And someone is walking around and I say: why are you wandering around? I'm helping because I'm already done (Interview, January 2006).

She described the way in which she thought she had succeeded with the class, and how this had resulted in better communication and attitude of pupils toward one another.

So I'm really happy with that, and also you know, those who knew used to be so arrogant towards those who didn't know. But, just as well, that is disappearing bit by bit (Interview, January 2006).

Lilith emphasized that in her opinion play, movement, and creativity are important in teaching and learning, and believed that anything to break up monotonous practice was for the better. However, at times she needed to use work sheets with fill-in exercises and stick to the textbooks, just to keep the pupils calm and functioning. When she was starting with the class she had to rely more on that kind of practice, but later, when she had managed the discipline, she was able to try out different methods.

For example: Well kids now we're going to look at two pages here in the math book, take a look. Now let's get the measuring sticks, which measuring sticks do you think we need? Then we go out to the playground and start measuring. And then in the next class we write on the page: done outside on the playground, and then these two pages are done. I would like to work much more like this, with the Icelandic [mother tongue as a subject] and all kinds of things. I want to get away from the workbooks because I think they learn so little from workbooks; much more from playing (Interview, January 2006).

The school community, rules and division of labour

Lilith described the school culture as collaborative and supportive, where people are consistently striving to do their work better, and the values guiding their activities are concern for the future and wellbeing of pupils (Figure 7.1).

Yes, it is a kind of safety net of people, and you know if you make a mistake it is not the end of the world. And it is so incredibly strong that you always feel that people are thinking: How can I do my job better? […] There is nothing like: Oh, this one is quite impossible and there is nothing we can do for him. Rather: Well, we have a problem here and what can we do? Because how will life be for him when he grows up, we have to do something now (Interview, January 2006).

She also felt that the community was rather open and provided space for professional discussion.

> All this chat in the staffroom, yes I was reading this article and things like that (Interview, January 2006).

Lilith thought that her colleagues were helpful, although often more willing to teach her than to learn from her contributions. Nonetheless she could discuss new ideas from her studies with her fellow teachers, though they were not necessarily ready to accept them or change their own. She mentioned, both in her contributions to discussion in the analysed courses (Chapter 8) and in interviews, how she had been spreading ideas from her studies in the school. One example was when a special method in teaching children concepts by visualization was presented in the programme:

> Actually I have already sent the web address to the principal because I think this can be useful in teaching right away (Digital portfolio, May 2005).

Since there is a long experience of having student teachers work as teachers in the school while studying, there are many among the staff who are familiar with the habit of bringing new ideas from studies and wondering if and how they should be applied.

Of course many enrolled in distance learning and many in the graduate programme.

> Yes, because such a large part of the group is in distance learning. It is such a large part you see, if I was the only one in the distance programme and there weren't people constantly getting these ideas and theories. Then you would just be overruled, but since there are so many distance students and many that have been distance students and many doing graduate studies – it has opened up the door to the mind of many energetic individuals (Interview, January 2006).

Lilith felt that it had been of great importance that all three members of the management team had been enrolled in graduate programmes as distance students. 'It opened many doors' she said. Then she praised the principal and the two vice-principals for being good listeners and supportive, having a positive attitude towards problems, and stimulating teachers in the belief that they are keen and able to cope.

> And you know, he [the principal] listens and listens and listens and thinks and then later you get a response. And you know, the vice-principals, they are very, very busy and it has been a bit difficult recently, much illness among the staff. But we have all just tackled this jointly […] They, the management group, give us the freedom we need to take control, and work things out for ourselves (Interview, January 2006).

This same attitude, expressed by the management team, was true regarding the pupils too, she claimed.

> Yes and the kids, they really, if they're having some kind of trouble then they walk into their offices, and it is completely open for communication there (Interview, January 2006).

Although Lilith described a positive atmosphere and development she was not uncritical, pointing to issues that caused tensions, and resistance to changes and school development in general. She felt that there was a generational gap in teacher attitudes towards changes in the school, the older generation being more conservative. She also pointed to systemic characteristics constraining development, such as an inflexible time schedule and stiff subject division, especially in the lower secondary level. When ideas of integrating subjects came up teachers tended to protect their subject by counting the minutes they would lose, and things like that.

> All the fluidity is lacking, it is all so closed inside the little boxes in the schedule (Interview, April 2005).

She also had contradictory feelings about the cooperation with the other class teachers teaching the same grade. She felt that sometimes it could be a constraint, as they might not be willing to make the extra effort needed to do something new. On the other hand she admitted that having to discuss ideas with experienced colleagues could be an important step in her learning process of becoming a teacher.

Lilith described her experience of belonging to a supportive school community, which may be characterized as bordering on collective self-confidence, in terms of their belief in their capacity to work professionally, and the emphasis placed on open and honest communication between people. As a school-based student teacher Lilith was in a situation that afforded her a lot of opportunities for social practice, as well as providing her with professional models she could use to direct her development. The school community was open to new ideas, which made it easy for her to introduce novelties she brought from the programme, thus contributing to school development.

7.2.3 Analysis of the learning process of Lilith in relation to school development in Waterside School

Responding to a need for change; the existing practice

When the first student teachers based in Waterside School entered the distance programme in 1993 a process of school development was initiated when they started to question the practice of the school and identified a need for change (Figure 7.2). They had a vision of changing the school (Interview, Elisabeth, May 2004, Chapter 6) which initiated a process resulting in an expansion of the school activity on a systemic level (Chapter 6). Expansive development included acknowledging that educating children meant taking responsibility for the future welfare of all pupils. An important part of the process was to change the way teachers talked about the pupils, which can be understood as a mediating tool (Figure 7.2) for reconceptualising the object of activity of the school by changing, and expanding, the understanding of the school's role in pupils' education and welfare.

The school had, by 2005, over 10 years of experience with having student teachers enrolled in the distance programme and their situation of learning to be teachers was respected and reflected in the school practice, for example, by organising placement of student teachers in teams that would allow for cooperation with more experienced teachers. The school had in fact taken on responsibility for supporting the student teachers in learning to become teachers although it had no formal obligation to do so (Interview, principal, April 2005).

When Lilith started to teach in Waterside School she entered a school that had been developing practice in accordance with a changed vision for several years. She experienced the school community as being generous and supportive, both professionally and personally. She described the school as a developing community, where people were constantly striving for doing their work better, guided by concern for the wellbeing and future of the pupils. From her words as well as those of other professionals in the school, values in the school community seemed to be coherent and shared, reflected in open communication across hierarchical boundaries, where members of the community were encouraged to talk and come up with solutions for problems that arose. It may be concluded that the staff had arrived at cultivating *collective responsibility* for children's wellbeing and education.
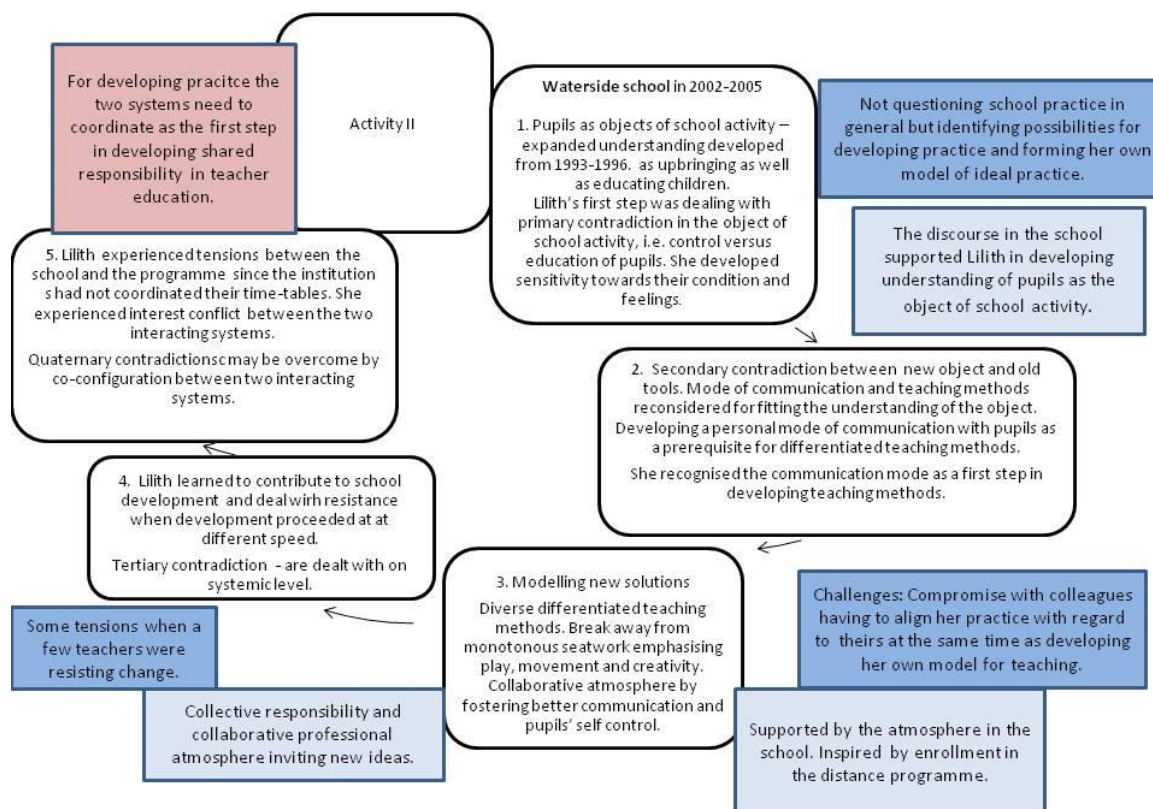
Figure 7.2 The learning process of Lilith in Waterside School in relation to the expansive learning cycle

The process of developing own model for classroom practice

Lilith did not question the school practice in general when she started to teach in Waterside School. She identified however possibilities for developing practice. She wished to form her own model of classroom practice according to her ideals that were evolving from her experience of teaching as well as being inspired by her enrolment in the distance programme. Lilith's challenge was to develop classroom practice using diverse teaching methods and use differentiated methods for all pupils although with different potentials and needs. Since the school had adopted an inclusive school policy she like other teachers was expected to plan for the participation of all children in the classroom and in Lilith's class there were several children with special needs. It was especially demanding to plan classroom practice in a way that the autistic child would be able to participate. At the same time it may have made her more aware of the right of all pupils for participating in school practice although they may have serious disabilities. Lilith's ideal was to break away from monotonous seatwork by using various methods emphasising play, movement and creativity.

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Before being able to implement this kind of classroom practice, Lilith had to deal with the problem of keeping discipline. Conventional teaching methods such as keeping pupils busy in seatwork with textbooks serve both for keeping control in the classroom and for instruction which in terms of activity theory is explained as a primary contradiction within the teaching method. In order to be able to use differentiated teaching methods she had to develop alternative methods for control and discipline in the classroom.

In responding to this challenge, Lilith realised that the pupils were very sensitive and needed a calm atmosphere in the classroom in order to be able to concentrate on learning. She discovered that she needed to learn to listen to them and develop sensitivity towards their condition and feelings. Then she recognised that developing a personal mode of communication with pupils for controlling classroom conduct needed to be an important step in developing differentiated teaching methods.

In reflecting on the pupils as objects of school activity Lilith considered her role as a teacher as well as the role of school as an institution. She reasoned that she would like to teach them in a way that fostered self control, both in their classroom conduct and their learning, so they would be able to enjoy freedom as well as responsibility in their lives. Guided by a vision of the pupils' future she was expanding her understanding of pupils as the object of school activity and the role of teachers and schools in their upbringing. The new understanding directed her actions at fostering better communication, enhancing pupil self control and respect for other people, thereby striving to cultivate a collaborative atmosphere in the classroom. The communication was dealt with as part of the curriculum by taking time to discuss behaviour and how it may affect other people's feelings. This reflects how an expanded understanding of the object of activity calls for attention to the mode of communication. Language as a mediating tool had to be changed for fitting the reconceptualised object, otherwise secondary contradiction between a changed object and old tools would cause disturbances and hinder development. Since expanded understanding of pupils as objects of school activity had directed school practice in general for some time the discourse in the school supported Lilith in focusing on the pupils and recognising their needs.

Another issue that Lilith dealt with in developing her preferred model for classroom practice had to do with assessment. She recognised that conventional assessment methods such as summative final exams would be contradictory to her innovative teaching methods. She saw keeping an overview of each and every pupil's pace as a necessary part of differentiated teaching methods and developed habits for assessing pupil progress and keeping a record of it on a regular basis in her daily practice. Enrollment in the teacher education programme where formative assessment methods were presented supported her development of this practice. As a student teacher she was in a situation of boundary crossing thus being able to use her participation in the programme as a double stimulation for overcoming challenges she faced in the school.

What supported or constrained Lilith in implementing her model?

In general the the atmosphere in the school was open to new ideas and supported innovative practices like Lilith wanted to develop. She had relative freedom to try out new teaching approaches with her class, but since there were three classes in each age grade there were rules regarding coordination that somewhat constrained her freedom. The three teachers had to agree on choice of textbooks and materials, which had to be gone through at roughly the same pace, at the same time as adaptation to personal differences was supposed to be taken into account. This was a challenge for Lilith in developing her preferred model. She had to compromise with her colleagues and align her practice with theirs while at the same time developing her own model for teaching based on using more diverse methods and breaking away from monotonous seatwork whenever she saw an opportunity for doing so. Having to align with the others constrained Lilith's teaching methods, which became partly directed by the textbooks which she wished to avoid. However, she managed to compromise by following the textbooks without working with them directly, e.g. by using different methods to work with the curriculum content, such as using the playground for measurements in mathematics and the natural environment for science assignments. In addition on a regular basis she used methods where different kinds of learning tasks, and not the textbook, directed the process of pupil learning. Here she was drawing on her participation in the programme as a double stimulation since the methods she wished to use had often been promoted in courses and in general she was keen to try out new methods she had become acquainted with in the programme.

In spite of the constraints of being part of a team of the three teachers, it was also an affordance since she could draw on her colleagues' experiences and viewpoints when dealing with challenges in her work. The principal saw this arrangement, of teams of teachers responsible for coordinating their classroom practices, as an important platform for learning and teacher development, and a preferred situation for student teachers. After Lilith started in the programme he had deliberately placed her in such a team to support her learning process in practice. The division of labour in the school, both horizontal and vertical, served an important role for social mediation and it provided for access to an ideal form for good practice. In addition to collaborating with peer teachers, Lilith collaborated with teaching assistants, the school management team, the librarian, special needs teachers, advisers and experts outside the school, as well as parents. In the process of learning to be a teacher, the activity system of the school provided her with affordances for stimulation in the form of social mediation where she got an opportunity to learn from peers, professionally more advanced colleagues, as well as different specialists of other professions. Being placed as a student teacher in Waterside School, Lilith's potential to work in accordance with her ideals and develop as a professional was considerably enhanced.

Contribution to school development

Given the long tradition of placement of distance students in Waterside School it had become habitual that teachers brought in new ideas and knowledge, thus contributing to the development of the school. The practice of brokering (Wenger, 1998), that is, bringing knowledge from the activity system of the programme, had been developed ever since the first distance students (see Chapter 5). Although Lilith was developing innovative teaching methods they were not at odds with the general practice in the school where it was assumed to be a part of school development that teachers would be developing innovative practices. However, Lilith was certainly taking actions to contribute to school development, such as presenting new ideas that she brought from the teacher education programme to her colleagues as well as to the senior managers. She was able to develop this competence because of the collaborative atmosphere in school which presumed agency and contribution of actors. The activity system of the school supported her in simultaneously learning to develop her classroom practice and learning to be an active participant in school development.

The tradition of focusing on communication in the school was an important symptom of a well functioning practice that supported teachers in dealing with problems and challenges. Lilith drew special attention to the principal and the two vice principals being good listeners and always taking time to listen to both teachers and pupils which might be taken as a symptom of openness and a contribution to improved practice. She also told me how the management team used to refer to their belief in the potential of the staff for collectively finding ways of dealing with problems. The managers assumed the agency and capacity of the staff to take actions at the same time as being willing to provide support if needed. Here *communication* and *collaboration* are identified as key concepts in supporting development of the individual as well as system development. By fostering their use Waterside School had managed to develop the activity system of the school on a system level in a way that it was capable of responding to societal changes.

Zone of proximal development in Waterside School

Lilith had some times found irritation and tensions when innovative practices had been accepted in general but a few teachers, especially the older generation, lagged behind (Figure 7.2, a dark gray box). This is a manifestation of tertiary contradictions. She also had realised that systemic characteristics in the school, such as an inflexible schedule and stiff subject division could be barriers in school development. When individual teachers or a group of teachers wanted to develop new models in their teaching, such systemic characteristics might be hindrances and cause troubles because of secondary contradictions between an expanded object and methods for mediating actions and old rules and division of labour. For overcoming such disturbances and developing practice, systemic characteristics such as the time schedule would have to be changed. At the time of fieldwork no such systemic changes were identified in Waterside which functioned more or less in accordance with the conventional structure of schools in Iceland.

In Waterside School practice had developed in line with the expansive learning cycle since actors had learned to deal with changes both as individuals and collectives as well as on a systemic level. As a consequence professional development of teachers was linked to system development which implied that school development had become part of the object of school activity. My analysis shows how individuals and the school

were developing in dialectical interaction. The *zone of proximal development* for Waterside School would lie in realising the kind of changes in systemic characteristics that Lilith identified to overcome barriers constraining development of innovative practice on a whole school level. Actions for overcoming tensions caused by *tertiary contradiction* were needed (Figure 7.2).

In addition the analysis of interviews with the student teachers point to the need of dealing with problems and disturbance in the school activity caused by *quaternary contradictions* between the school and the teacher education programme as interacting neighbouring activity systems (Figure 7.2). Lilith had experienced conflict interest between the school and the distance programme which caused tensions and disturbances in daily practice since the timetables of the two systems had not been coordinated. The time planned for face-to-face sessions in the programme on campus in Reykjavík had interfered with the school start in the autumn which had caused diverse difficulties. It had also been problematic that the arrangements of practice teaching had not been modified for school-based student teachers. For developing practice the two systems have to collaborate for coordination. Overcoming quaternary contradictions would require inter-organizational boundary work where the schools and the university would have to negotiate to co-configure their practices (Chapter 3.3.4). Collective responsibility and shared responsibility on a system level is suggested for directing that kind of developmental work. This will be further analysed and discussed in Chapter 9.

7.3 Sarah in Coastline School

7.3.1 Coastline School

Coastline School is, by Icelandic standards, a medium-size school with approximately 150 pupils, situated in a small town with around one thousand inhabitants. There were between 20-25 teachers, and the staff as a whole totalled up to 30 people. The schoolhouse is rather spacious, as the number of pupils has decreased recently alongside a diminishing population in the town. Some 10-15 years ago there were well over 200 pupils, so the school professionals have been facing a situation of fewer pupils each year.

During the years of my fieldwork in the school, 2003-2005, a school website was set up as well as an intranet for registration of information for school management, teachers,

and parents. The plan was to give parents access to their children's performance on the intranet. It had not been requested by the parents but the principal saw information and communication technology as a tool for enhancing communication between home and school. According to the principal most of the homes in the town had computers with Internet access (Interview, February 2004). The school library, which also served as a municipal library, was situated on the ground floor, close to a special entrance for the public and at the same time somewhat disconnected from school activity. One computer with Internet access for users was situated in the library, where one librarian served the school half of the time and the municipality the other half of the time.

The teachers' working space was in one small room next to the staff room. There they had access to two Internet-connected computers. The teachers used to prepare their teaching in their classrooms after lessons, but there they only had access to old computers without Internet access. After regular school hours teachers were free to use up-to-date computers in the pupils' computer classroom. In spring 2005 a wireless network was set up so that the Internet could be accessed throughout the schoolhouse. In addition, four laptops and one projector were purchased. This was provided to teachers for direct teaching using the Internet, and also for pupils who could borrow the laptops when working on projects in the classroom. Teachers could also use the laptops whenever they liked for their professional work. This was positively accepted right away, both by teachers and pupils, and proved to function well.

In Coastline School there was usually one grade in each class (occasionally two grades in one class) and as a rule one teacher responsible for each class. The teachers therefore had considerable independence in curriculum planning and teaching methods, where the rules on division of labour did not assume collaboration with other teachers. These kinds of professional work regulations may lead to isolation of class teachers, a well-known problem in schools.

During the three years I visited the school two women, one at time, held the position of principal, the same female vice-principal working with both of them. The principal in charge the first two years had several years of experience in the job. During this time she completed a master's degree in educational administration by distance learning at the IUE, but quit for another job in town, partly because she found it hard to change and develop the school (Interview, February 2004). The principal in 2005 had an

educational background and experience in school counselling and had been working on her master's through a distance programme at the IUE.

Both principals were concerned that a lack of cooperation among the teachers was constraining school development (Interviews, February 2004, and April 2005). The former blamed the model of the school, which had for a long time been that of one teacher teaching pupils in the same grade in one class. She saw a result of this model being that a collaborative atmosphere had not been cultivated. She had for several years been promoting a new way of cooperation, breaking up the class organization, setting aside the conventionl timetable and making multiage groups for theme work. In those periods, regulations for planning and teaching required teachers to collaborate. This was also thought of as a way to step out of the traditional routine, and she hoped that this way of working would open up avenues for more collaboration in general in the school. However, that did not happen, as the teachers, while happy with a change of routine, went back to their classrooms and closed the doors.

The latter principal felt that her challenge would be to get the teachers to collaborate and make their classroom practices more overt. She had been a teacher in Waterside School before and claimed that there was a great difference in atmosphere.

> Maybe it was because people work closer together there, because there you are maybe in an age grade team or teaching the same subject as someone else. Here people are more independent workers. I don't know if that has an effect (Interview, Rachel, April 2005).

She also thought that the problem could be related to the regulation of one class in each grade, which does not 'force' teachers to cooperate. She felt that more open, professional discussion among the staff would be important for further development of the school. In her opinion:

> It is both difficult and boring to work alone; it enhances work satisfaction to try to work a little together (Interview, Rachel April 2005).

During her first year as principal in 2004-2005, she promoted a project for the upper primary (11-13 years old) where three class teachers were encouraged to cooperate. The teachers agreed in a positive manner to participate and were able to base their work on the experience gained from the open school project, promoted by the former principal (Interviews, April 2005). In both cases the initiative for changing things came from the

principals. However, they did not manage to follow up on intermittent changed practice by implementing lasting changes at system level in the whole school.

The school policy was built on inclusion, so special needs pupils, such as pupils diagnosed with ADHD (attention-deficit/hyperactivity disorder) or disabled pupils, participated in regular classes. In that case teaching assistants would support the teachers in the classroom but special teaching was also provided in separate classes.

Because of changes in the community brought about by immigrants moving to the town the school had been facing new challenges. One of the teachers, who had taken courses in teaching Icelandic to foreigners, was responsible for teaching Icelandic to about 10 pupils who needed support in the language. She had also taught Icelandic to adults in the town. Three of the teachers were immigrants, teaching physical education, dancing, and visual arts. There seemed to be a positive acceptance of multicultural development, and the pupils talked about how they missed the Thai dance teacher who was on maternity leave. Nobody mentioned that the task of integrating immigrants was problematic.

When visiting Coastline School it was intriguing that many of the staff had been or were enrolled in distance learning, both undergraduate, graduate, and further education programmes e.g. for teaching assistants. Out of approximately 20 teachers with teacher certification, nine had graduated from the distance education programme at the IUE and four were enrolled in the IUE programme during the fieldwork; two had just completed a graduate diploma. Since its inception, there have always been some teachers from Coastline enrolled in the distance programme at the IUE.

7.3.2 Description of Sarah as a school-based student teacher in Coastline School

Sarah was in her early thirties when she started in the distance programme in 2002, at that time a single mother of one child, about 8-9 years old (Figure 7.3). Before entering the programme she had three years experience as a teaching assistant in a rather big school in another region, providing support in a class with a disabled pupil. Because of this experience, and a lack of qualified teachers in her hometown, she was asked to move back home and take a job as a class teacher in Coastline School for the school year 2001-2002. Sarah was not at all sure she could cope with being a class teacher, but

when both pupils and parents turned out to be very satisfied with her work she applied for the distance programme and was admitted for the fall 2002.

Sarah was in her second year in the programme when I first met her in February 2004. She felt she had learned a lot during this time and that the programme had supported her in developing her practice as a teacher. Previously she was not self-confident with regard to university studies, but she gained courage when she turned out to be a successful teacher. She studied a lot during the first year of the programme (watched television only at Christmas, she recalled), and was successful despite struggling with severe exam anxiety. She chose arts and crafts as her specialisation when it was offered as an option in the third year. Success in teaching, as well as in her studies, gave her increased courage in teaching. She started to try out more diverse teaching methods. She said she started letting the pupils do more work independently, and step-by-step stopped using the worksheets as she had done in the beginning. The pupils liked it a lot, she recalled, and would say at the end of the school day: 'What, is the school day over already?' She also felt that the studies gave her more confidence in cooperation of home and school (Interview, May 2004).

As a class teacher Sarah had considerable independence in curriculum planning and methods. A couple of pupils had been diagnosed with ADHD and because of that she had a teaching assistant supporting her several hours per week in the classroom. They collaborated well. Sarah managed her work in a way she believed to be most helpful for the progress of not only the disadvantaged pupils but also the whole class.

When asked about the motives directing her work with the children Sarah mentioned that she felt a responsibility for equipping them with basic skills in reading, writing, and arithmetic, literacy being very important for success in general (Figure 7.3). She explained that, in her opinion, it is important for teachers to think of pupils as individual human beings, each with their characteristics and needs. She emphasized the importance of listening to them and to base teacher-pupil communication on mutual respect. Sarah preferred unwritten rules for regulating classroom conduct, a model she saw first in practice teaching during her first year in the programme.
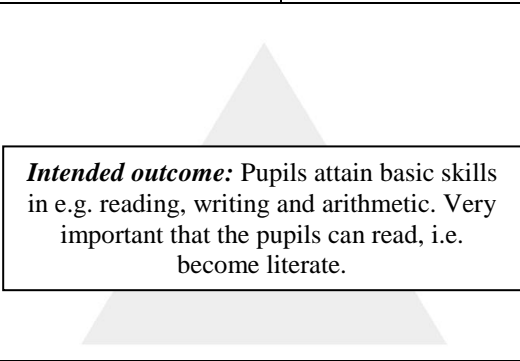
Mediating tools & practices			
Interacting material and conceptual tools		*Affordances in the school community*	
Learning materials Dependent on textbooks in the beginning but grew to be independent. Chose material according to personal needs of pupils. Local resources in history teaching in addition to textbooks.	*Teaching methods* Sarah used diverse teaching methods. Personalised methods, adapted to each pupil's capacity. Not work-sheets. Creative methods with collaboration. Exact documentation of pupils' progress. Regular individual examinations to check their status.	*Models/ideal forms* Sarah was critical of the model in the school as being stagnated. She had her models from her experience as a teaching assistant before and from the teacher education programme; both practice teaching and courses.	*Social practices* Collaboration with teaching assistant. Parent cooperation. Minimal cooperation on planning within each grade level. Representative in the teacher council in her 3rd year in the programme. Annual meeting with other teachers in the district, bonding with arts and crafts teachers.
Subject Sarah: In her thirties, mother of one child. Started teaching fall 2001. Started in the distance programme fall 2002.	*Intended outcome:* Pupils attain basic skills in e.g. reading, writing and arithmetic. Very important that the pupils can read, i.e. become literate.		*Object* Teaching two grades in one lower primary class, age 7 and 8, with diverse needs, one diagnosed with ADHD, etnic background other than Icelandic, disabled, etc.
Systemic institutional factors mediating actions of subjects			
Rules As a rule one teacher teaches one grade in one class. Primary level, upper primary and lower secondary teachers had some cooperation on planning within each level. Representatives, one from each level, form a teacher council. Rules on class teacher-parent cooperation. Sarah preferred unwritten rules in controlling pupils, a model she learned to appreciate in practice teaching. Wellbeing of children and respect for them are values that guided the rules. Important to listen to the pupils. Important that the pupils have some control over their learning, e.g. individual pacing, and sometimes selection of content.	*Community* Sarah felt good at the school and thought that the staff in general was good and willing to try out new things although not succeeding. The principals were both interested in promoting change and saw a lack of collaboration among teachers as a constraint. The former complained that her efforts did not last. The latter did not succeed either and left after two years. Tensions in the school community: Student teachers enrolled in the distance programme were not secure about their jobs since the pupils were getting fewer and teachers with certification had priority. Two had to quit 2005-2006. Pupils at the lower secondary level sent in a formal letter where they complained about the teachers not listening to them. Home-school cooperation important for Sarah; the parents being supportive.		*Division of labour* Sarah as a class teacher had responsibility for her class. A teaching assistant was supporting her several hours per week. Sarah managed her work in a way she thinks is most helpful for the progress of the pupils. School year 2005-2006 Sarah was the lower primary representative in the teacher council. The principals both took the initiative on developmental work they wished the teachers to work on. Top-down initiative where consulting with the grassroots was neglected.

Figure 7.3 The activity system of Coastline School with Sarah as subject

She explained that written rules, along with praise and punishment, were difficult to follow, especially for young pupils, and felt a better way was to get to know them and then come to an agreement with them on acceptable conduct. 'When making rules it has to be taken into account that they are made for children' she said, and Sarah's unwritten rules reflect that she values the wellbeing of children and respect for them.

When visiting the class I noticed that the pupils had liberty to move around in the classroom, although they seemed to be aware of their limits (Fieldnotes, April 2005). When I asked Sarah about this she said:

> They are of course children, they have to move, that's my opinion. […] They are difficult and they use any chance they get, but they know exactly what they are allowed to do in my class (Interview, January 2006).

However, succeeding in a task like this, i.e. keeping control of pupils without explicit rules based on praise and punishment, takes a lot of effort and patience, as Sarah recalled:

> I remember the first lesson when everybody was working. They were all working and there was no disturbance. I remember it was an enormous triumph – in January – I was just about ready to give up (Interview, April 2005).

The school year starts in late August. Therefore it had taken more than half of the first year for Sarah to succeed, since in January she was about to give up, but then her methods started to work.

Teaching methods, learning material and assessment

In the first interview Sarah described with enthusiasm how she had been applying what she had learned in the first two years in her classroom teaching, and how the studies had supported her in home-school cooperation (Interview, April 2004). A year later the principal admired how clever she had been, trying out new ideas in the classroom, which she brought from her studies, and praised her increasing professionalism, which, for example, was evident in teaching plans she handed in to the management (Interview, Rachel, April 2005). Sarah explained that after she started in the programme she began to use more diverse teaching methods, and made an effort to use personalised methods, adapted to the capacity of each pupil (Figure 7.3). She also emphasized integration of creative work and visibility of pupil work:

> When it comes to the work of pupils I think it should be visible in the school. In my school there are samples of the teachers' work covering the walls of the arts and crafts classroom, but none from the pupils, which I think is a shame. There is artwork by pupils in the halls though (Web entry, April 24 2005).

In her third year in the programme she had thrown away all old worksheets.

> Now I know that there are many approaches, not just one presented in this particular book (Interview, April 2005).

She explained that she attempted to use mixed methods so the pupils would experience both individual learning methods and collaboration. She felt it important that the pupils were given agency to have some control over their learning, such as individuals being able to proceed at a different pace, and that every now and then they would be given the opportunity to select their tasks.

> I think it is necessary to be able to choose. You have to be able to choose what you are going to do (Interview, January 2006).

Sarah had realized that such methods call for an exact documentation of pupils' progress and regular individual examinations to check their status. She had found her way of doing this with the help of a spreadsheet computer programme. This made the assessment practice manageable:

> I think it's no problem. […] I always have surveys in Icelandic, writing and mathematics. […] Just to see how they are doing and how I am doing (Interview, April 2005).

As a student teacher Sarah had learned diverse methods for assessment, both in courses on curriculum and assessment and from her own experience as a student. For example, in arts and crafts, and in information technology, she said the lecturers exclusively used formative assessment. Prior to this she did not know what formative assessment entailed (Interview, April 2005). That sort of assessment practice was generally not used in Coastline, although teachers were free to choose the methods they liked. However, Sarah's methods had with time started to intrigue some of her colleagues who wanted to learn her way of doing things, which resulted in their use of Sarah's method to keep an overview of pupil progress and status (Interview, January 2006).

The school community, rules and division of labour

Sarah felt good at the school and thought that in general the staff members were good people, willing to try out new things, although not succeeding in changing conventional

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practice. The two who held the position of principal during the fieldwork were both interested in promoting change. Both complained that their efforts did not last and saw a lack of collaboration among teachers as a constraint.

The rule of one grade forming one class did not call for teachers to coordinate planning within age grades (Figure 7.3). However, the school was organized in three levels, lower primary, upper primary and lower secondary level, and within each level teachers were expected to collaborate on coordination. Representatives, one from each level, formed a teacher council, which was part of the governing body of the school. By her fourth year in the teacher education programme Sarah had become the lower primary representative in the teacher council.

> I like being able to have influence because I thought things were so rigid here. I think things need to be shaken up more, even though there's a lot being done (Interview, April 2005).

She believed it had something to do with the structure of the school, since one teacher responsible for her or his class or age-group alone tends to get isolated. Referring to her experience as a teaching assistant in a bigger school elsewhere she thought the difference was striking.

> I noticed it as soon as I arrived here, because I had worked up north in a compulsory school. And of course, that school is so big with many classes in each grade. And then I came here and entered my room. Somehow the structure takes over and everyone just tries on their own (Interview, January 2006).

Despite having identified the problem, and despite good ideas and goodwill the teachers at Coastline School had not been able to reverse this trend of stagnation. The principals identified a lack of collaboration as a hindrance to school development. In a similar way Sarah pointed to the isolation of the teachers.

> I think like at home, you see, many good ideas come up for doing some kind of developmental work, but somehow it stalls, we don't manage to see it through. Yes I think there's a bit of stagnation, see. […] It's like you're inside a box, your own box (Interview, January 2006).

This is a description of a double bind situation where lack of collaboration seems to be hindering development. Sarah said she did not discuss her studies with her colleagues nor ask them for support, though many of them had gone through the same programme and several were enrolled at the same time as she was. She said she didn't want to disturb them since they had enough to do.

During the last year of fieldwork tensions were rising in the school community due to imminent job insecurity for student teachers enrolled in the distance programme. Since the number of pupils was decreasing, and certified teachers had priority, two of the teachers that had been studying for their certification had to quit in 2005-2006. A different tension had also arisen between teachers and pupils at the lower secondary level. The pupils sent in a formal letter complaining about the teachers not listening to them. Since the discourse in the society had been revolving around individualized teaching, where the school is supposed to meet pupils' personal needs, they refused to accept that school authorities could set rules to control pupils without listening to their views. This case is yet another testimony on the lack of a collaborative spirit.

Sarah felt that her studies in the distance programme had made her more secure in her work, and that the satisfaction of both pupils and parents had been a motivating factor. However, she found that the school as a whole was not open to change, the reason being that the teachers seemed to be locked up in their boxes. By her third year she was starting to have an impact outside her classroom, when her advanced practices were spreading among colleagues. As a representative on the teacher council she was starting to contribute to the school community on a systemic level. However, the data do not provide evidences of how she might have influenced the school practice. During her studies she gained a reputation as a good teacher among her colleagues in the school, as well as among the parents in town, confirmed by the principal:

> She is just amazing. […] If you go in there [into the classroom] she is doing great things. […] She was like born to be a teacher. She has multi-age classes, two age grades, and everything is somehow organized and functioning. I mean, the parents were very sceptical in the fall whether it would work out. […] She has convinced all the parents that not only this is possible but it is also very good. And she is very well liked by the staff, the parents, just everybody. […] She is quite simply the best teacher in Coastline after Mary [a retired teacher, well-known in the town as an excellent teacher] (Interview, Rachel April 2005).

7.3.3 Analysis of the learning process of Sarah in relation to school development in Coastline School

Questioning existing practice – identifying a need for change

Both the women who held the position of principal in Coastline School during the years 2003-2005 questioned the existing practice in the school and felt a need for change

(Figure 7.4). Inclusion as part of school policy had been implemented and teachers needed to change their practice e.g. by using differentiated teaching methods. It had proved to be difficult to bring about changes in the school practice and the principals were worried about stagnation. They felt that isolation of teachers and lack of cooperation was constraining school development and that it was at least partly related to the school's size and the tradition of one teacher being responsible for pupils in the same age grade in one class.

Both principals had taken the situation as a challenge by planning temporary projects where teachers were presumed to collaborate in teams, hoping that the experience of participation in different practice would promote them to change their teaching models. Although this was positively accepted by teachers everything went back to the same state when each project was finished.

Both principals were experiencing a double bind situation since they had recognised the need for changing school practice in response to changed school policy but were not able to initiate development that lasted. In order to break away from that situation the principals and other staffs would have needed double stimulation, such as a concept for understanding of the interplay of individual and systemic development, for supporting change. Analysing the trajectory of Sarah in learning to be a teacher in Coastline School sheds further light on what might be hindering school development and what would have to be done for overcoming the double bind situation (Figure 7.4).

When Sarah started to teach she soon became critical and started questioning the practice in Coastline School, which she felt was stagnated. She had the experience of being a teacher assistant in another school and she may be looked at as a boundary crosser bringing with her new ideas about school practice from that school. This experience stimulated her in wanting to develop alternative practice from the general practice in the school (Figure 7.4). The group of around 20 pupils in her class was diverse; two age grades (7 and 8 years old), some with special needs and one or two with other ethnic background than Icelandic. Her ideal was to use more diverse teaching methods and to be able to differentiate according to the competence level of individual pupils. However, the interview data indicate that before being able to implement a new model for classroom practice she had to overcome troubles in the first two steps of the expansive learning cylce caused by primary and secondary contradictions.
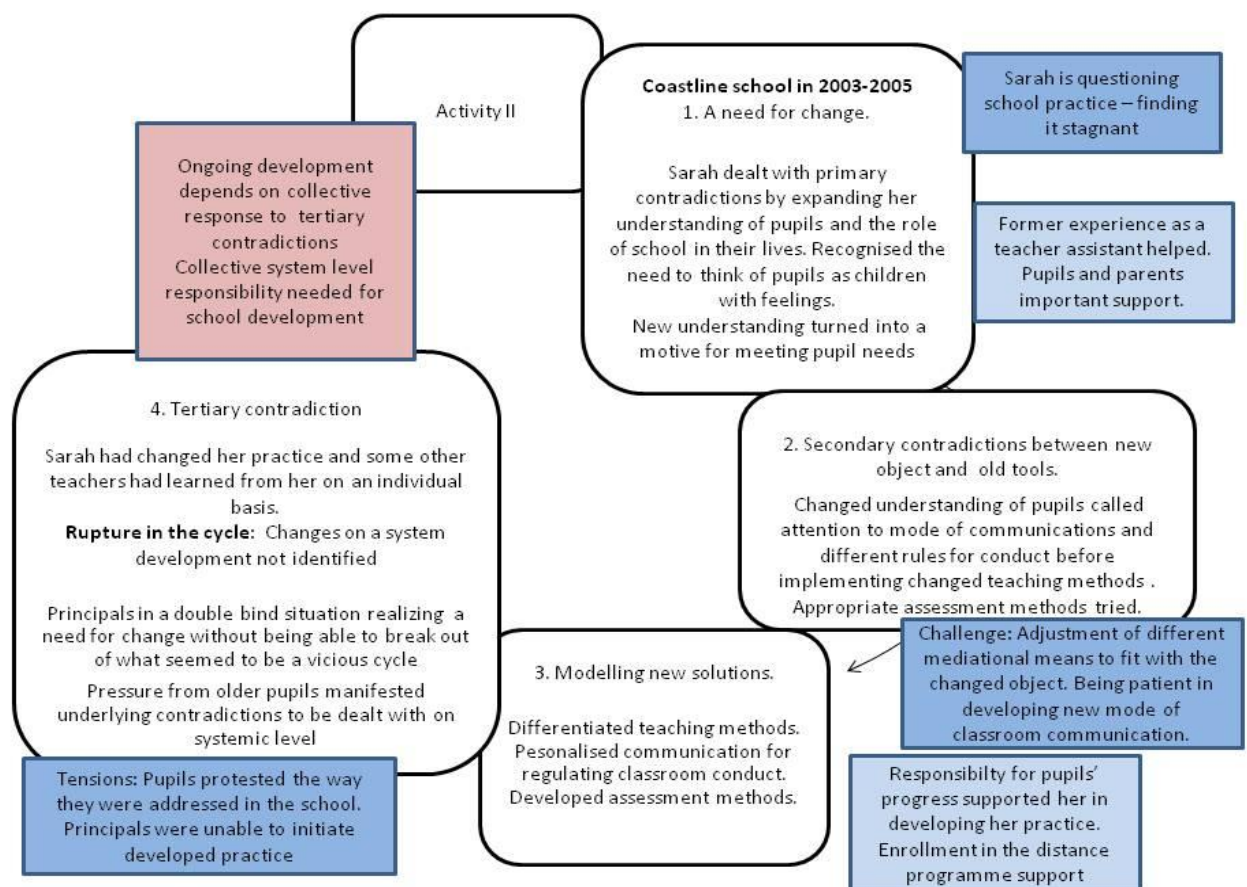
Figure 7.4 The learning process of Sarah in Coastline School in relation to the expansive learning cycle

The process of developing one's own model for classroom practice

In thinking about how she could implement her ideal form for classroom practice, Sarah early on reconsidered the object of school activity and expanded her understanding of the pupils and the role of the school in their lifes (Figure 7.4). She was concerned with recognising them as different individuals, children with feelings that should be respected and that teachers had a responsibility for caring for children's wellbeing as well as their education. Her new understanding of the object of school activity were then turned into a motive for meeting the children's needs (cf. Leontiev see Chapter 7.6.1). As Leontiev pointed out, when considering a need for changed practice it is important to focus on the object of activity.

Expanded understanding of pupils and their education as the object of school activity, led Sarah to rethinking the way she as a teacher would like to communicate with pupils. In accordance with her understanding of pupils she felt a need to cultivate personalized

forms of communication with the pupils instead of presuming conventional hierarchical status difference in teacher pupil communication where the teacher tends to address pupils as a group. Within the object of school activity in general there is a primary contradiction between educating the pupils and controlling them. Before being able to teach Sarah needed to overcome difficulties caused by this contradiction. She explained that this was the biggest challenge which took a long time and stretched her patience. In order to be able to teach the children and see that they used their time well for learning she had to manage the control which was closely connected to the type of communication she strived for in the classroom. Sarah emphasized the importance of coming to an agreement with pupils on rules of conduct. She wanted teachers to listen to pupils and when they made demands about their conduct they needed to acknowledge that they are working with children in the process of maturing. She prefered personalised communication with pupils as a mechanism for controlling their conduct, rather than written rules followed up with praise and punishment as was the conventional practice in the school.

Having developed her way of communication and conduct in the classroom, Sarah could turn her attention to consider the kinds of learning materials and teaching methods appropriate for the different individuals. She could start using diverse methods, adapted to each pupil's capacity, and choosing different kinds of learning materials accordingly. Before she had managed the conduct she used the method of following textbooks and using workbooks as a tool for control. This reminds us of the primary contradictions inherent in teaching material, i.e. they are in general simultaneously made and used for educative purpose and for keeping control of pupils by keeping them busy working in their seats.

While stressing the importance of thinking of pupils as individual human beings, each with their characteristics and respecting their different needs, Sarah said that the motive in her teaching was the importance of equipping pupils with basic skills, such as literacy and numeracy. As a teacher she felt a responsibility for that task because of its importance for general success in life (Figure 7.4, a light gray box).

In implementing a differentiated approach in her teaching the need for developing appropriate assessment methods became pressing. Her feeling of responsibility meant that she needed evidence to show whether she as a teacher and they as pupils were

succeeding. This need is a manifestation of secondary contradictions between changed teaching methods and learning material and old assessment methods. In the distance programme she had learned about formative assessment, which she was not familiar with before, and when she discovered how she could use a spreadsheet computer programme to maintain records of pupil progress she had the right toolkit; the interplay of ideas of formative evaluation and a computer programme were what she needed for mediating her developed practice. Here the distance programme was serving as a double stimulation for Sarah in overcoming challenges when learning to be a teacher able to respond to pupil needs.

For overcoming the secondary contradiction between changed object and conventional instruments, Sarah needed toolkits where material and conceptual tools were interrelated (Chapter 3.3.3) such as learning materials and learning theories, assessment methods and material tools to register pupils' progress (Chapter 7. 4). Engeström (2007a) argued the need for integrated toolkits, for which he has suggested the term instrumentalities for developing an activity. When Sarah learned to use new tools, where material and conceptual tools functioned in interplay, she was able to progress in her learning to be a teacher.

What supported Sarah in implementing the new model?

Sarah could not use the practice in Coastline School as an ideal model for practice since she felt it was stagnated and had to be changed. She had restricted possibilities for collaboration with her colleagues since the rules and division of labour did not presume collaboration in daily practice. However, she managed to use her freedom and agency as a teacher, responsible for her class to develop her practice in the classroom in a way she felt was appropriate for the diverse group of her pupils. Parents were important and supported Sarah in developing her practice as a teacher by sharing an interest in the object of the classroom activity. The pupils as well as the parents appreciated her practice which may be looked upon as a double stimulation for overcoming troubles and not losing her patience. From her previous experience as a teacher assistant, she had ideals of classroom practice she wished to develop on which she could draw as a double stimulation for guiding her practice. The distance programme also served as a second stimulation where the model she strived for was reinforced. However, the most

important drive for change may have been the reconceptualised understanding of the object of school activity which turned into a motive for meeting the children's needs

Diffusion of innovative practices

Having gained security in her classroom practice, Sarah was prepared to contribute to school development and be a representative of the lower primary level in the teacher council. Some of her colleagues wished to learn from her, especially her way of managing classroom conduct and methods for maintaining records of pupils' progress. At the same time she had gained a reputation both in the school and in town as an excellent teacher. This indicates that Sarah had managed to develop her practice beyond the general practice in the school, developing a qualitatively better way of practice in accordance with the new school policy on inclusive education and differentiated teaching methods (Figure 7.4). Since her practice was more advanced than the practice of the school in general she could have functioned as a change agent, and had actually begun to spread her practices among her colleagues. However, during the time of fieldwork there were no signs of the fourth step in the expansive learning cycle, i.e. implementing the new model Sarah had developed in the whole school.

Double bind situation caused by tertiary contradictions

According to the expansive learning cycle implementation of a new, developed model for practice in the whole system is likely to initiate tertiary contradictions since there might be some resistance to the innovation. Thus, when some practitioners have changed their practice according to the new model, others might still be lagging behind. For overcoming tensions and disturbances in activity systems caused by tertiary contradictions, they have to be dealt with on a systemic level. Although Sarah's way of practice had started to spread among individual teachers, no evidence was found of implementation of the new practice on a system level. Since this was not the case Sarah's developed practice was likely to remain an isolated microcycle of expansive learning.

Developing school practice in response to demands built on inclusive school policy would have to be dealt with on a system level. Individual teachers like Sarah might have adjusted their practice to meet varying individual needs of pupils but teachers as a collective body had not. For developing practice in an activity system like a school,

individual responsibility of practitioners is not enough. Collective responsibility of teachers as colleagues needs to be fostered. Activity theory reminds us to focus on the object of activity for not losing sight of the motive that should direct actions; here learning actions of school staff. The analysis of Sarah's process of learning may be used as a model for enhancing understanding of the process of change in schools. Using Sarah's experience as an example teachers as a collective would need to start by focusing on pupils as objects and expanding the conventional understanding of the role of school in pupils' lives. In turn they would have to reconsider teacher-pupil communication and find ways for cultivating a personalized manner of communication in contrast to communication built on a hierarchical status difference between teachers and pupils.

As a matter of fact pupils in the lower secondary classes had put pressure on teachers and principals for change since they had protested the way in which teachers ordered them around and did not listen to them (Figure 7.4, a dark gray box). This may be taken as a symptom that the pupils had reconsidered their understanding of themselves as pupils and in turn did not accept being handled as if nothing had changed. They experienced tensions caused by secondary contradictions between their changed conception of themselves as pupils and the old way of hierarchical communication. The pupils turned their complaints to the principals indicating that they understood this as a matter to be dealt with on system level but not by individual teachers. For overcoming these tensions the teachers would have to react on a collective systemic level and the example of Sarah might be used as a model for how to come to an agreement with the pupils and learn to listen to them and take their point of view into account. As a result of the analysis *collective system level responsibility* is suggested as an intermediate concept for supporting developmental work for overcoming the double bind situation caused while focusing on *teacher-pupil communication*.

7.4 Sam in Creek School

7.4.1 Creek School

Creek School is a small school with 30-40 pupils, situated in a small fishing village of around 300 inhabitants. The school house was designed when there were more inhabitants in the village, so for the number of pupils during the time of fieldwork for this study there was plenty of space. There had been a lot of demographic changes in the

village, and about one third of the population were immigrants who had moved to the village to work in the fishing industry. During the years 2003-2005 the number of teachers varied from five to seven, not all employed full-time. The composition of the teaching staff had been very unstable, and there was a new principal every year during the three years of fieldwork.

Creek School had a website with news and photos from the school but during the fieldwork it was not kept up-to-date and nobody seemed to be responsible for it. The village is part of a bigger municipality, and in accordance with school policy, each school was supposed to use the same system for registration of information. The principal during the school year 2004-2005 refused to do so. A quote from an interview with a counsellor at the municipal school office says a lot:

> I'm pleased to be able to tell you that I just introduced a new principal to Creek School yesterday, and in doing so we are facing quite a new situation for the next school year. We will have three or four fully certified teachers, in addition to the two student teachers. It is quite revolutionary (Interview, counsellor June 2005).

Teaching was planned in mixed age groups with about 10-12 pupils in each class or even fewer. In addition to teaching pupils of different ages in the same group, teachers had to take into account that up to one third of the pupils might not speak Icelandic as their first language. Teachers were dealing with multicultural challenges, not only with their pupils of different ethnic backgrounds such as Polish, Russian, Thai, Filipino, in addition to Icelandic, but also in communication with parents. One of the student teachers, Sam, confirmed that there had been lots of difficulties in communicating with parents in general, especially the immigrants.

> The teenagers of foreign descent, it would happen that they didn't show up for lessons for several days, were either working with fish or hanging around doing nothing, and the parents could not be reached (Interview, April 2005).

Teachers had a lot of autonomy in their job but lacked institutional support in form of rules and conventions, and the student teachers employed in the school felt that more cooperation with other schools in the district could provide support. Since there had been problems with school management, and the school had suffered from a lack of certified teachers, a professional atmosphere, including collaboration and professional discussion, was lacking. Despite this, the atmosphere was welcoming, the words and actions of staff reflecting a concern for pupil wellbeing. This feeling was supported by

the municipality's school counsellor, explaining how a new developmental plan was being prepared. All planning of teaching was being revised, with two-teacher teams teaching each class and special provisions to support the immigrant children:

> Now I feel like a magnificent opportunity is opening up, to really start vigorous collaboration and developmental work between the small schools; with these new people coming in with new energy (Interview, counsellor, June, 2005).

What happened to the hopes for better times in Creek in the long run are outside the scope of this study. However, the student teacher Sam acknowledged there were examples of more professional practices in the school year 2005-2006 (Interview, January 2006).

7.4.2 Description of Sam as a school-based student teacher in Creek School

When starting in the distance programme Sam was in his mid-forties, married and a father of three children; two grown-ups and one teenager attending the lower secondary level at Creek School (Figure 7.5). Sam's family has roots in the village, and he has diverse experience and education in connection with the fishing industry e.g. as a fisherman and a ship-owner. Sam had been teaching at Creek School for one year when he started in the programme in 2003. He chose teacher education in his search for a different job, 'maybe not as wet', as he put it, since he wanted to keep living in the village.

> Honestly, if I'm going to keep living here, I have no interest whatsoever in working in the blood and gore; the fishing or baiting. That time has passed I am done with my quota there (Interview, May 2004).

His brother had been principal of the school some years earlier, and he himself had been chairman of the sports club for several years in addition to working as a caretaker of the village swimming pool. Those positions focused on leisure activities of young people, and he got acquainted with what it was to work with school children, thus making the teaching profession an option to consider.

I first met Sam in spring 2004 when he had just finished his first year in the programme. The staff and school management situation had been and continued to be very unstable in Creek School. During the first three years that Sam was enrolled in the programme there were new principals each year; for the first two years only one of five to seven teachers was certified while two or three were student teachers. In his second year in the

programme Sam was the most experienced staff member, with three years of teaching. Sam used to teach in the upper primary with two or three grades jointly in one class. He felt that after his first year in the programme he already had more resources to draw on in his teaching, and that he was more secure in what he was doing (Interview, May 2004). In his third year Sam elected mathematics as a specialisation. He liked it despite it being demanding. Since he taught full-time and had other obligations in his community he postponed some of the courses in fall 2005, presumably meaning it would take him longer than four years to finish, which is not unusual for school-based distance students (Interview, January 2006).

The object of activity for Sam as a teacher in Creek School

Since Creek School is a small school two or three grades are taught jointly in each class. Sam started teaching 10 and 11 year olds in a class with around 10-12 pupils, but since the number of pupils in the school was decreasing he had three age groups together in one class. In addition he had taught elective courses in philosophy in the lower secondary level. He enjoyed teaching and felt it important that school attendance was both enjoyable and useful for pupils.

> I really like teaching and that the kids learn. I wouldn't like it if I thought I couldn't teach them anything (Interview, April 2005).

> That the children are more knowledgeable afterwards and enjoy it as well […] I think that's important. […] that what you are teaching hits home and that somehow it's useful (Interview, May 2004).

Not only were there different age groups in the class but these 10-12 pupils had up to five different ethnic backgrounds (Figure 7.5). While some of immigrants were settled, others were coming and going, and as a result the pupils did not all speak Icelandic but were supposed to participate in classroom practice anyway.

> A new Polish girl arrived who didn't speak any Icelandic but she's been learning the language. Her progress is slow; I let her write in Polish when she can't follow the class, or do what has been planned (Interview, January 2006).

In addition, Sam as a teacher needed to be able to cooperate with the parents in the multicultural society of the village. Home-school cooperation had in effect been a problem, both with Icelandic and foreign parents. Sam understood the importance of improving on that, but nothing changed during the three years of fieldwork for the study. He recalled times before he started teaching, back when his brother was the

principal. Then it worked; meetings were held at the school where parents would come to learn about different things of interest for upbringing and schoolwork. Unfortunately, he said, the home-school cooperation had been minimal for several years, despite good intentions and municipal policy stressing its importance (Interview, January 2006).

Teaching methods, learning material and assessment

When Sam was asked about his use of learning materials and teaching methods he emphasized the importance of getting to know the status and competence of the pupils (Figure 7.5). He explained that he made an effort to use flexible methods, because the same methods do not suit everyone. Sometimes he would be teaching from the blackboard, sometimes discussing with the whole class, making an effort to appeal to everybody. Along with textbooks he would use workbooks, for pupils to fill in independently or in collaboration, where he used to walk around and provide support. In addition he regularly planned reading hours, where all pupils would sit and silently read books they themselves had chosen. He said that he did a lot of creative writing classes, in turn letting the pupils perform, read poems or act out plays in front of the class, which he said they loved. Sam thought it important to allow the pupils to express themselves freely. He would also plan project work in the fall and spring, where he would draw attention to how the curriculum connected to the surroundings in the village, such as focusing on seamanship and fisheries as themes for study (Interview, April 2005).

Since the teachers as a rule had sole responsibilty for their classes, they were free to choose their own methods, although they were expected to follow the national curriculum (Figure 7.5). Sam described how the teachers in Creek handled the choice of learning materials where the pupils in each class were so different:

> It may depend on the competence and interest of the teacher, if he wants to teach this or that, in a way it is quite open. […] This has been rather haphazard, taking a risk, and then when pupils reach the 10th grade an attempt is made to fill in the gaps (Interview, April 2005).

Mediating tools & practices			
Interacting material and conceptual tools		Affordances in the school community	
Learning materials Sam chose textbooks that can be used with the whole class although in different grades and with different competence; also considering the different language capacity. Choice of textbooks dependent on the teacher's interest. Sam felt a need for better coordination and management of textbook use.	**Teaching methods** Sam felt it was important to get to know the status and competence of the pupils. Emphasized flexibility in methods because the same methods don't suit all. Sometimes taught from the blackboard, sometimes had discussion with the whole class, making an effort to appeal to different pupils. Also used workbooks and regularly used free reading and creative writing along with performance in front of the class. In the fall and in the spring he had used project work connected to the environment, such as seamanship and fisheries.	**Models/ideal forms** As there had been problems with the school manage-ment and the school had suffered from a lack of certified teachers, models of professional practice were absent. Up to half of the teachers were student teachers. The school did not afford professional or ideal models for practice.	**Social practices** Minimal collaboration among the teachers. Not even regular staff meetings the first two years but this was changing with the third principal in fall 2005. School-home cooperation had been minimal in spite of good intentions and the policy of the municipality stressed its importance.
Subjects: Sam: in his forties. Married father of three children, two grown ups and one teenager. Started in the programme fall 2003.	**Intended outcome**: Knowledgeable pupils; having learned to express themselves freely; having enjoyed school attendance at the same time as it has been useful for them.		**Object:** Teacing three age grades in one upper primary class, age 10-12, diverse group, one third of the pupils not speaking Icelandic as their first language.
Systemic institutional factors mediating actions of subjects			
Rules The setup of one teacher teaching two or three age grades in one class did not require the teachers to collaborate or consult with each other on organisation of their work. Neither timetables nor choice of textbooks constrained teachers' freedom to choose their own ways, nor did such rules support them. Values underlying communication of teachers and pupils seemed to be based on caring for pupil wellbeing. Sam felt it important that pupils enjoyed their school attendance and liked to use humour when dealing with the kids.	**Community** The teaching staff consistsed of around 5-7 teachers including the principal, some teaching part-time, some not living in the village, some also teaching at another school in the district. At times only one had formal teacher education. Many immigrants had moved to the village mainly to work in the fishing industry; many pupils did not have Icelandic as their first language. Home-school cooperation had been a problem, both with Icelandic parents and foreigners. Sam understood the importance of improving on that but nothing changed during the years of fieldwork. Efforts made in the last year to improve pro-fessionalism in management and teaching.		**Division of labour** Teaching is planned in mixed age groups with 10-12 pupils in class. Up to 30% of the pupils immigrants; not a stable group, did not speak Icelandic when arriving. Sam as a class teacher responsible for selecting learning materials and deciding teaching methods. Three principals in three years; instability resulting in lack of firmness, or at times the school not being managed. No specialized staff besides the teachers. Special needs are served by counsellors from the municipal office in Waterside.

Figure 7.5 The activity system of Creek School with Sam as subject

When talking about the gaps that needed to be filled in Sam was referring to the national curriculum and the standardised final exams at the end of compulsory school. Because of poor reconrd-keeping the teachers had not coordinated their choice of learning materials, which could result in a need to fill in the gaps when the final exams approached. Sam explained that he tried to choose textbooks that could be used with the whole class, different as they were. When he started to teach there was no documentation available on which books pupils had been taught. He has kept a record since he started teaching. His aim was also to document the progress of each pupil in every subject. However, it could be complicated:

> For instance, like the plan for the week, which books they have and things like that, I have it written in a table; these two are working in that book and those two in another. And the plan for what we are going to finish during the winter, like in the maths. There are ten of them [pupils in the class at that time] but in fact they are split into four groups in terms of how far along they are in maths. Then I think that one mustn't compartmentalize them too much. It can change overnight, if someone catches on in maths and other areas (Interview, April 2005).

Although he was making an effort to document pupils' progress he felt that assessment was the most difficult part of the teaching. He said that sometimes he would not be able to give reasons for why pupils got this or that grade, and that he definitely had to improve in that area, admitting at the same time that assessment was not something he had prioritized (Interview, April 2005).

As far as Sam could recall, nothing in the programme had touched upon problems like those he had been dealing with directly; he was half way through his third year when I last met him. However, when interviewed at the end of his first year in the programme, he felt that it had been supportive in the sense that he had gained more resources to use in teaching:

> Having more solutions, when you have read more and know more, you are better able to piece together appropriate solutions for different situations (Interview, May 2004).

Since Sam had a lot of autonomy as a teacher he could try out methods and ideas from his studies. He recalled having successfully used ideas from an oral performance course, both in practice teaching as well as with his class in Creek School. Those were ideas that reaffirmed practices that he liked and believed in.

The school community, the rules and the division of labour

Three principals were hired for school management during the three years of fieldwork. There were five to seven teachers including the principal, some taught part-time, some did not live in the village, and might also teach in another school in the district. In the school year 2003-2004 two student teachers in their first year of the programme taught at Creek School. The principal that year had only stepped in temporarily and quit in the spring. The following year a new principal was hired, who had experience of managing small schools, but the year turned out to be very difficult in the school for many reasons. The national teachers' union was on strike all over the country for several weeks during the fall, and in the spring Sam had to do practice teaching in another region, which meant he was away for five to six weeks. That school year the teaching staff included three distance student teachers. One of them quit the programme and moved from the village at the end of the school year. As it turned out, this particular year Sam was the most experienced one, and seemed to be the most reliable.

> I'm not like all the other teachers who come and can leave without notice. I live there and am tied down with housing and other things, so that also comes into play, my own interests and feelings for the place, naturally (Interview, January 2005).

The second principal was not successful in managing the school in those difficult circumstances and left the post after one year. In Sam's third year in the programme the third principal arrived.

> The new principal is good and life is different. Everything is more structured, and the cooperation and atmosphere have greatly improved. Now for example staff meetings are held regularly and minutes are taken, which has never been practised before. The pupils notice this and talk about it, e.g. the 10th graders (Interview, January 2006).

The class structure of one teacher teaching two or three age grades in one class did not require the teachers to collaborate or consult with each other on the organisation of their work (Figure 7.5). Neither timetables nor choice of textbooks constrained teachers' freedom to make their own choices, nor did such rules support them. There had apparently been minimal collaboration, since not even regular staff meetings were held during the first two years Sam was in the school as a student teacher. That seemed to be changing with the third principal, with intentions to improve professionalism. No

specialized staff besides teachers were working in the school and special needs were serviced by counsellors from the municipal office in Waterside (Figure 7.5).

Home-school cooperation had been a problem, both with Icelandic parents and immigrants. Sam understood the importance of improving that, but nothing changed during the three years of fieldwork for the study.

Sam's situation as a school-based student teacher was very difficult, since he was deprived of social practices with his colleagues and with parents, and there were no models for professional practice he could use to direct him in learning to be a teacher. He felt that he was able to use what he learned in the programme to use more diverse teaching methods, but he was confronting challenges that were so complicated that he would have needed more, and possibly different, support than offered in the programme. Nonetheless, he felt better able to discuss problems in the school with professionals in the municipality, with increasing regard shown for his opinions.

7.4.3 Analysis of the learning process of Sam in relation to school development in Creek School

Facing problems and a need for change; the existing practice

In the space of only a few years the numerous immigrants in Creek School had caused dramatic changes to the group of pupils and the parent group. Around one third of the pupils in Creek School were immigrant children, having to learn to understand both the language and the culture at the same time as being expected to cover the prescribed curriculum along with their Icelandic classmates. In spite of a changed object of the school activity more or less conventional practice had been continued. This was bound to be problematic when the mediating tools teachers used in the classroom had not been reconsidered according to the changed pupil group, i.e. secondary contradictions between object and tools were manifested in malfunction of the school practice (Figure 7.6). The staff and the school as an institution were in a double bind situation not being able to react to the societal changes, in particular the changing ethnic composition of the pupils, which had expanded the object of school activity and initiated contradictions causing problems which had to be dealt with.
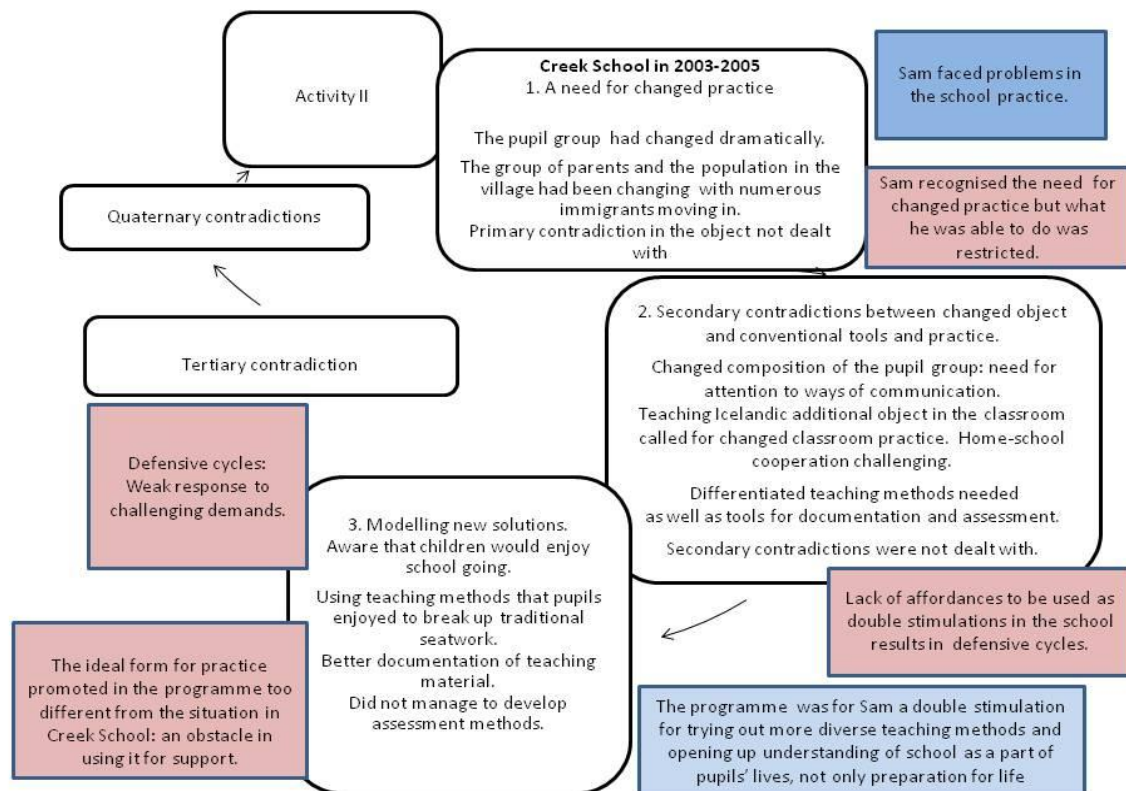
Figure 7.6 The learning process of Sam in Creek School in relation to the expansive learning cycle

There had been problems in school management for some time and the school counsellor situated in a nearby town had been worried about the situation, especially of the immigrant pupils, and was planning to take actions during my last year of fieldwork.

Sam recognized the problems he and the school as an institution were confronting and the need to react to demographic changes in the village but as a student teacher he was not able to take any action for changing (Figure 7.6). Sam mentioned that lack of contact with the immigrant parents had caused problems and that there was a need to cooperate with them. An apparent evidence for that need was when the pupils did not show up for school, and the teachers had to go and fetch them from where they were working near the harbour. Despite having realized the need for cooperating with the parents on such matters as school attendance, it has not been addressed during the time of fieldwork for the study. The school practice was characterized by defensive cycles since no actions were taken although the situation called for it. Sam and his colleagues would have needed stimulation for breaking away and developing their practice (Figure 7.6).

The process of developing own model for classroom practice

The task ahead for Sam which consisted in learning to develop his model for classroom practice was complicated and demanding. Since the rules for the division of pupils into classes were unconventional he had to adjust directives from the curriculum in a way that worked for him. However, Sam was in a situation that gave him more freedom, at the same time as it left him with more responsibility than teachers would have in general, for how he planned his teaching, including content, methods and materials used. There was not a tradition for monitoring of teachers' work in the school and the weaknesses in school management insured that he was more or less learning to develop his teaching practice on his own.

While enrolled in the distance programme Sam made efforts for developing his practice as a teacher in his multi-age and multi-ethnic classroom. After entering the programme, Sam had been stimulated to reconsider pupils as the object of school activity by recognising that children live their lives while at school, and that school attendance ought not to be looked upon only as preparation for life but as a part of life. As a result he developed classroom practice where he could break up the traditional teaching regularly to make things more enjoyable. He tried to use teaching methods that added some variety, such as discussion with the whole class, or allowing pupils to do what they enjoyed, such as making their own stories and performing (Figure 7.6).

These activities were not necessarily directly related to the curriculum content in the textbooks, though it might be related to goals and objectives in the national curriculum. For covering the prescribed curriculum Sam used learning materials and teaching methods more or less in a traditional way, letting pupils go through textbooks and workbooks in their seats while he walked around the classroom and helped them individually or in pairs. He had recognised the need for improving documentation and developed a practice of keeping a register of books he had used with pupils, for coordination, but that was not a regular practice in the school and the choice of textbooks had been haphazard. Sam was improving his practice somewhat by acting with new tools.

The description shows how Sam was dealing with secondary contradictions between a new, expanded understanding of the pupils as objects of school activity and traditional teaching methods. This was a challenge to which he responded by taking actions for

developing new models in his teaching. He got inspiration from his enrollment in the programme where he got acquainted with diverse teaching methods he could use. His former experience of leisure activities with children could also have been regarded as a resource to draw on for supporting Sam in developing his preferred model of classroom practice.

What supported and constrained Sam in implementing his model

Sam could use the programme as a double stimulation for developing more diverse methods in the classroom and for being more aware of the need for use of differentiated methods for the diversity of pupils (Figure 7.6). He felt that pupils had the right to enjoy school attendance, while also wanting them to become more knowledgeable. Sam's attempts to change may be looked upon as micro cycles, small attempts for developing his teaching to be more in tune with his new understanding of the role of school in children's lives. However, he had not yet found a way to develop his practice by intertwining responsibility for pupils' learning and progress with being able to ensure that pupils enjoyed their time at school. One aspect of his problem was apparent in how he talked about his assessment practices. Sam admitted that assessment of pupil progress was a weakness in his practice, but he did not act on improving it. His lack of taking actions despite having recognised the need to develop assessment methods is identified as a symptom of defensive cycles since he neglected to respond to a need he was aware of.

The development of defensive cycles like this may be blamed to a lack of affordances to draw on as double stimulations for overcoming challenging demands in activities. However, it may be noticed that when thinking about pupils as objects of school activity and considering his role as a teacher, Sam did not mention the importance of school going for the future welfare of children (like both Sarah and Lilith did) but rather he was concerned that they enjoyed their daily life. He said he would like them to learn something useful without explaining in which way, inferring that he may not have reflected seriously enough on the need of children and the responsibility of teachers and schools in their upbringing and education. As a result of this analysis, *visioning pupils' future* is suggested to be an important concept for use in developing practice in the school.

The model of Creek School was different from the conventional one, on which the national curriculum, learning materials, and teacher education were based, which means that Sam lacked support in official regulations. There had been problems in the school's management, which is symptomatic of the weaknesses in dealing with the problems in the school on a systemic level. There were no support professionals situated in the school, such as special need teachers or librarians. Expert advice was provided by the municipal school office, located in a nearby town, which means those professionals were not part of the community in the same way they would have been if placed in the school. For Sam as a school-based student teacher, there were few resources within the school setting to support his efforts to develop his practice as a teacher. Models for ideal practice were absent and the modus operandi of the school did not assume collaboration constraining Sam's possibilities for drawing on other people's experiences in his learning to be a teacher.

Sam felt that the distance programme had made him more secure in discussing school matters in the community, although he could not recall anything in the programme that had touched upon problems like those he had been dealing with directly. Since the object of school activity for Sam in Creek School was so far removed from the object of school activity assumed in the programme it constrained his ability to draw on resources in the programme for enhancing his practice. The ideal form promoted in the programme was too different from the circumstances in Creek School and a lack of shared models between the school and the programme is regarded as an obstacle.

Defensive cycles

Sam's case reveals how an individual teacher's development of classroom practice and school development on a systemic level are intertwined. The circumstances in Creek School were exceptionally complicated and demanding and constrained Sam's possibilites as a student teacher for developing his preferred mode of classroom practice. Sam had recognised the need for improving on things both at a whole school level where he mentioned the need to improve home-school cooperation, as well as things he could have acted on personally like improving on his assessment methods. A lack of responsibility both on individual and collective system level resulted in no actions taken which is symptomatic for defensive cycles and stagnation, even regression, in school practice. In situations like in Creek School during the time of

fieldwork for the study, developmental work for expansive learning would have been needed. When reflecting on pupils and the role of school in their future lives, the concepts *individual* and *collective responsibility* and *system level responsibility* can stimulate and direct developmental work.

7.5 Findings

The analysis has enhanced understanding of the process of learning to be a teacher when situated in a school and enrolled in a teacher education programme at a distance. The programme has been looked at as a double stimulation afforded for student teachers for mediating practice learning when situated in schools.

The findings are summed up as follows:

By analysing the learning trajectories of the three school-based student teachers it may be seen how the *zone of proximal development* for individual student teachers is intertwined with practice in their home schools. The expansive learning cycle assumes that both individual and system level analysis are accounted for and by following the learning processes of the student teachers, the *zone of proximal development* of the schools as activity systems has been revealed.

The analysis has shed light on the learning processes of the three student teachers and revealed common characteristics in the developmental phases when examined in the light of the expansive learning cycle. Ruptures in their learning processes are identified as a consequence of institutional characteristics and the practice of the schools.

As a result of using theoretical models for analysis the results and hypotheses are situated in practice and as such they can be used as double stimulations for supporting subjects in developmental work. I suggest that the matrix descriptions of the analysed activity systems of the schools are useful since the theoretical constructs have been grounded in practice and made more comprehensible for practitioners. Likewise the learning trajectories of the student teachers regarded in real recognizable circumstances and modelled in the expansive learning cycle make the processes of breaking away from contradictions when developing practice more understandable. The analysis of student teachers' experience in the schools has revealed the process of student teachers learning to be teachers in the schools in terms of challenges and problems they were faced with and affordances for *double stimulation* in their actions. I have shown how in learning to

overcome contradictions and respond to the need of pupils they developed their practice. Shifting the focus to the system level in the expansive learning cycle sheds light on how development was hindered when it was not dealt with on a collective level or an institutional level.

The analysis has generated generalizations in the form of emerging concepts suggested for use as a *double stimulation* in developmental work in the schools.

7.5.1 The practice in the three schools

When the three student teachers started to teach, a new national policy on inclusive school practices was changing the object of school activity. They were confronted with diverse groups of children with different potentials and needs and school authorities, teacher education as well as the general discourse in society, presumed that teachers should abandon their conventional practice and apply differentiated teaching methods customised for individual needs of pupils. Given this situation the student teachers were challenged by the task of developing changed practice in schools.

In Waterside School, change in that direction had begun some years earlier and it is argued that the school had by 2003 developed its practice by expanding the object of school activity. Changed practice could be identified among teachers both on an individual and collective level and change had been dealt with at system level. In expansive learning 'the learners construct a new object and concept for their collective activity, and implement this new object and concept in practice' (Engeström & Sannino, 2010, p. 2). My findings suggest that in Waterside School, as a result of expansive learning, professional development of teachers was included in the object of school activity, including education of student teachers.

In Coastline School individuals might have changed their practice but since development had not been approached at a system level, teachers and managers were stuck in a double bind situation (Chapter 3.3.3). In Creek School the practice was damaged because of management difficulties and an unusual situation because of demographic changes. This had resulted in defensive cycles rather than expansive development since teachers were not able to cope with the challenges.

The three school-based student teachers, Lilith, Sarah and Sam had different circumstances in the schools. There they could be expected to be learning to practice as

teachers since they were enrolled in the distance programme. The analysis reveals, however, the way in which their learning trajectories interact with affordances for learning in the schools.

7.5.2 Emerging concepts and issues of concern

The emerging concepts pointing towards issues of concern are accounted for here and they will in turn be used for formulating the proposal of hypotheses for use as *double stimulations* in developing practice (Chapter 4.4) presented as conclusions in Chapter 10.

The importance of future vision in expanding the object of activity

By requiring differentiated teaching methods the new school policy had initiated secondary contradictions between new methods and a traditional understanding of the education of pupils as the object of school activity. Lilith and Sarah were confronted by the contradictions in the form of disturbances in classroom conduct since they had problems in keeping discipline. Their concern was that the pupils used their time well for learning when seatwork with textbooks was being replaced with differentiated teaching methods. For Sam this did not come up as a problem, maybe because the pupils in his class were few (10-12) and the methods he was implementing did not pose problems in classroom conduct. There was a long experience in the small school of some kind of differentiation where the general practice was multi-age classes. As a matter of fact, Sam was not really focusing on the use of differentiated teaching methods as he continued using seatwork for covering the curriculum although breaking it up for a relief.

Lilith, Sarah and Sam as student teachers all went through the step of reconceptualising their understanding of pupils as the object of school activity and reflected on what teaching and upbringing of school children constituted in contemporary society. Lilith expressed her concern for the responsibility of school for children's future when she said: 'Because how will life be for him when he grows up, we have to do something now' (Interview, January 2006). Both for Lilith and Sarah the future vision in considering pupils as the object of school activity was of crucial importance and it is argued that it had encouraged them to reconceptualise pupils and their needs which then was turned into a motive for taking actions.

Engeström (2007a) argues that participation in emerging new types of work requires personal engagement to bridge the gap between designs based on visions for the future of practices and their implementation in practice. He observed that for people who became exceptionally engaged in developmental work, visions of change and situational solutions merge (ibid, p. 36). The analysis has revealed that this characterised the learning processes of Lilith and Sarah but not Sam. Sam, Sarah and Lilith had all been changing or adapting their interpretation of the object of school activity, and expanding their understanding of what the education of school children comprised by embracing upbringing, as well as teaching of knowledge and training of skills, in their tasks as teachers.

Changed understanding of the object calls for focusing on communication

The new interpretation of the pupils as objects of school activity affected the way the student teachers developed teacher pupil communication. In both Waterside School and Coastline School the conventional practice was that the teachers used written rules for controlling classroom conduct with appropriate praise and punishment; a practice symptomatic for addressing pupils as a group referring to hierarchical status difference of teachers and pupils. Neither Lilith nor Sarah would use that method and both explained that they wished to develop a more personal way of communicating with the pupils by coming to an agreement with them.

The demand for using differentiated teaching methods had called for changing the conception of pupils which in turn had motivated changed mode of communication which in turn became the foundation for their control of classroom conduct, a prerequisite for changed teaching methods and use of innovative learning materials. This is supported in Bernstein's theories of sociology of pedagogy (Bernstein, 2000, p. 32) where he reasons that the pedagogic discourse involves two discourses where the instructional discourse which creates specialised skills is embedded in the regulative discourse which creates order, relations and identity[3]. Taking his view into consideration in school develpment means that for changing teaching methods, the communication regarding conduct, manner and behaviour would need to be changed

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[3] Although the theories of Bernstein are not accounted for and used in the thesis I have used them for analysis of some of the data generated for the research and written two papers published in conference proceedings where I present the results (Jóhannsdóttir, 2007a, 2008c)

first. The result of the analysis of the trajectories of Lilith and Sarah point to the same direction.

In search of the role of linguistics in facilitating expansive transitions, Engeström has suggested that besides collaborating on a shared object of activity there is a need for reflecting on the script that mediated the activity.

> The script coded in written rules, plans, and instructions or engraved in tacitly assumed traditions, coordinate their actions behind their backs, without being questioned or discussed (Engeström, 2008, p. 50).

Reflecting on conventional rules and changing them was part of the procedure for Sarah and Lilith in developing their models for teaching.

Multilevel toolkits for mediating teaching

Contemporary ideas of differentiated and individualized teaching methods promoted in inclusive school policy have called for changed teaching methods, which in turn have called for new kinds of learning materials and changed methods of assessment. The use of tools in schools is based on cultural traditions that have developed over time, where both new material tools and changed ideas of practice have been introduced into the schools as activity systems and actuated school development.

Engeström (2007a) has addressed the importance of understanding the interplay between conceptual and material tools for mediating learning and developing practice. New material tools bring about the need for new concepts, visions, and ideas, just as new ideas and visions call for new material tools. The notion of *instrumentality* (or a constellation of tools) has been proposed for this kind of complex toolkits where there is interplay among different kind of tools, models, concepts and visions (Kerosuo & Engeström, 2003).

The trajectories of Lilith, Sarah, and Sam reveal the importance of being able to combine the use of different kinds of mediating instruments and the analysis shows how their use of material and conceptual tools developed in interaction. Lilith and Sarah managed to combine the use of teaching methods and teaching material and develop appropriate assessment methods and use them for developing their practice in accordance with their new ideas and visions. Sam on the other hand, perceived a

problem with his traditional assessment methods, but did not tune it to his relaxed teaching methods.

Resources for social mediation and models for ideal practice in the schools

Vygotsky (1978) emphasized the importance of social mediation for individual development (Chapter 3.2.2). The analysis here has revealed that the schools as activity systems were different regarding to the way in which they enhanced or constrained the learning of the student teachers. Certain characteristics can be identified in Waterside School, the school in this study that offered the most affluent resources for supporting student teachers learning regarding division of labour, rules, and community. They were identified as follows:

a) The division of labour was complicated indicating that the degree of specialisation was rather high and different professionals had responsibilities according to their expertise. Boundaries demarcated different roles and emphasised and enhanced individual responsibility.

b) Rules regulating the function of the school assumed collaboration of teacher teams for coordinating curriculum. Collaboration between different professionals was also part of the organisation of the school practice. Rules that supported collaboration were important offering opportunities for collaboration as a form of social mediation. Collaboration as a form for practice enhanced collective responsibility.

c) Communication was fostered in the school community by opening channels between people in different hierarchical positions. The three principals in the management team were always prepared to listen to teachers and pupils.

This analysis implies that the rules and division of labour, as well as communication and atmosphere in the community, affected the affordances for social practices as well as models for ideal forms for practice available in the schools. In discussing implications for teacher education in the light of Vygotskian thories, van Huizen et al. (2005) emphasise the importance of supporting student teachers by providing them with affordances where they are able to draw on other people's experience, therefore collaboration with both peers and more advanced practitioners is important, as well as offering access to ideal forms for practice.

The distance teacher education programme as a double stimulation

In this chapter, the focus of the analysis has been on the learning of the three student teachers when developing their practice in schools. The main focus has been on examining their learning as situated in the activity systems of the schools. *Double stimulation* for support has been identified both in the distance education programme and other resources the student teachers were able to use. In Chapter 8 the focus will turn to their learning trajectories in the distance programme and in Chapter 9, the student teachers' situation of boundary crossing between the schools and the programme will be discussed.

The analysis in this chapter shows that the programme inspired the student teachers to use diverse and innovative teaching methods as well as new assessment methods. However, they had to find out how these could be adjusted for their situations. Vygotsky's method which he called the *functional method of double stimulation* assumes that new means for solving tasks are made available for subjects which have to make meaning for themselves of how and whether they can use them for the given task (Engeström, 2007b; Vygotsky, 1978, pp. 73-74).

In the talk of Lilith and Sarah it may be seen how their enrolment in the programme supported their ideal forms for teaching, both the ideology of inclusive education and accordingly the differentiated teaching methods. They were able to draw on this as a double stimulation to support their learning in practice while that was harder for Sam, reminding us once more how contingent learning is upon circumstances in their home schools.

CHAPTER 8: DEVELOPMENT OF TEACHING AND LEARNING IN THE DISTANCE PROGRAMME

8.1 Introduction

The purpose of this chapter is to explore the development of teaching and learning in the distance programme and how the learning processes of distance students are intertwined with development of the practice of teaching and learning within the programme. The aim is to provides an insight into the distance programme, and open up an understanding of how the practice was developing in the middle of the first decade of the twenty first century. At that time the Iceland University of Education offered teacher education comparable with on-campus programmes in a distance programme. In the years 2002 to 2004 distance students constituted 40-50 percent of students in the programme for compulsory teachers (Kennaraháskóli Íslands, 2005). Despite these figures there had not been much discussion on the implications for the curriculumof the teacher training programme and the effect on teaching and learning. The way in which distance students learned to participate and function as student teachers at the same time as learning to manage curriculum tasks is the focus in the analysis of their learning trajectories.

The results are presented in three phases, starting with descriptions generated from the data collected in the ethnographic work. In Chapter 8.2 three distance courses are described and in Chapter 8.3 narratives of the experience of three school-based student teachers of participation in the programme are constructed. The theoretical analysis presented in Chapter 8.4 is based on these descriptions. The analysis is supposed to lead to generalisation and in Chapter 8.5 the findings are presented in the form of hypotheses and intermediate concepts suggested for use in programme development with lecturers, students and programme leaders (Chapter 4.3.4).

8.2. Description of three distance courses

In order to more easily provide an overview and make a comparison of the courses the activity system of each course is depicted in a matrix (Figures 8.1, 8.2, 8.3). A figure of the triangle model is put in the middle to symbolize that the boxes around refer to components of the model. The assumed outcome or motive of the activity, which is normally placed outside the triangle is placed in the middle matrix to emphasise its centrality and relevance for all components of the activity. The student teachers in each

course are the subject of the system, to the right the object of activity is described. The top row refers to the place of tools or instruments and the importance of the interplay of material and conceptual tools is emphasized by placing them side by side. Three subcategories are found in the teaching methods to distinguish among: assignments as conceptual tools in learning; lecturers' actions as professional guides in the role of more advanced supporters in student learning; and social practices, since teaching methods affect collaboration and dialogue as a resource in learning. In the bottom row institutional factors characterizing the system that mediates the actions of the subjects are described, referring to rules, community, and division of labour, of the analysed courses or the programme as an activity system.

8.2.1 Ethics

In the beginning of the term 67 student teachers were enrolled in the Ethics course. The course was part of the core curriculum for teacher education and most student teachers would take it in their fourth of eight terms. The students' object in the course was to get acquainted with philosophical concepts and to learn to use them to deal with everyday problems they might face as teachers, for example, when communicating with pupils and parents. Instead of making assumptions about solutions and using everyday concepts based on common sense, the student teachers were supposed to learn and apply concepts from ethical theories. As an example the concepts 'relativism' and 'political correctness' were used to throw light on situations teachers were likely to face in multicultural communities.

The importance of dialogue was stressed as a learning method, while at the same time it is a method of philosophical inquiry. The threaded discussion tool on WebCT served as a platform for dialogue, where students were supposed to practice the use of philosophical concepts in solving problems related to the prospective teacher job. Each problem or subject was discussed for one week. The lecturer directed and motivated the discussion in the beginning by putting forward different questions to each group of about 10 students.
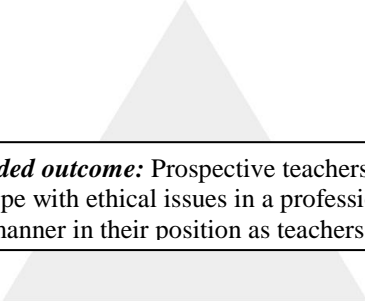
Mediating tools & practices			
Material tools	*Teaching methods as conceptual tools*		
Digital online tools WebCT was the online platform. Affordances most used: Threaded discussion and email for private communication: student-teacher, student-student. Access to course documents e.g. syllabus, reading material, assignment guidelines, and syntheses of the discussion. PowerPoint from lectures in face-to-face sessions.	*Assignments* Students contributed to discussion on texts. Exercises in applying theory to practice: 10% Participation in discussion on a problem example: 20% Individual final examination – open access online for 12 hours, solutions sent as an attachment: 70%	*Lecturer's actions* Lectures in the face-to-face sessions. Questioned and motivated discussion: 8 themes, plus two group assignment. Eight syntheses/roundups of the discussion - feedback to the whole class. Evaluation of the two group assignments for each group. Answered questions regarding the final examination three times during the examination day.	*Social practices* Dialogue was the central learning method planned for discussing the reading material. Group discussion in 6 groups of about 10 students each. Platforms for group discussions were open for all students and they were encouraged to read other groups' discussions.

Subjects A class of 67 distance student teachers in their fourth term; 55 females 8 males	*Intended outcome:* Prospective teachers able to cope with ethical issues in a professional manner in their position as teachers.	*Object* Get acquainted with ethical concepts and practice their use in solving problems related to ordinary problems teachers are likely to face.

Systemic - institutional factors mediating actions of subjects		
Rules Two face-to-face sessions on campus, 1.5 hours each, one in the beginning of the term and one in the middle. The teacher set rules on what the students were supposed to do in the distance sessions and how the teacher would communicate with them. Rules regarding teacher-student and student-student participation in discussion: Minimal three contributions from each student to each of the eight discussion themes and the two problem examples. If not fulfilled it affects the grade. The teacher, as a rule, did not enter the discussion but rounded up and gave feedback when it was finished.	*Community* One teacher and the students enrolled in the course. The class divided in groups of about 10 students for collaboration and discussion. Peer students encouraged participation of passive group members. Teacher motivated by entering the discussion by inputs and praising students. Cooperative atmosphere in the online community.	*Division of labour* The role of the teacher clear. He decided how the course was organized and what the criteria for accepted knowledge were. He organized the discussion, put forward problems to discuss, and gave feedback on the discussion. Students were responsible both as individuals and as group members. Individual responsibility: read texts and participate in discussion, take the final exam. Group responsibility: discussing two group assignments that were assessed and given a common grade for the group.

Figure 8.1 The activity system of the Ethics course with student teachers as subjects

In the case mentioned above, the teacher stressed the importance of understanding these concepts for prospective professionals working with and educating the youngest generation. Each student was supposed to contribute to the discussion about a defined topic three times a week, drawing on readings from certain theoretical texts, and their inputs were included in course assessment. The teacher generally did not interfere with the discussion during the week. Here is an exception:

> It is a real pleasure to monitor your discussion. You are doing well and hopefully this is just the beginning. […] However, with such a potent group of students, I have to take the liberty to break my promise of giving comments on Fridays. Your discussion is well worth spending a Friday night and Saturday reflecting on it. I hope you will not hold this against me (Web entry, Teacher January 28 2005).

The assessment of the discussion was given in two forms. Usually, when the weekly discussion was closed, the lecturer gave a general response, reflecting on the discussion and taking examples from student teacher contributions. He did not necessarily correct misunderstandings of particular students, but corrected in general the understanding of a given (specific) concept and how it was used in the discussion. Individual contribution to the eight discussion themes was assessed as failed or passed and counted as 10% of the final grade. Two discussion problems were put forward as group assignments. They were assessed by a written response to the group in about half a page and a grade which was the same for the whole group except for if somebody did not pass the minimal contribution, then his/her grade was lowered.

The division of labour between lecturers and students, and among students themselves, was clear. In accordance with the traditional teacher role the lecturer decided on course organization and criteria for accepted knowledge. However, the course design implied open channels for discussion among students as peers and between students and lecturer. The belief that students learn from each other was promoted when the lecturer encouraged the students to read other group discussions, as they might be able to learn from them, although this was not required. The communication online between students and lecturer, and amongst students, was a testament to a supportive atmosphere. The teacher entered the discussion website saying:

> Now I think it is time to compliment you for intensive discussion this term. It has been a pleasure to see good progress in group dialogues, and increased competence in analysing the ethical essence of topics (Teacher, April 20 2005).

The discussion as a learning method in this case was used for students to practice use of theoretical concepts when discussing everyday problems in schools. The written mode and the threaded discussion were supposed to enhance reflexivity, as students got time to read a discussion in context and reflect on it before contributing themselves. However, the discussion caused some tensions. The asynchronous mode meant that the teacher was not on hand to correct possible misunderstandings of individual students, although he commented on the discussion in general. One of the students complained about that in a private email to the teacher.

> I think that this arrangement isn't working and I am not much of a better thinker after this assignment. In the first place we haven't received any criticism on our writing this term, which I feel is necessary to improve the writing. […] I think that since our writing [on the discussion web] is part of the grade, you should plan it so that all students get a comment on their writing at least once (Student, April 18 2005).

The next day this student sent another private email to the teacher, where he continued to reflect on the shortcomings of discussion as a method used for online teaching and learning:

> I also have opinions on what my peer students write and I think their contributions are of varying quality and often give reason for criticism. Your letters do not satisfy the need for personal criticism, though they do give us deeper insight into the subject each week, which is good. […] The problems we are dealing with in the discussions are interesting but we tend to get stuck in discussion of a general kind. There I think you could interject with some comments to keep us on track, but then again you probably are given too little time for such activities (Student, April 19 2005).

Here the student was questioning the value of peer knowledge and thereby also the value of the discussion method increasingly used in distance courses, with threaded discussion tools available in online learning management systems. However, the comments reflected an understanding of the lecturer's situation when the student deduced that time allocated for distance teaching constrains actions. This student also questioned the value of group assignments when complaining about the injustice of grading the group assignment with one grade for the whole group:

> In fact it is not justifiable that I get a grade for how other people are doing. My grade should be based on my competence and my contribution. For example, it would be absurd that my group members would get a deduction in their grade book because I was absent for two weeks! (Student, April 18 2005),

The lecturer answered with a private email in WebCT where he thanked the student for the criticism and promised to reflect on how he could do better. Then he explained the pros and cons of group assignments in general, and pointed out that in this particular case, in contrary to other forms of group assignments, the teacher could see each student's contribution to the discussion, and those who did not participate with the minimum required contribution of three got a lower grade than the group. Besides, he pointed out, each group discussion counted only 10% of the final grade for the course. However, the student complaints about the shortcomings inherent in the method is worthy of attention. The ethics lecturer explained how he had made an effort to minimize shortcomings in his organisation of the assignments.

8.2.2 Arts and crafts along with subject didactics

The arts and crafts course that was part of the elected specialisation for prospective arts and crafts teachers was divided into three parts: 1. Development of ideas/colours and forms. 2. Needlework. 3. Subject didactics of arts and crafts. The three parts were to some extent interwoven. One lecturer was responsible for the course as a whole while a second teacher came in to teach the needlework part. Since the second teacher did not use WebCT when communicating with students I did not have access to that part of the course. Description and analysis are therefore based on parts 1 and 3.

A characteristic of this course was that student teachers were expected to share their assignment outcomes and exhibit their creative work on the course web for peer reactions. The lecturer was keen to make students understand that there is no single right solution. Therefore she stressed the importance of sharing products to see the range of student teacher solutions, and also to correct possible misunderstandings. In a response to a student who hesitated to share her work on the course web the teacher said:

> The course is designed around the idea that you exhibit your work, otherwise I can't guide you. I also find it very important that you see each others' products so that you have a basis for comparison, and learn (Teacher, February 12 2005).
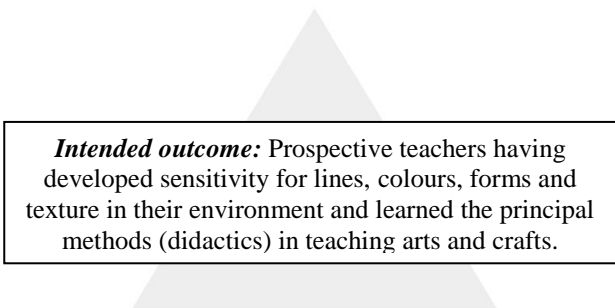
Mediating tools & practices			
Material tools	*Teaching methods as conceptual tools*		
Digital online tools	*Assignments*	*Lecturer's actions*	*Social practices*
WebCT tools used: Threaded discussion. Access to course documents e.g. syllabus, reading materials, assignment guidelines, roundup of discussions in text files. Sharing of assignment solutions; image-files and word-files sent as an attachment on the discussion web. E-mail for private communication; student-teacher, student-student.	Part 1: Working with ideas/colours and forms 6 assignments for developing sensitivity to colours and forms. Photos, drawings and reflective texts collected in a process portfolio. Keep a book of ideas to document ideas and stimulate the imagination. Part 3: Didactics. School observation and interview with teachers connected to practice teaching plus visit to second school. Discussion on WebCT based on articles on subject didactics, national curriculum and observations from practice teaching. An individual roundup for the portfolio.	Provided precise guidelines for how to work on assignments stressing that there is no one right solution. Entered the discussion to answer questions, direct and motivate. Gave collective feedback when assignments were completed. Gave feedback on each student product in the class in the midterm face-to-face session connecting the arts and crafts to subject didactics. Assessed discussion and portfolio.	Sharing of assignment solutions on WebCT. Participation in discussion on WebCT. Sometimes student teachers living in the same area formed groups and met for discussion and collaboration.

Subjects	*Object*
A class of 16 student teachers; all females; ages about 20-50; 8 holding jobs as teachers.	Exploration of natural as well as cultural environment by taking photos, working with imagery, drawing and experimenting with different textures. Curriculum of compulsory school in textile and didactics of arts and crafts. Observations of teaching in schools.

Intended outcome: Prospective teachers having developed sensitivity for lines, colours, forms and texture in their environment and learned the principal methods (didactics) in teaching arts and crafts.

Systemic institutional factors mediating actions of subjects		
Rules	*Community*	*Division of labour*
Two face-to-face sessions with two lessons in each, one in the beginning, one in the middle. Values regulating rules on communication: Emphasis on activity, creative thinking, independent methods of work, personal elaboration, carefulness. Emphasis on communication and sharing of ideas and assignment solutions. Emphasis on reflective methods and time for ideas to mature. Respect for pupils and their creativity.	Lecturer and enrolled student teachers formed the community. Supportive atmosphere, students are willing to help each other and explain if needed. Sometimes insecurity because of unclear messages or lack of contact with teachers, especially the second teacher not using the WebCT. Tensions because of that. Students felt it important to keep the same online space for the class all term between face-to-face sessions.	Student teachers handed in samples of their assignment solutions regularly. Teacher gave feedback and direction to each sample. Individual responsibility for assignment solutions, contribution to discussion, etc. No group assignments.

Figure 8.2 The activity system of the Arts and crafts course with student teachers as subjects

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The discussion tool was used for sharing outcomes, and images and texts were sent in as attachments on the discussion web. The images could be digital photos students had taken or drawings they had scanned or designed on a computer. Student teachers handed in web samples of their products steadily throughout this module. The lecturer entered the discussion every now and then to respond to questions, to give further explanation, to motivate student work on assignments, and to participate in the discussion. As a rule she gave general feedback to the class once a week on the samples shared online.

> I will try to answer your questions once a week. Each question is generally useful for more than the student who asked and I think that you can all gain from seeing other people's questions and my answers (Teacher, February 12 2005).

In the midterm face-to-face session students were supposed to bring all their products, regardless of whether they were finished or not, and the lecturer gave feedback to each student's assignment outcomes in front of the class, so the students could learn from the successes and failures of peer students. She used the opportunity to connect arts and crafts as a school subject with didactics, and brought up practical issues on teaching methods. A portfolio in paper format with all assignments was handed in for summative asssssment towards the end of the term.

In the third part of the course the object was to get acquainted with the national compulsory school curriculum in arts and crafts and learn about teaching methods and didactics of arts and crafts. This module was connected to a practice teaching component. Student teachers were expected to make an observation in the practice school and interview arts and crafts teachers to learn about teaching and learning methods. In addition they were asked to visit a second school to observe and interview teachers about teaching arts and crafts. Students were then expected to participate in online discussions on WebCT, organized around three issues. The first dealt with didactics of arts and crafts, the second the national curriculum, and the third focused on observations from the practice teaching. The discussion on each issue spanned one or two weeks in a five-week period. As a rule the lecturer did not enter the discussion until each discussion was finished. At the end of each theme she summarised and gave feedback to students. When two weeks of the period were left she entered in order to iterate the rules on student contributions and responses from the lecturer. After having discussed each theme students wrote an individual roundup from the discussion and

filed it in their portfolio. Assessment was based on activity in discussions and their portfolio.

The roles of the lecturer and students respectively were clearly articulated, for example rules about how and when the teacher responds to student actions; individual responsibility for assignment outcomes and contributions to discussion, since there were no group assignments. However, the teacher emphasized the value of social practices by setting rules on sharing products and ideas and contributing to discussion as an obligatory part of the learning process. Communication had a role to play in supporting the community of learners.

> Keep in mind that you are talking to the group but not submitting an assignment to me. I certainly take into account your contribution to discussion, like everything else, in the final assessment (Teacher, March 18 2005).

Explicit values, stated in the course description and regulating the instructional theory of the teacher, emphasized activity, creative thinking, independent methods of work, personal elaboration, and sensitivity. An emphasis on reflective methods, and time for ideas to mature, were indicated in the messages from the lecturer to the students. She overtly wanted to implant respect for pupils and their creativity, which she believed was of importance in all teaching, as well as important in supporting pupils in developing sensitivity. In the same way she was keen to enhance a supportive atmosphere where peer students were willing to help each other and explain if needed. Students' comments on the website implied that she was succeeding. Sometimes students were confused and did not understand what was going on. In such instances it was quite common that another student showed up offering help:

Dear Anne

> This sample cloth is what we got during class, if you weren't in that session with Christina. Aren't you the Anne who was sick the night before and had to take the ferry to the Vestmann Islands the next day when we were doing machine sewing and form? You were on the final stage of the white skirt!

> Anyway, this assignment is nr. 3 on a paper titled needlework I with Christina. She gave us textile and yarn to start with. If you can't figure it out don't hesitate to ask us. This discussion is so we can help one another. Regards, Heather (Student, January 20 2005).

Student teacher comments showed that they really seemed to appreciate sharing their work with their peers:

Wow.

> Great ideas, I had not thought of it that way. There you see how important it is to have an opportunity to communicate. Just to see what the others are doing is generating one's own ideas. Good luck. Best regards, Jenny (Student, January 19 2005).

Insecurity and tensions sometimes came up because of unclear messages or lack of contact with the teacher. This seemed to be especially troublesome when the second teacher came in to teach a specific module and did not use WebCT for communication. Although she could be contacted in another platform, used for communication with on-campus students, this was confusing for the students and they complained about technical problems in that system. It seemed to be important to keep the same online space for the class throughout the whole term. The problems caused by the tensions that came up because of this were solved because of a very supportive peer community, where student teachers cared and did not hesitate to help in all kinds of ways, as is the case in the following example.

> Hi, we got the assignment guidelines in the face-to-face lesson – don't you have them? If not I can copy it and send to you. I can also try to take photos of e.g. the sample and send to you – I have a digital camera but I don't know how to save the photos on the computer, but I am going to learn it anyway so then I might be able to help you (Student, January 31 2005).

However, like in the ethics course, there was a danger of misconceptions when the teacher did not get involved in time to provide appropriate professional guidance. The lecturer's rule about not interfering in the discussion while it was going on, but having only a general response when it was finished, could be misleading. The lecturer intended to enhance the independence of students and weaken her control in order to give the students increased agency to take responsibility in their learning. This was her vision for ideal practice and is accepted as such by the students. However, in reality it could be more like a lack of sufficient contact with the lecturer, sometimes leading to misconceptions and causing insecurity among the students, especially during the second module with the teacher not using WebCT. The supportive atmosphere in the community and the access to WebCT as an online platform for communication all the time helped in overcoming such tensions.

The lecturer found the form of feedback she used problematic, i.e. the collective responses to the whole group but not to individual students, since the student teachers had difficulties in transferring the general group feedback to their personal work with

products. Because of this she thought the face-to-face sessions were crucial for teaching success in arts and crafts distance courses (Informal interview during face-to-face session in March 2005).

8.2.3 Science and creative art in lower primary school teaching

The course Science and creative art was part of the lower primary school teaching specialisation. Around 50 distance student teachers were enrolled in the course, which was taught by five lecturers, each of them responsible for his or her area of specialisation, and one of them functioning as administrator. The focus was on science teaching and learning for the lower primary in primary schools. The integration of music and visual arts was seen as an interesting way of approaching the subject of science with young pupils. The goal of the course was that prospective teachers would be competent in teaching science in the lower primary school, able to use the everyday environment and experience of pupils, and able to explore the natural environment using creative art methods.

Two of five lecturers were specialists in music and visual arts respectively, and assignments related to their teaching counted 40% of the course. The other lecturers were two early years specialists in teaching biology and one in teaching physics. The lecturer in charge directed work related to young pupils' ideas of the human body, including both theoretical and empirical investigations, along with an inquiry of the national curriculum for primary schools, together with learning materials. This was supposed to result in designs of teaching plans and the assignment counted 30% of the final grade. The other biologist specialized in environmental studies (ecology) and taught a small module on environmental teaching. The physicist taught the last module on physics experiments with young pupils using the everyday environment. The two last modules were assessed as part of the process portfolio handed in at the end, reporting on all the work done throughout the course.

The course started with the visual arts module where the focus was on observing nature; first by reflecting on and registering childhood memories of nature using both texts and photos, secondly developing a sensitivity for the beauty of nature by taking photos, and thirdly creating artwork in nature and documenting it in photos and text.
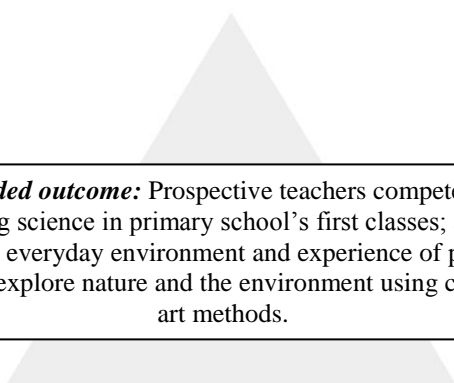
Mediating tools & practices			
Material tools	Teaching methods as conceptual tools		
Digital online tools WebCT tools: threaded discussion access to course documents, syllabus reading material and guidelines. Sharing of assignment solutions, image-files and text-files sent in as an attachment on the discussion web. Email within WebCT for private communication.	**Assignments** 20% Music related experiments. 20% Nature and visual arts: a) photo and short text reflecting on childhood memories from nature, b) taking photos in nature, c) create artwork in nature and record it. 30% Ideas of 6 year olds of the human body; a) observation and interview with 2-3 children b) make a teaching plan. 30% Portfolio: reflections on face-to-face sessions, student contribution to online discussion collected, and reflection on the learning process during the course.	**Lecturers' actions** Assignment guidelines. Explanations to enhance understanding; general praise, motivating messages. Feedback on assignments on the discussion web focused on the whole class or responding to ndividuals. Participation in discussion: different frequency and mode, general - individual depending on teachers. Modelling experiments in small groups in the face-to-face sessions.	**Social practices** Doing experiments with children. Share products online. Contribute to a discussion. In some assignments optional to work alone, or in groups of two or three.
Subjects: A class of about 50 student teachers, one male.	**Intended outcome:** Prospective teachers competent in teaching science in primary school's first classes; able to use the everyday environment and experience of pupils; able to explore nature and the environment using creative art methods.		**Object** Didactics of natural science, theories on children's learning in science, the science curriculum, teaching methods, learning material, value of environmental teaching and subject integration e.g. creative arts and natural science.
Systemic institutional factors mediating actions of subjects			
Rules One face-to-face session on campus, 8 lessons during three days in the beginning of the term, students divided in several groups. Teachers had different rules regarding how they communicated with students online. Values regulating rules on communication: Importance of sharing products of learning and enjoying and learning from different outcomes.	**Community** Student teachers and five lecturers: Two biologists, a musician, a visual arts teacher and a physicist. Peer support important, helpful atmosphere and sometimes detailed feedback on solutions. Students enjoyed sharing their solutions and were clever praising each other. Too many lecturers and too many assignments at the same time were confusing and lack of contact with lecturers caused insecurity and disturbances.	**Division of labour** Discussion, sometimes in the whole class, sometimes in smaller groups. Individual assignments as a rule shared with the class, sometimes a smaller group. Cooperation optional in some assignments. Complicated organization and many teachers sometimes causing insecurity among students on what they were supposed to be doing.	

Figure 8.3 The activity system of the Science and creative art course for lower primary with student teachers as subjects

The lecturer was the same as in the arts and crafts course, and used similar rules, valuing the sharing of products and responding to the students online in a general fashion rather than individually. The first assignment on memories turned out to be a powerful way to enhance group sentiment. The student teachers were based all around the country and when they brought up their childhood memories related to special places they often found common connections to places and even common origins.

> I have read all the descriptions here and find it enormously interesting to see from where they originate. I think that this is going to empower us as a group, now we can connect many faces with names, but this is something more than that. I just wanted to express my pleasure with this assignment. Regards, Maggie (Student, January 19 2005).

This assignment of working with their childhood memories was supposed to bring student teachers closer to the mindset of children with whom they were supposed to work as teachers. The sharing of photos seemed to arouse sentiments when students admired each other's photos with personal responses, sometimes detailed with a professional touch. The lecturer also expressed her happiness with work well done (Teacher, March 2 2005).

The music teacher supervised a module she called *Natural principles of tones and sounds* that spanned two weeks, squeezed in between the second and the third assignments of visual arts (February 6-18, 2005). The students were asked to choose three of four experiments they would try out with children. The tools necessary to carry out the experiments were assumed to be available in the everyday environment. After carrying out the experiments, students shared their experiences online on the discussion web. The discussion platform for communicating on this theme was open for two weeks and the lecturer was very active in responding. In 35 entries by the teacher during the period (which means two to three entries a day) she corrects and directs; praises and motivates; and gives professional guidance, connecting concepts in music and the natural sciences. She generally responds personally to each student, with the assumption, however, that her responses will be useful to others as well.

> Hi. Good to hear that the assignments are enjoyable :-)
>
> It is probably correct, in regards to the glasses, because they function as a soundboard that boosts the tone. As for the string in the last experiment, it is similar to the difference between a violin string and a base string, i.e. the shorter (and actually finer) the higher the tone.

> And to finish up, the sound waves form vibrations causing the salt to bounce and the higher the frequency the more the vibration (Teacher, February 9 2005).

In carrying out the experiments student teachers could work with their pupils if they were teaching, or their own children and families if they so wished, and examples of both were seen on the online platform.

> Now I'm surprised – is it possible that the differing movement of the salt affected by your daughter's and husband's voices depends on the strength and not the pitch? My books say the higher pitched voice should cause more vibration? Not sure!!
>
> Entertaining hobby for the family and hopefully you will use this experiment in your teaching. Maybe you can come up with some more (Teacher, February 10 2005).

Since most of the students were adults with families, they appreciated the family friendliness of the assignments, both in this module and the visual arts module.

> Hello. Apparently the assignments we have been doing in this course are very family friendly. Mothers have been good about taking their children and husbands with them on various nature study trips and have enjoyed it. As well as giving concerts at home with the kitchenware. Lots of fun, lots of joy. Regards, Joe (Student, March 2 2005).

The module on environmental and outdoor education spanned from March 8-18. Student teachers were given an assignment to work on and were to share the results on the discussion web. Since the lecturer got sick she did not give feedback but sent a message telling students she would respond when she had recovered. The assignment was to be assessed as part of the portfolio at the end.

Parallel to the two modules on using artistic approaches to teach natural sciences and the environmental module, students were supposed to start preparing an assignment on young pupils' conceptions of the human body, which would count for 30% of the final grade. This module was supervised by the lecturer in charge of administrating the course. Student teachers were to read and discuss the national curriculum on science for the lower primary in primary schools, study constructivist theories on child learning, and get acquainted with learning materials in books as well as on the web.

Four themes, planned for in discussion threads as explained below, led the dialogue:

First theme: The curriculum for the lower primary and subject integration, to be worked on January 13-24

Teacher gave directives on reading material and elaboration of a teaching idea student teachers were supposed to put forward and share online. There was no discussion planned for shared ideas. The teacher entered the discussion space when students had sent in their ideas, saying that she was reading their interesting outcomes and that she would soon respond to them privately. The discussion entries from students reflected confusion because of two assignments being worked on simultaneously, in addition to there being insecurity about the assessment of the assignment.

> Hi. I am confused about all this, when shall I hand in assignments. This assignment for example is not on the schedule for assignments to be handed in and therefore it becomes confusing. Where did you find information about this assignment that is to be handed in now? Regards, Liz, Denmark (Student, January 23 2005).

> I think it is rather strange to hand in something half-baked since we have done so many solid teaching plans. How will this be assessed? Is it maybe just pass/fail on whether or not we submit it? Just wondering? Regards, Maggie (Student, January 23 2005).

Second theme: Constructivism, January 24 to February 4.

The group was divided into four groups of 11 or 12 students. Each group got reading material to work with and to discuss in a closed discussion space, open only to group members. When the discussion was finished all spaces were opened for students to read the results of other groups. Since the reading material was usually in English the students felt it helpful to have access to discussions and extracts in Icelandic.

Third theme: Online learning materials and the use of so-called concept cartoons in teaching, April 4-21.

Students were asked to have a look at websites presenting teaching ideas and learning materials. They got two assignments and their results were shared on the discussion web but no discussion was required. The teacher did not give feedback online but the results were assessed along with other material in the process portfolio.

Last theme: Physics, spanning the two last weeks.

The physics lecturer had met the student teachers in the face-to-face session in January, with a session on how to do experiments with young pupils. Student teachers were supposed to share their experiences of doing experiments with children, as well as read and respond to contributions from their peer students. Inferring from students' responses they enjoyed sharing ideas, and found it useful for collecting ideas for use later in teaching.

> This is very nifty. The kids must have liked it a lot. This one I will put in my idea bank, like so many other things that have been posted on here. Thanks for that ;), regards, Sophie (Student, May 1 2005).

> You've got very good ideas Lilith and good luck with the experimental days. It really is true that this course has generated ideas for a whole book of experiments. Regards, Rebecca (Student, May 3 2005).

Communications online included contributions from around 50 student teachers and five lecturers. The structure of the course was complicated since there was sometimes more than one assignment to be worked on simultaneously, and students had to communicate with different lecturers who might have different rules regarding student-teacher interactions. This caused tension among students on occasion (and presumably sometimes among lecturers as well), when students felt that having to work on many assignments at the same time was confusing, as well as feeling that messages on assessment and grading of assignments were not always coordinated or clear.

> It is so uncomfortable to have so many teachers in the same course. […] I have been going round in circles, and have come to understand that I really have to work hard to understand which way is up, so that I don't miss deadlines! (Student, January 21 2005).

Sometimes lack of contact with teachers caused tensions, like when the physics teacher in the last module did not show up on the course web until five days after the two-week module should have started. However, the students' reactions were interesting. Some of them took the initiative to check if he had forgotten that it was his turn in the course. The smiley at the end of the former comment, below, does not reflect irritation, which might have been expected, but rather shows tolerance of the situation.

> It would be incredibly good to know exactly what we are supposed to do here. It is April 25 already :) Regards, Hilary (Student, April 25 2005).

> I totally agree. I log in several times a day since I am keen to finish this course.

What is the name of the teacher in this part again? Can't we email him? He has obviously gotten carried away somewhere. Regards, Sue (Student, April 25 2005).

The lecturer, who had modelled the experiments they were to perform in the face-to-face session, entered the web April 26 with directions and students started working without complaint. As a matter of fact they were happy with the assignments, as reflected above, as with the course in general.

In this course the lecturers, as a rule, entered the discussion web in the beginning of their module and gave directives on how to work on assignments. Then they returned with general feedback when the discussion on each theme was closed. The music teacher is an exception, as she participated very actively in the discussion with two or three entries a day during her module, giving personal responses to student experiments. In such circumstances the time allocated for university lecturers in distance teaching is an issue that needs to be taken into consideration. In conventional campus-based teaching the lecturers' time is regulated by lessons on their schedule, where lecturers meet their students in classrooms, whereas in distance teaching they have to monitor an online classroom where there may be some activity constantly.

The complicated structure, and the number of lecturers, seemed to be disturbing in this course. Since there were no coherent rules on frequency and mode of communication within the group of lecturers it could be a real challenge for students to keep up with what they were supposed to be doing at each time. In fact, the lecturers might also have been confused. There was only one face-to-face session in the beginning of the term, so students and teachers had to rely on online communication to sort out and clarify messages and correct misconceptions. In this case coherent rules among lecturers would have been supportive.

Despite this, based on the online communication, it was evident that peer support and a supportive atmosphere were important and helpful when students were dealing with insecurity and tensions that arose. Students' postings on the course web revealed that they enjoyed sharing their solutions, and were good about praising each other and sometimes giving each other detailed feedback on solutions. In addition, they were helpful when practical problems came up.

In general, student teachers seemed to be enjoying the kind of assignments they were supposed to do in the course, which compensated for the confusion in finding out what to do and when. It is interesting to see how well the lecturers have designed the student assignments, in order to ground their theoretical studies in practical experience in the different subjects that were covered in the course, and taking into account their situation at home, either as teachers or parents.

8.3 The experience of Lilith, Sarah, and Sam as students in the distance programme

In this chapter the experience of Lilith, Sarah, and Sam as students in the programme will be accounted for by constructing descriptions of each of them separately based on the interviews with them during fieldwork. The unit of analysis is the activity system of the programme and the triangle model of activity system is used for directing the structure of the description like in the former chapter describing the courses.

8.3.1 Lilith's experience as a distance student

Objects of the programme activity

Lilith decided to complete her B.Ed. degree in five years, instead of the usual four years. After the first two years of general courses, such as pedagogy and curriculum studies, she chose primary level teaching as her specialisation. In her optional courses she selected visual arts and courses emphasizing creativity. She was enrolled in the course *Science and creative art for lower primary*, analysed above. She thought the introductory courses tended to be somewhat dull and boring while she was taking them, but afterwards she found out they had been useful after all. Then again, there were other courses that opened up new ideas for her right away, she said.

> Yes, then when you take courses that change how you see things. It opens up another dimension for you, and you think: I can do that with the kids (Interview, April 2005).

In general Lilith criticizes the courses for lack of subject integration and holistic approaches, which is what is preached, but in her opinion not practised.

As an exception to the rule Lilith got permission to take all her practice teaching in her home school, because her child had a developmental deviation making him especially vulnerable to changes in his surroundings.

Mediating tools & practices			
Material tools	**Teaching methods as conceptual tools**		
Digital online tools Lilith felt that WebCT for online communication was as necessary as a classroom. Participation in threaded discussion a good way to learn. Audio files with lectures supported with PowerPoint very good. She liked how students were supposed to use digital cameras. PowerPoint for handing in student products. Students shared products online. MSN used for instant messaging between students. Internet search for accessing all kinds of materials.	***Assignments*** Lilith felt that participation in threaded discussion a good way to learn, but unfair when the discussion is obligatory without being part of the grade. Assignments that can be used in classroom practice. Keeping portfolio recording the process of the studies. ***Practice teaching*** Lilith took all practice teaching in Waterside. She was critical on how the practice teaching was planned for school-based student teachers. Different rules needed.	***Lecturer guidance*** Lecturers' support depended a lot on individuals. Professional guidance sometimes excellent sometimes lacking. Audio files with lectures very good support. ***Face-to-face sessions*** Depended on subject how useful they were, very useful in oral performance and visual arts. Sometimes useless; especially lectures in big auditoriums. Bad organization a problem. The face-to-face session in the midterm more useful for lecturers than students.	***Social practices*** Group assignments, working with peer students in the district or online. Personal communication with peer students using MSN instant messaging. Discussion and sharing of assignment outcomes on WebCT. Feedback from peer students. Workshops in arts and crafts courses in face-to-face sessions.
Subject Lilith: A school-based student teacher in her thirties, married mother of one child aged about 10-13. Started in the programme fall 2002, finishing spring 2007.	*Intended outcome:* Qualified teacher with theoretical knowledge and practical skills, with compulsory school teacher		***Object*** First two years: diverse general courses; dull but useful. Primary level teaching as area of specialisation in third year. Practice teaching in Waterside School.
Systemic institutional factors mediating actions of subjects			
Rules As a rule the distance programme was planned for four years. Flexibility in rules allows for longer or shorter time. Lilith took five years to finish. Exception from the rules: Lilith got permission to take the practice teaching in her home school because her child was vulnerable to her absence. Lilith was critical towards the rule that tutors from the university did not visit the distance student teachers as they did in regular student teacher practice. Schedule for face-to-face sessions inconvenient for students who were teaching. Individual teachers had different rules on how they communicated with students which affected their professional support.	***Community*** Lilith said it took the first year to form the community of the distance learners. Online communication needed time to develop; face-to-face sessions necessary support for online communication the first year. Student teachers were learning to collaborate; independence and initiative developed a lot with time. In face-to-face sessions in visual arts students got an opportunity to see each other's products and talk about their ideas. MSN instant messaging supported personal communication between students.	***Division of labour*** Different what lecturers did in the online modules. The feeling for their presence online different; 'with some you get the feeling that they are always there while others it is like they throw you the documents, and there you are, help yourself'. Lecturers exerted their status as professionals differently, from strong control to very weak. Student teachers have different agency and responsibility depending on teachers. Lilith felt it was important that lecturers used their professional authority to guide students but disliked it when they use their status to patronize students when addressing them.	

Figure 8.4 The activity system of the distance programme with Lilith as subject

She got an experienced mentor, one of the teachers in Waterside, and took the practice teaching with a different class than her own. She would have preferred to be able to take some of the practice teaching with her own class, as she thought it would have been useful to have the local mentor and a tutor from the university to give her feedback on her general practice. Because of expense, tutors from the programme generally did not visit the distance student teachers, as they did for regular student teacher practice teaching. Lilith was critical of this rule, pointing out that it would provide important support to the school-based distance students.

Interrelation of the theoretical and the practical

School-based distance students like Lilith are at the same time practitioners in the local schools and students in the teacher education programme. Having experience as school teachers, they can bring practical experience to the programme, and conversely can bring academic knowledge from the programme to the schools. Lilith reflected on the interplay of theoretical learning and practical experience.

> There are so many concepts, just for instance, the curriculum course, when we were learning about individualized curriculum and national curriculum and identifying things in the national curriculum. When I first started at the school I found it awfully confusing. But then having that experience, when I started in the curriculum course it was all so easy.

> All the same, there were an awful lot of concepts to learn, your head would start to hurt. Then I started to understand better what was being talked about around me in the school, and at the same time I understood better why I had goals in my teaching plans, like I did. I had a superficial understanding of this in the school, which helped me gain a deeper understanding of the learning content at the university (Interview, January 2006).

Lilith used many assignments and ideas she was learning about in the programme in her teaching. By trying them out, she got an opportunity to ground the theoretical knowledge from the programme in her practice in the school. As a class teacher she had a space where she could try out teaching methods and content simultaneously as she was learning about them in the programme. She participated in the course on science and creative arts, in which the students were supposed to share all their assignments on the course web as the course proceeded. At the end they were supposed to collect the material they had shared, including contributions to discussion, in a digital portfolio to be assessed on an individual basis. An analysis of her portfolio clearly showed how keen she was to try out assignments and ideas presented in the course with her pupils in

the classroom. There she described, usually in detail, what went well, what mistakes she made, and how she learned from the exercise how to do it better next time.

> We started to collect insects and examine them in a microscope as a part of the science curriculum. Then we collected seeds from the fruits that the children brought in their packed lunches. We planted them in empty milk cartons that we had collected after the lunchbreak. The seeds grew well in the windowsill. The pupils sometimes forgot to water the plants and in the beginning I made the mistake of watering the plants for them. When some of the plants began to be a bit limp we discussed what could be the reason for that. Some mentioned that they forgot to water them but then one pupil said: No, I have almost never watered mine but it is ok! I had to tell them that I had watered the plant for him, but decided then that I would stop watering the plants for them so that they would have the right preconditions for their learning (Portfolio, May 2005).

This is one of many examples in her portfolio where she contributed with her experience as a teacher, linking the theoretical knowledge presented in the programme to her practice with pupils. Her contributions were appreciated by other students in the course, and her reflections on how she applied what she had been learning in the programme showed how she had been improving her conceptual understanding.

Digital online tools and teaching and learning methods

Lilith felt that the WebCT as an online platform with the possibility to communicate as well as access and share materials was as necessary for distance students as a classroom is for conventional students (Interview, April 2005). She recalled when certain teachers told the students, when introducing the course in the face-to-face session, that they were not going to use WebCT. The students in the auditorium went mad and wanted an explanation, because they felt they needed it as much as on-campus students need a classroom.

During the years 2003-2005 teachers increasingly used recorded lectures, and published audio files supported by PowerPoint in WebCT. Those were either recorded, live, on-campus lectures or recorded especially for the distance students. Lilith thought they were very supportive, either way (Interview, April 2005). She mentioned the importance of hearing the teacher's voice and thought that more teachers in the distance programme should use this method, and needed to better learn the technique.

> There are always certain teachers who are technophobic … the technique exists and the technique is the tool we need to use but it isn't fully taken advantage of (Interview, April 2005).

Lilith used Internet searches for accessing all kinds of supporting materials for her studies, and felt like the teachers should in many cases have more knowledge of what was accessible online. Instead of using material available on the Internet they were often using bad photocopies, which students were supposed to buy, while the same material might be available for free on the Internet.

Lilith liked the way students were supposed to use digital cameras in their assignments, and said that PowerPoint as a format for submitting student products was recommended in many courses. She described an example from a course on arts in schools.

> There it is well used. We use the technique both to work on the assignments and to hand them in. We use digital cameras, we scan pictures, and this is integrated into the assignments. We were supposed to take photos but could choose if we used traditional cameras and scanned the photos or if we used digital cameras and put the pictures in directly. I did both actually. Likewise we always sent the poems we were writing by email (Interview, April 2005).

Lilith considered participation in threaded discussion a good way to learn. She explained how they used the discussion platform to connect the theoretical content they were dealing with in the courses to their environment as teachers in schools (Interview, January 2006). Her contributions to the discussion in the course on science and creative art show how she was actively participating, and keen in giving peer students both personal and professional feedback when they shared their assignments online. Although she liked the discussion form she thought it was unfair when discussion was obligatory without being part of the grade, which sometimes was the case.

There were more ways for distance students to use information technology. Lilith talked about how they used instant messaging such as MSN to have somewhat less formal contact. With MSN they could see who was online and contact them through an instant message.

> We weren't necessarily working together, but just nice to have a chat. It's kind of like meeting people in the hallway on campus (Interview, April 2005).

But she also explained how they had used MSN as a meeting place to communicate in relation to assignments.

> In one course our group was living all over the country, and if we had to discuss the assignment it was just like: Let's meet tonight at this time on MSN, five people working on our assignment there (Interview, April 2005).

This is an example of how the distance students were developing their use of the online technique, by picking up new tools and adapting them to their needs, which in this case was supporting personal communication and in turn sustaining the distance student community.

Lecturer student communication

Lecturers differed as professional guides during online sessions. Lilith said that distance students felt that the presence of teachers online differed a lot.

> She [name of the teacher] managed it so well and you got the feeling that she was concerned about you: while with others it is like they throw the documents at you, and there you are, figure it out for yourself (Interview, April 2005).

As for the online discussion it differed how much and in what way the lecturers took part in the discussion. Lilith described three different examples of how lecturers communicated with the distance students online.

Example 1:

> And there they managed very well you see. The lecturer was really motivating, which didn't take her long, you were immediately interested. And the assistant teacher had such good control of WebCT so as soon as you asked you usually got an answer the same day. That's wonderful. There they had perfect control. But we did our assignments. In a way it could be said that we [the students] had too little agency because we got such clear instructions: You are supposed to do this and this in that way, interpret this and that. So they used the technology very well in this course. If that's done well then – it's a bit of a good feeling sometimes to let go of control. But then you have to trust the teacher (Interview, January 2006).

Example 2:

> Then there are lecturers who are such sticklers for facts, who often misread what you write, get mad because of something you have written in WebCT, and just lose their temper completely, you just get dumped on. And yes, just yell, and send completely misguiding messages like: Don't be afraid to ask, and then you ask, and then we get like: 'Why are you asking about this?' reactions. Of course you ask if you don't know. If we had gotten an explanation before then we didn't understand it. Then you need to reformulate and not just repeat. And you quickly get the feeling that the teacher doesn't trust you. But the teacher isn't in control (Interview, January 2006).

Example 3:

> But then there are lecturers who make it clear from the beginning that we are going to contemplate. […] It is different how people react. People say: What am I supposed to do? Then I say: you are supposed to contemplate. And then you

have freedom and can put in whatever comes to mind. And then he sometimes responds […] People get really offended by it. But he is challenging our understanding and there we need to take responsibility; I am going to give my opinion in this discussion. And when it gets going properly the groups become like really dynamic […] like what about this and that and yes what – and it becomes so alive. Yes, sometimes he needs to keep a better eye on what is going on, he should definitely be more active, come online more often. But he says he is afraid of too much control and directing our discussions so that we would try to do what we think the teacher would like us to do. I understand his point of view. So we dig through it on our own. But he almost has too little control (Interview, January 2006).

Lilith thought it was important for lecturers to use their professional authority to guide students, but disliked it when they used their status to patronize students when addressing them. It sometimes happened when students asked about something that the lecturer had already covered, and then he/she responded like the student was an idiot (Interview, January 2006).

Lilith highlighted the importance of teachers' professional guidance when she described arrangements she liked.

I really like it when the teachers encourage us to contribute to web discussions with our own experience. […] It gets the discussion going. And then the teacher has to interject and bring the professional side into the discussion, link it to the learning material. And bit by bit we start to do it ourselves and say like – I was reading this article and then I saw it was related to that and started to think… It is important when the teacher realises this. But in the beginning we need freedom to talk about ourselves, to get a feeling of owning the space (Interview, January 2006).

Different modes of communication gave rise to tensions and disturbances in the community of the programme. Weak teacher control gave students agency to participate in knowledge construction, space to be creative, and agency to collaborate and communicate in accordance with rules they have agreed upon themselves. But if teacher control was too weak it could deprive students of professional guidance from the teacher. In the third example described above, teacher control was weak and students seemed to have freedom, both regarding selection of content and how to work on it. The lecturer reiterated that the students were supposed to be responsible for their studies. In this case, though, it was difficult for the students to realize what was legitimate and acceptable as a contribution, and as a consequence they became insecure and frustrated.

In the second example Lilith described the the boundaries between students and lecturers as strict; students felt that the lecturers were tough on facts, which indicated

that they saw their role as the holders of the truth, clearly demarcated from the role of the students. The quote points to that the lecturer was using different manners of communication with the students than the students perceived as the accepted mode in the distance community. The lecturer did not follow rules on manners and respect, and students experienced distrust in the way she/ he addressed them. Lilith said that students were critical of authoritative lecturers when they used their authority to constrain students' agency. When lecturers talked to students in an authoritative way, like in traditional teaching, it often upset the students who did not accept the form of communication. However, in the first example above, students perceived clear messages on the hierarchical roles of teachers and students, and no doubt about the lecturer being in control as a professional. At the same time, regarding personal communication, students felt like they had easy access to the lecturers who would answer quickly and carefully and address them as students who are keen to learn. In that way they created trust between students and teachers, which made the students feel good.

Face-to-face sessions and development of a community

It was Lilith's opinion that it had taken a long time to form the community of distance learners. She explained how students had to learn to communicate on WebCT in the beginning, and how the collaboration became smoother over time when individual students gained independence and learned to take initiative.

> It takes the first year to learn how to communicate on WebCT. In the beginning you see, it is either people that enter the discussion excusing themselves, you see, I'm not saying this, or that, but…. And then someone says something that upsets everything. Then later in the course someone says like: hello, what are you getting excited about, we're just talking here. We are not trying to offend each other. We just have to take it as a given that we are all learning here, we are putting our opinions forward but … yes we need to watch how we say things.
>
> And this is very much in the discussion and that is why during the first year we need to meet. This one maybe said that, and you meet her and she says; I didn't mean it that way you know. And the teacher meets some of the students who have been so why, why, why, and just noisy on WebCT. Then the person turns out to be very likeable and sweet. So you see, the first year you are learning to communicate, because online communication is so new to most of us. […] and then right away in the second year then WebCT has become so strong – and the discussions there (Interview, January 2006).

Lilith explained that in general the distance student teachers feel that they are part of a supportive community of learners, collaborating and sharing outcomes that will be

useful for them as teachers. When reflecting on one of the courses Lilith felt that all the assignments had been useful, and that she will use not only her solutions in the future but also ideas from her peers. Lilith's descriptions suggest that the community of distance students was an open and collaborative culture, where the WebCT had an important function as a platform for communication.

Lilith felt that what supported the students in coping with how to be distance students, including learning to communicate online and becoming a community of learners, was their meeting on-campus in the face-to-face sessions. She described the importance of both formal and informal settings; the informal with regard to meeting and getting to know fellow students, and the formal for meeting the teachers in class-size groups for discussion. Conversely, she complained about the uselessness of lectures in big lecture rooms.

> Sitting in a lecture room getting transparencies that you know you will be reading on the screen in a while, listening to the teacher reading the text on them. Some teachers are just saying exactly what is written on the transparencies. So it becomes a real waste of time. But maybe the teachers think they are really delivering the message, they are so used to this format that if they don't do this maybe they feel like they aren't doing their job (Interview, January 2006).

After students started taking electives the face-to-face sessions were used more for meeting in small groups. Lilith felt they were more supportive for their studies, but evidently it depended on the nature of the subject.

> The only face-to-face sessions that have been really useful were in the course on oral performance, really useful. And also the course on arts and crafts, because we got the opportunity to look at what other students had been doing and to talk about the ideas behind it and things like that (Interview, April 2005).

Although Lilith acknowledged the usefulness of face-to-face sessions she was critical of the time in which they are planned, disrupting the preparation of the school year. She also felt like the midterm sessions were more useful for lecturers in the programme than for student teachers. She explained how schedules for the face-to-face sessions were inconvenient for school-based students. Those living in the countryside have to pay expensive travel fare. Besides, time was valuable, especially when they had to get a substitute teacher to teach the class at home, and pupils were vulnerable to changes. Lilith expressed the view that the face-to-face sessions need to be better organised so the student teachers did not feel like they are wasting their time.

And a large part of the distance student teachers work as teachers, and so it's ridiculous that this isn't taken into account when face-to-face sessions are scheduled, and have the schedule tightly packed, and use the weekends so that we can take the Friday afternoon flight after our school day and then spend Saturday, Sunday and maybe Monday, and catch the later flight back Monday night so we could be in the school again as soon as possible. […] - We carry such a precious cargo (referring to the pupils in the classroom) (Interview, April 2005).

Both student teachers and principals in the local schools emphasized that the time schedule should be reconsidered with regard to those school-based student teachers so that it would not interfere with sensitive times in the schools.

Donald, the principal in Waterside, said:

Repeatedly we are losing the teachers during the most important time of the school year, which is the end of August. That's when people come back to work after their holidays, the school activities get going, we're planning and preparing teaching, people are receiving new pupils and getting into the rhythm of things. There are courses held to prepare the inner work of the school, methods, procedures, etc., which are very important, not to mention for new teachers. And we lose them year after year during these days, which is very inconvenient (Interview, April 2005).

The planning of the face-to-face sessions certainly disturbs the daily practice in the schools where the distance students teach.

8.3.2 Sarah's experience as a distance student

Objects of the programme activity

Like many student teachers who taught alongside their studies, Sarah took longer than four years to finish her B.Ed. degree, starting fall 2002 and finishing spring 2008 (Figure 8.5). The first two years she took diverse general courses and in the third year she chose arts and crafts education as her specialisation. She was enrolled in the arts and crafts course analysed in Chapter 6.3.3. Sarah did her first year practice teaching in Waterside School, and she explained how important it was as a model for her teaching, since it was so different from what she had seen before. As a matter of fact, her mentor teacher in Waterside had a very good reputation as a teacher and in 2005 she got the President of Iceland award as an outstanding teacher. For later practice teaching, as an exception from the general rule, she got permission to teach her own class with a teacher from Coastline as a mentor. In that instance she regretted that she missed out on the opportunity to see another teacher's practice.
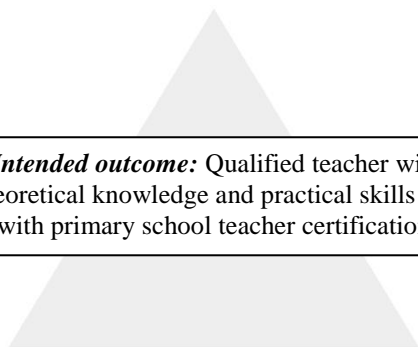
Mediating tools & practices			
Material tools	**Teaching methods and conceptual tools**		
Digital online tools WebCT platform for online teaching and learning. Threaded discussion. Sharing of documents. Sound files with lectures supported with PowerPoint. Searching for support material. Accessing learning material; text files, image files, sound files.	***Assignments*** Sarah felt she learned most from practical assignments she could use in the classroom. ***Practice teaching*** First year in Waterside School very important; the mentor was a model different from what Sarah had seen before. Second year: teaching her own class with mentor from Coastline.	***Lecturer guidance*** Teachers support depended a lot on individual teachers. Collective or personal feedback, exact or vague guidelines, easy to reach or forgetting the distance students, reasons for assessment detailed or only a character. ***Face-to-face sessions*** Especially valuable in arts and crafts specialisation. Sometimes useless, expensive travels, time-consuming.	***Social practices*** Group assignments, working with peer students in the district or online. Discussion and sharing of assignment outcomes on WebCT. Group discussion on phone. Workshops in arts and crafts courses in face-to-face sessions.
Subjects Sarah: School-based student teacher in her thirties. Single mother of one child. Starting in the programme fall 2002, finished spring 2008.	***Intended outcome:*** Qualified teacher with theoretical knowledge and practical skills and with primary school teacher certification.		***Object*** First two years: diverse general courses. Arts and crafts as specialisation, elected in the third year. Practice teaching.
Systemic institutional factors mediating actions of subjects			
Rules Like many student teachers teaching alongside their studies Sarah took six years to finish the B.Ed. Rules on practice teaching expected student teachers not to take the practice in the school where they were teaching. These rules are sometimes adapted to personal needs. Sarah got permission to take the practice teaching in her home school with her own class except for the the first year. Individual teachers had different rules on how they communicate with distance students. Lack of configured rules gave rise to tensions in the community.	***Community*** Sarah felt isolated in the beginning and found it difficult to communicate with peer students when they met only in the big auditoriums in the face-to-face sessions. She preferred when students meet in class-size groups. That was the way the face-to-face sessions were planned when students start their specialisation. Sarah liked how the students got to know each other and work together in workshops in arts and crafts. She appreciated the feeling of personal contact and belonging to a group. Teachers gave personal feedback on assignment in the face-to-face sessions in arts and crafts.	***Division of labour*** Lecturer's role as professional guides unclear. It was different how much freedom students had to elaborate on the assignments, depending on the teacher. The role of the lecturer versus the role of students sometimes unclear. Some lecturers kept their distance from the student teachers confirming the hierarchical status. Others were personal and encouraged student teachers to make personal contact whenever they felt they need help. Sarah felt like some lecturers tended to forget the distance students because they were busy with the students on campus. She had the feeling that it would be better if the teachers were either teaching in the distance programme or the on-campus programme.	

Figure 8.5 The activity system of the distance programme with Sarah as subject

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Interrelation of the theoretical and the practical

Sarah's contributions to the online discussions reflected how she was able to draw on her experience as a teacher, by bringing what she had learned by practicing as a school teacher into the community of distance student teachers. An example from the arts and crafts course showed how her experience became relevant input into the discussion when she reflected on the theoretical knowledge presented in the course with her practical experience.

> I think it is important that school teachers manage to present all assignments in diverse ways, using different teaching methods, because we are so extremely different. What suits me may not suit my best friend at all. One must be careful that the assignments don't take too long so the pupils don't lose interest in them.

> I think subject integration is very interesting and all teachers should look into the possibilities of integrating different subjects. But then it's how to organize this sort of work, all teachers fight with a lack of time, right? If there is a will there is a way.

> My opinion is that the national curriculum in arts and crafts is a guideline; it is far too extensive to be followed exactly (WebCT entry, April 24 2005).

This is an example of how Sarah's experience of teaching was reflected in her understanding of how both pupils' and teachers' situations in the school restricted what could be done. As a school-based student teacher she was in a situation to contribute to the discussion on concepts and theories with her practical perspective.

Digital online tools and teaching and learning methods

Sarah felt that WebCT, used in most courses, was the most important tool for the distance studies (Figure 8.5). She described its convenience and how teachers were increasingly taking advantages of its features as well as other affordances of rapidly developing online technology.

> I feel a big difference now in my second year compared to the first year because now we almost have a classroom with these audio lectures on WebCT. [...] Just like roughly once a week. [...] It's also when you have an ADSL connection it changes a lot, then you can be online on this [WebCT]. It is a much better connection than the email. You can see what everyone is saying (Interview, February 2004).

Audio lectures refer to sound files with lectures, normally used alongside PowerPoint presentations. In addition, students could access course documents and learning materials as text files and image files, depending on the content of the course, and in a

few cases video files (Interview, April 2005). In arts and crafts sharing of image files was much used and Sarah felt that peer students' contributions were an important resource for her learning, and in some cases no less important than the teachers' inputs.

Sarah felt that learning by participating in the discussion on WebCT, using the threaded discussion platform,was a good way to deal with what the studies demanded.

> I think it's best when we have to read and then submit input on WebCT. Like now in ethics, for example, we read a chapter and he puts forward a question and there is a kind of discussion around it (Interview, February 2004).

At the same time she felt it took her a lot of effort to send what she had written to the discussion panel.

> I find it extremely difficult to sit down and write. I write and then I erase it. I just find it difficult to put something in there (Interview, April 2005).

However, Sarah said she used to enter WebCT regularly and view what peer students had sent in. It could be seen in her inputs that she was keen on praising their work, thereby contributing to a good sense of fellowship in the community of distance students. The importance of WebCT became evident when lecturers did not use it as a platform in the distance sessions. She recalled how the students reacted in such case:

> Then we found it impossible not to have WebCT, where we could talk to each other, and we felt we needed to, you know (Interview, January 2006).

In addition, student teachers learned to search the Internet, since they were often supposed to search for and access learning materials there. As a result Sarah increasingly used Internet searches for her own teaching as well (Interview, February 2004).

Lecturer student communication

Sarah thought that sometimes it was not clear what students could expect from the lecturers. At times this caused insecurity. For example, it was different how much freedom students had to elaborate on the assignments. It depended on lecturers, the role of lecturer versus the role of students sometimes being unclear. Sarah described how she experienced insecurity when she thought that the teacher gave unclear guidelines, but at the same time she was critical of her own reactions.

> Last year you see it was quite clear how we should do the assignments, but still had some free choice, she wasn't saying put a full stop here and here, you know,

but clear guidelines. And then this year it was remarkable how she was not nearly as clear. I thought it was really difficult because I didn't know exactly what she wanted us to do. But at the same time I thought: Why is it bothering me, I should be doing this for me and not for her? In the beginning I felt that I was doing the assignments for her, you know that was the way she wanted it done, not that's the way I want to do it. [Later] we know what we are supposed to do, but at the same time have some control over the process ourselves (Interview, January 2006).

In spite of her insecurity she was struggling with her role as an agent and independent student, realizing that she was the one that should be in control of her learning.

However, she was critical of the kind of professional support she got from the lecturers, depending a lot on individual lecturers who each had their own rules for communicating with the student teachers. It might be collective or personal feedback, exact or vague guidelines, and teachers being easy to reach or forgetting the distance students, reasons for assessment detailed or only a character in numerals.

I think that when you submit an assessment it is not enough to get 8.5. Why did you get 8.5, why didn't you get 7, or what? I was handing in a portfolio before Christmas, and got 8.5, but I don't know why. Last year I submitted a portfolio to another teacher, and got 9, but I also got an A4 piece of paper explaining what I could do better and what was well done. It is necessary so that we can improve (Interview, January 2006).

Lecturers acting according to different rules, and lack of institutional coordination sometimes caused tensions in the programme community, both among students and teachers. Some lecturers kept their distance from the student teachers, emphasizing the hierarchical status; others were personal and encouraged student teachers to make personal contact whenever they felt they needed help. Sarah gives two examples:

She answers quickly, you can phone her and you know she is always ready. And I like it, she explains, this was right but there you did something wrong (Interview, January 2006).

He was just there at the computer as if he was in the classroom. Answering immediately and explaining everything very well. There was no trouble. He always knew what he should do. He was always there and always answering. […While with others] you have to wait and wait and maybe something is forgotten, the assignment gets lost and the same questions are asked again and again. I notice a big difference (Interview, February 2004).

Sarah felt like some lecturers tended to forget the distance students because they were busy with the students on campus. She believed that it would be better if the lecturers were either teaching in the distance programme or the on-campus programme.

Face-to-face sessions and development of a community

Sarah felt isolated in the beginning and found it difficult to communicate with peer students when they met only in the big auditoriums in the on-campus sessions.

> I think it is because in the first year there were just so many lectures. You can't make a connection in such a big group. As soon as we have elected [a specialisation area] everything changes (Interview, January 2006).

She preferred when students met in class-size groups. That was the way the face-to-face sessions were planned when students entered the specialisation, normally in the third year. It is noteworthy how she described the different feeling it gave her to be in a big auditorium in the academic subjects as compared to the workshops in the arts and crafts.

> Look, when you are up there in the academic subjects then you are only a letter on a computer screen. That's why it felt it terrific to come here to the arts and crafts. Then you are a human being and yes – you feel like one. You were nothing, there was just a group, going to school, going home and then just typed into a computer, and you were there, just a letter on the computer […] Also because you see, we naturally get to know each other…. It felt kind of encouraging. […] It is so nice to come to this place I think. Speculate and reflect on things with someone you know, though of course you don't really know them (Interview, January 2006).

In the face-to-face sessions in arts and crafts student teachers brought their assignment products and continued to work on them in the workshops while the lecturers would walk around and give them personal feedback. Sarah liked how the students got to know each other and worked together in workshops in arts and crafts, where she appreciated the feeling of personal contact and belonging to a group.

> When you pick a specialisation a lot of things change. And see, we know exactly what we have to do, but yes, are kind of more in charge (Interview, January 2006).

Sarah felt that the on-campus, face-to-face sessions held in Reykjavík were sometimes useless. Taking into account the high cost of travel and valuable time, she felt that the schedule needed to be better organized. She was concerned about her pupils when she had to get a substitute teacher to teach her class at home, vulnerable as they were to her absence. It disturbed the practice of the local schools that the teacher education institution did not take into account in their planning that student teachers also had their responsibilities as school teachers.

8.3.3 Sam's experience as a distance student

Object of the programme activity

Sam felt that the courses in the programme had in general helped him as a teacher, along with the studies wherein he got more diverse resources to draw on in his teaching. Sam was enrolled in the ethics course analysed above. In his third year he chose mathematics as his specialisation (Figure 8.6). He found it difficult to learn mathematics at a distance and had to postpone some courses as he also had a full teaching position at home as well as other obligations since he had been an active member of the community and important in the social life. Six years after he started he had not completed the programme but was still determined to finish.

In his first year in the programme Sam did his three weeks of practice teaching in Waterside School, and in his second year he did four weeks in a school situated in another region, which meant that he had to be away for more than five weeks, including travel. Sam felt these two sessions of practice teaching had been helpful for him, as he saw ideal models for teaching as well as examples to avoid.

Interrelation of the theoretical and the practical

Sam felt it was important for the assignments in the programme to be relevant to the school-based student teachers. Either that they could use them directly or indirectly in their teaching, or that they supported them as professionals in their community. He recounted, as an example, an assignment when a student group, all living in the countryside, were to work on a research project on small schools and their pros and cons (Interview, January 2005).

> There we had to put forward reasons for how the existence of small schools could be justified, and then we had to mention various issues that suggested it could be justified. […] And be able to refer to professionals who are respected (Interview, January 2005).

As the most experienced teacher in his school at times, Sam had been in the situation of being a representative for his school in the municipality, and he felt like his studies had supported him as a professional in these kinds of situations.

Mediating tools & practices			
Material tools	*Teaching methods as conceptual tools*		
Digital online tools WebCT as a rule used. One exception where there was no platform for communication at all. Sam uses the private mail with attachments on WebCT to collaborate with peer students. Sam thinks that audio files with PowerPoint and explanations using screenshots, e.g. to show how to use Excel, are very supportive. The phone used by students and one example of a teacher contacting students by phone. Sam uses Internet searches a lot.	*Assignments* Participation in threaded discussion, writing logbooks documenting the learning process; portfolios handed in for grading. Assignments often relevant to the student teacher's reality: e.g group assignment on small schools. *Practice teaching:* First year: 3 weeks in Waterside school. Second year: 4 weeks in another region. The practice teaching showed both practices to avoid and models for good practice.	*Lecturer guidance* Online presence and contribution to discussion important. One-way communication problematic when it was not followed up by a discussion. Different rules on feedback from lecturers problematic. Displeasure with online absence of lecturers. Good guidance in mathematics both motivating and supporting in difficult subject. Appreciated one lecturer phoning students personally, sometimes to one student as a representative for a group. *Face-to-face sessions* Many good lectures, although not all as useful.	*Social practices* Group assignments, working with peer students in the district or online. Working in pairs in practice teaching. Schoolmate and a colleague important for collaboration and discussion the first year. Discussion and sharing of assignment outcomes on WebCT. Disturbing when no online platform is used for communication. Communicating with peer students in face-to-face sessions.
Subject Sam: School-based student teacher in his forties. Married father of three children, two grown up and one teenager. Starting in the programme fall 2003, not finished during the time of fieldwork.	*Intended outcome:* Qualified teacher with theoretical knowledge and practical skills and with primary school teacher certification.		*Object* First two years: diverse general courses; supportive for teaching, giving more diverse resources. Mathematic as area of specialisation in third year. Practice teaching in two schools.
Systemic institutional factors mediating actions of subjects			
Rules Flexibility in rules allows for longer or shorter time than the four years planned for to finish the degree. Rules on practice teaching were not adapted to the school-based student teachers although exceptions were made. Sam was critical toward the rule that two weeks had to be spent on observing classroom teaching when students had experience as teachers. Lack of coordination of rules regarding roles of students and lecturers in the programme have caused tensions.	*Community* Face-to-face sessions important for personal communication with lecturers and peers. Important role in forming a community of students and lecturers and for preparing collaboration in the online sessions. The community of distance students was supportive; as a rule students were supposed to communicate online on the content; students learned to make personal contacts and collaborate regardless of where they lived; in general they gave personal support and motivated each other.		*Division of labour* Lecturer online support varied. Lack of institutional rules on the role of distance teachers and students cause tensions. One lecturer not fulfilling own promise of feedback, another had a motivating online presence answering quickly, keen explaining. One course based on traditional delivery model where lecturers looked upon their role as to send the students one-way information without planning discussion.

Figure 8.6 The activity system of the distance programme with Sam as subject

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> You have more answers to unexpected questions and things like that. Seeing more and more angles to point out all the time […] … then the question is if what I said [before] would have been taken as seriously (Interview, January 2005).

However, after the first year in the programme Sam thought that the most important thing he had learned was the realisation that school is not only preparation for life, but school is life.

> It is always being emphasised to the children that they have to learn addition, and they have to learn when to use y, to be able to do something when you have finished school. But they spend ten years in compulsory school, four years in upper secondary school, five years in university. They are not supposed to live until after twenty years, when they have learned when to spell y and all this (Interview, May 2004).

As mentioned before, this turned out to be an eye-opener that changed the way he thought about pupils' education as the object of activity in schools.

Digital online tools and teaching and learning methods

The first time I met Sam I interviewed him together with his colleague Emma, who at the time was also enrolled in the programme. Neither of them stressed the importance of WebCT, but indicated that they had been very important mates for each other, being able to discuss and work together on assignments, staying up all night sometimes (Interview, May 2004). However, when she left both the programme and the school he acknowledged the importance of the online platform to stay on track (Figure 8.6).

> I think there's no question that it matters to follow things online. I read everything that comes from others even if it's a lot, you also learn to scan. […]
>
> Yes and different information shows up, somebody asking about something, and then another student maybe knows the area well, and puts in good information (Interview, April 2005).
>
> I learned a lot from reading questions from the other students and the answers from the teachers, or guidelines. They often gave hints, not necessarily the answer (Interview, January 2005).

Sam thought it was very helpful when lecturers recorded their lectures, and made audio files, usually with PowerPoint. He mentioned the research methods teacher as an example of using screenshots and recording talk when explaining how to use the spreadsheet programme Excel. Both in that course, and in oral performance in Icelandic, lecturers recorded eight to ten lectures during the term, which could be accessed on

WebCT. Sam also said that he used the Internet a lot to search for additional material concerning the studies.

Sam talked about how the students used the private mail and attachments on WebCT to collaborate on text creation when working on group assignments with peer students; in between they would call each other on the phone.

> Yes, one of us wrote something, the other read it through and sent it back and added some ideas, corrections and comments (Interview, January 2005).

He recalled one exception where the lecturers did not use WebCT as a platform for communication in the distance sessions. That became problematic since the students felt they were deprived of support, both from the lecturers and each other, and of the right to respond to what they had been reading, since they had developed their practice as online learners by communicating on assignments and texts.

> When we attended the later face-to-face session I talked to several students and it was the same with everybody, nobody had looked at the subject. It was just put off because there were no obligations to hand anything in. […] We could have sent them email but we weren't working on any assignments or anything. They sent a letter every ten days, eight in all were distributed. We were only supposed to read (Interview, January 2005).

Assessment was based on one written final exam, which in this case counted 100% of the grade for the course. Bit by bit the students decreased their activity and about one third of the students did not complete the course. This course was, according to Sam, a deviation from the normal practice in the programme, where students were used to having obligations, including showing up online and participating in the community of distance students and teachers. Participation in threaded discussion online had at that time become the mainstream approach, which meant the course without the use of a communication platform was unusual.

Lecturer guidance

Sam confirmed the importance of the presence of the lecturers during the online sessions and how motivating it was for the students when lecturers entered the discussion in a positive way, giving the students compliments for their contributions, like the ethics teacher did (Interview, April 2005). He also mentioned the mathematics teacher for answering both quickly and carefully, and how important that had been in a subject like that, which is difficult to learn at a distance.

> It was really good and admirable how diligent Christina was about answering. There were many questions because this was a new kind of mathematics for many students, and a bit complicated see, and she was good about answering. Even before the exams you noticed she was there, answering until late on Saturday and Sunday nights (Interview, April 2005).

Writing logbooks where student teachers were supposed to document their learning process, and handing in portfolios at the end of the term for grading, had become normal practice in the programme. Lecturers had different rules about giving feedback evenly during the process or at the end in form of a grade and a final response. Sam described an example of how disturbing it was, and how it caused displeasure among the students, when one of the lecturers did not act according to the rule she had set herself on feedback before they were supposed to hand in the final portfolio. In actual fact she did not give any feedback and was impossible to reach.

> Several girls have repeatedly sent enquiries and they haven't even received a response (Interview, January 2005).

Sam liked the programme in general and praised the lecturers in general for explaining carefully and being supportive. He mentioned that one lecturer had the habit of sometimes phoning students personally; if they were working on group assignments he would call one in the group to discuss their process and support them (Interview, May 2004). On the other hand it was problematic and caused disturbances when the lecturers were difficult to access and did not keep contact with the distance students.

Face-to-face sessions and development of a community

Sam felt that the face-to-face sessions were important for getting instruction and mentioned several inspiring lectures, although he did not find not them all as useful. However, he wanted not least to draw attention to the importance of on-campus sessions for personal communication with peer students and teachers, their usefulness in preparing collaboration in the online sessions, and forming a sense of belonging in the community of the programme.

> But it is of considerable importance to meet the other students during breaks and compare ideas and things. It is just as useful as the teaching (Interview, January 2005).

He explained that distance students had to learn to make personal contacts since they were supposed to collaborate a lot on assignments in the courses, regardless of where

they live. In addition he felt that the community of distance students was important for personal support and motivation.

8.4 Analysis of development of learning and teaching in the distance programme

When student teachers entered the distance programme their first challenge was to learn how to function as students in the programme.

> Much like going to work in any complex institution, going to school is an exercise in trying to make sense of what is going on (Engeström, 2008, p. 86).

Davydov (1999b) claims that educational activities are fundamentally different from other activities in that their goal and outcomes is a change in the subject, not the object on which the subjects are acting like in other kind of activities (Chapter 3.3.2). However, learning to function as distance students was a prerequisite for, or intertwined with, learning to develop academic understanding of curriculum content, which was expected to change them as individuals and make them better qualified to be school teachers.

In the following the expansive learning cycle (Figure 4.1) will be used for directing analysis of the learning trajectories of distance student teachers in general as interacting with development of the distance teacher education programme (Figure 8.7). The aim of the analysis is to make sense of the situation in terms of 'learning actions' taken by the student teachers when dealing with problems and challenging situations as participants in the distance programme (Engeström & Sannino, 2010, p. 11). The trajectories of the student teachers have been followed through the expansive cycle in order to trace how they learnt to participate and function in the programme. The aim is to develop an understanding of the kinds of challenges that student teachers were faced with (the dark gray boxes in the figure) and what kind of support they were able to use (the light gray boxes in the figure) when taking actions for developing their practice and learning to be distance students (Figure 8.7).

The analysis is based on the experiences of Lilith, Sarah and Sam on the one hand, and the three online courses traced in the spring 2005 on the other. The expansive learning cycle is meant to reveal the *zone of proximal development* for the programme on a system level through the interaction of student teachers and university lecturers as actors contributing to the development of the programme by their actions of teaching

and learning. The analysis is expected to provide generalizations in the form of intermediate concepts which could be used as double stimulations for students, lecturers and programme leaders expected to participate in developmental work for expansive learning in the programme (Engeström, 2008).

8.4.1 A distance programme in a process of change

From a system level perspective, the objects of activity of the teacher education department had changed from teaching conventional students that attend courses on campus to distance students attending courses online most of the time. However, the programme had from the start been organised as a blended form where student teachers were expected to meet in face-to-face sessions on campus for several days, 2-3 times per semester. During the early years of the programme the distance student teachers were as a rule school-based and working as teachers while enrolled. Ten years after its inception less than half of the distance students were teaching in schools, but still represented however a substantial part of the student group. Those students have been the focus of this study and special attention is given to their situation, both their learning processes and their possible impact on the development of the programme.

When an object of activity changes for example as a result of societal changes, the changed object initiates a pressure for changed practices in activity systems such as institutions and that is what Engeström (1999b) describes as the need state and the first step in the expansive learning cycle. A pressing need for responding to the changed object is often manifested when individual practitioners start questioning the conventional practice in the activity. The inner conflict within the practice of school-based distance students as objects of teacher education is that the student teachers are supposed to be preparing for a teaching position through their studies but at the same time they are working already as school teachers. This primary contradiction within the object is likely to cause tensions and disturbances that would provoke individual university lecturers and student teachers to question conventional practice and identify a need for change. The student teachers participating in this study questioned the the organisation of practice teaching indicating primary contradictions within the object of activity. However, a pressure for developing practice is usually initiated by secondary contradictions (Engeström, 1990) which manifest themselves in disturbances between components within the activity system such as changed tools and old division of labour

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or changed objects and old tools. These kinds of contradictions put pressure on practitioners to find solutions to keep the practice functioning.

In the following analysis it will be explored how practice developed in response to the changed object of activity as well as how the use of new powerful online tools as mediators in teaching and learning initiated secondary contradictions that students and lecturers marked as tensions and problems that called for action.

8.4.2 Distance students learning to participate in the programme

When entering the distance programme, students where confronted with two challenges. They needed to learn to use the technology and they needed to learn to communicate online. Although they had to start functioning as students from the first day they entered the programme they explained that it took time to learn to be an online student. Since most of the time the actions for learning and teaching were performed on the online platform WebCT, they obviously had to learn to use that platform for communication. However, learning to use the technology was not the most difficult factor to overcome for the students. Learning the mode of communication, that would function in online dialogue, proved to be more demanding. In analysing the talk of students, both in the online courses and in the interviews with Sam, Sarah and Lilith, different kinds of problems were identified, such as lack of contact with lecturers, feelings of isolation, insecurity, confusion and misconceptions.

For all of them WebCT was crucial in overcoming the feeling of isolation. One of the reasons for student complaints about lack of contact with lecturers was how they used, or did not use, available digital online tools. Lilith mentioned that the lack of lecturers' know-how in the use of technology could be disturbing, since the online programme was based on the use of new technology. All three student teachers mentioned an example when lecturers announced they were not going to use WebCT as a platform for communication, and how that turned everything upside down in the community of the distance students. From the beginning the online technology was the tool that was expected to mediate teaching and learning in the distance programme. With new course management systems developing it had become the most important mediating tool for the distance students in order to function in the programme. When lecturers did not use the best available mediating tools the students experienced frustration because they were being deprived of tools appropriate to their situation. The tensions were caused by

Activity II

Activity I
Distance programme in 2003-2005
1. A need for change.
Distance students as changed object called for reconsidering practice in the programme.
Primary contradictions in the object call for expanding the object.
Learning actions of students and lecturers responding to the new object contribute to development.

Challenges:
Learn to use the online technology.
Learn to communicate online.
Learn to be autonomous.
Learn to ask for support and give support.

Personal mode of student lecturer communication.
Collaborative teaching methods.
Students and lecturers developing responsive practices.

For developing the pratice the two systems need to coordinate as the first step in developing shared responsibility in teacher education.

Student teachers and principals questioning and criticising.

5. A need for inter-organisational collaboration.
Organisation of face-to-face sessions and practice teaching caused disturbances in the schools practices.
Quaternary contradictions between two interacting systems

2. New online tools mediating teaching and learning initiated secondary contradiction.
Between new online tools and traditional student-lecturer communication.
Between changed object and conventional mode of communication.
Between new online platform open at all hours and lecturers' old time schedules regulating their time for teaching.

Ongoing development depends on collective response to tertiary contradictions. Sysem level response is needed.

4. A need for development on a system level.
Some students and lecturers have developed practice while others were lagging behind.
Tertiary contradiction between changed individual practice and unchanged system level factors.

3. Emerging new model
Changed understanding of distance student teachers as object of activity.
Role of students and lecturers revised
Mode of student lecturer communication revised.
Increased student agency (autonomy), weakened teacher control.
Increased students' collegiality, collaborating, asking for and receiving support from peers.
Lecturers and students responding to others' needs.

Lack of contact with lecturers feelings of isolation, insecurity, confusion, misconceptions

Complaints, dissatisfaction, frustrations, drop out of courses.

WebCT online classroom.
Face-to-face sessions.
Peer-support and feeling of belonging in the community of distance students.

Collegiality and mutuality in the community of the programme. Developing responsive practices

Figure 8.7 Learning processes of distance students in relation to programme development in relation to the expansive learning cycle

secondary contradictions between the changed object of activity and lecturers' use of old tools.

What supported the students in taking actions for participating online was how they experienced peer support and a feeling of belonging to a community of distance students who were in the same situation. Students often helped each other when there were technical problems or confusion on the organization of courses and also by sharing experiences and feelings. They learned to ask for help, receive help and respond to other peoples' need for support in solving problems related to their situation as distance students. This comes close to the concept of *relational agency* developed by Edwards (Edwards, 2005b). Face-to-face meetings on campus were important in supporting the formation of a community during the first year of enrollment since it supported distance students in getting to know each other which was important for facilitating online communication. There they were able to resolve frustrations that had come up during the online sessions, such as offences and misunderstanding, which were much easier to sort out face-to-face. Lektorsky (2009) explains that when "individual subjects

participating in collective activity feel that they belong to a collective entity with which they identify themselves" we can talk about a collective subject. The feeling of belonging in the community of distance students can be interpreted as an attribute of a collective subject emerging and supporting participation in the programme.

8.4.3 Developing teaching and learning methods in interaction with new tools

Preconceived ideas about the kind of communication needed in university studies were that the online platform was needed for lecturers to deliver the teaching material, lectures, and assignments for the students, and for the students to send in their results and receive feedback from the lecturers. Thus the students would presumably simply have to learn how to use the technical features in order to be able to function in the distance programme. However, this was more complicated since the new online tools, in conjunction with changed ideas on teaching and learning, had initiated changed practice. The most salient were changed teaching methods, where students were expected to use dialogue between peers to enhance their understanding of the learning content, to collaborate on assignments, and to share ideas and products of their learning on the online platform.

WebCT permitted threaded discussion that had made online discussion a feasible method for learning. During the time of fieldwork for the study it had become part of general practice in the programme to plan for such discussion. The method of discussion for learning was also supported by social and socio-cultural learning theories that had increasingly been gaining adherence among teacher educators (Moran & John-Steiner, 2003; Vygotsky, 1978) (Chapter 3.2.3). Thus the students met the challenge of learning to participate in online discussion as part of their studies; such as learning to reason, be critical, disagree or agree.

Students in general expressed their pleasure with the online practices and felt it was a benefit to have an opportunity to develop their understanding in discussion with their peers. However, despite the benefits of discussion, it gave rise to tensions. In the ethics course one student criticised discussion as a learning method, questioning the value of peer contributions, as well as feeling that the lecturer should be contributing more often to keep the discussion on track. His remark points out a primary contradiction in group work and online discussion as learning methods between the ideal form and the reality in practice.

The general practice of lecturers was not to interfere or contribute while discussion on a certain issue was taking place, but rather to enter with a summary or general feedback when the time allocated for the relevant issue was finished. Therefore students might be discussing for a week or more, on their own, without any guidance from the lecturer or correction of possible misunderstanding. Since as a rule lecturers gave general feedback to the group individual student misconceptions were not corrected. As a matter of fact, the arts and crafts teacher felt this method was problematic, because in her experience it had been difficult for individual students to transfer the general feedback to their own products .

In these cases lecturers and students were dealing with disturbances caused by secondary contradictions between new material and conceptual tools i.e. threaded discussion in WebCT and discussion as a method for learning, and old rules for course activity in universities. When the classroom moved online contradictions arose beween the new online tools and methods and the old rules. The university offered an online classroom on the WebCT open at all hours for students to work on their studies. As a result weakened teacher control developed since lecturers were only occasionally present.

The rules regulating the time of university teachers were developed from conventional on-campus teaching. The lecturers, according to conventional wage contracts, had obligations to give perhaps two lessons a week. In general lecturers in the analysed courses seemed to base the time they used for communication with students on old schedules, e.g. by entering once a week for round-up and feedback, while others were adjusting their teaching time and mode to the new online practice. For example the music lecturer, who entered the discussion board two or three times a day (including holidays) during her two-week module; instead of rounding up and responding generally to everyone she responded to the students individually with shorter comments. By her practice she was taking actions by responding to her perceived need of the distance students thereby suppporting them in overcoming the feeling of isolation, insecurity and misconceptions.

As a result of changing teaching methods and an online platform for communication teacher control was being weakened in the distance programme and students were challenged to take on more autonomy and agency for their studies. Some of the lecturers

were deliberately weakening their control to enhance student independence and responsibility such as the arts and crafts lecturer who wanted to enhance student independence, as well as to enhance their learning from each other, by sharing their products online. However, although some students appreciated increased agency others were confused when they did not get precise directives from the lecturers on what to do. Sarah found it disturbing in the beginning when the lecturers did not give exact enough guidelines, as she was struggling with the challenge of learning to become more independent as a student. What helped her overcome the dilemma was to remind herself that she was the one who was responsible for her studies and she should be able to take independent decisions. She was in the process of reconsidering her understanding of herself as a student teacher. Secondary contradictions between changed student group and new online instruments for mediating teaching and learning had initiated a need to expand the conventional understanding of the object.

8.4.4 Lecturer-student communication

It is noteworthy in the talk of the student teachers how often they mentioned that the way lecturers addressed them in the online platform had been a reason for tensions, disturbances, and offences in the community of distance learners. Lilith described how different modes of communication, depending on individual lecturers, made it difficult for students to realise what was acceptable conduct, since they had to learn where the limits were between student agency and teacher control for each lecturer. These tensions are symptomatic of a developing practice where individuals are developing their practice at a different pace and perhaps also in different directions (Engeström, 1999a) (Chapter 3.3.3). Student teachers needed to learn to deal with disturbances since old and new models of teaching and communication co-existed within the programme. Here the problem was that individual lecturers were responding to their perceived need of distance students while collective responsibility of lecturers on a system level (within courses in particular, within the programme in general) would be needed to overcome the tensions and develop practice in the programme.

When lecturers had changed their understanding of the object of activity it affected not only their teaching methods but also the way they communicated with students. For students the changed understanding of themselves as distance student teachers in the programme had focused their attention on the mode of lecturer student communication.

Having accepted the obligations of being independent students they assumed that they had agency in their learning tasks and then they could be irritated and critical when lecturers addressed them in an authotitative way. Once they had learned to become independent students with a say in the programme they did not accept strong teacher control and authoritative directives from the lecturers. Student protest when the lecturers were not going to use the WebCT is an example of an action taken in response to what they perceived as unacceptable practice. Some even manifested their dissatisfaction by not showing up for the final exam, thus dropping out of the course.

When lecturers acted like the object of activity was unchanged it initiated tensions caused by secondary contradictions between redefined understanding by students of their role and the traditional way in which lecturers talked to students from their authoritative position. On the other hand students felt that it helped them to deal with tensions in the programme, when lecturers were easy to access and used a mode of communication characterized by care and respect, as opposed to communication built on the hierarchical status difference of students and lecturers. Sam appreciated personal communication with lecturers and praised some of them for keeping good contact with students, while he complained about those who were impossible to reach.

8.4.4 Affordances as potential double stimulations

The affordances that the distance students could draw on had an important role as potential double stimulations supporting their participation in the programme. Such affordances build on student teacher agency since they are supposed to transform them for use as 'a situationally effective mediating device' (Engeström, 2007b, p. 374). The most salient affordances identified in the empirical data were the following:

- New material tools in interplay with new ideas for teaching and learning
- The face-to-face sessions
- The lecturer
- Boundary crossing between schools and distance programme

New tools in interplay with new ideas for teaching and learning

It has been claimed that there is a tendency to introduce new digital tools, such as course management systems, without taking into account that new technology brings about the need for new concepts and ideas as an essential part of innovation (Engeström, 2007a). My analysis has shed light on how the new tools in interplay with

new ideas for teaching and learning changed practices and affected how students experienced their participation in the programme. WebCT as a platform served as an online classroom open at all hours, and even though the lecturer was not there some of the classmates might be online. Students had access to peer contributions enhancing the feeling of the mutual benefit of sharing.

When the teaching methods were based on collaboration, discussion, and sharing of results, the students were afforded social practice since they could draw on their peers as resources in their studies. A culture of mutualism had been developing in the community of the distance student teachers ever since the first cohort was enrolled, and collaborating on assignments and sharing solutions had become general practice. The new model initiated by the instrumentalities (Engeström, 2007a), that is the toolkits of interplay betweem new material and conceptual tools, provided affordances for social practice, which helped students deal with disturbances and learn to function as students and it helped support their academic studies. How this developed within the distance programme has enhanced understanding of the qualities and potentials of online platforms used in distance education.

The face-to-face sessions

The distance students used the face-to-face sessions as double stimulation for facilitating their online participation. However, the way in which the sessions on campus were planned mattered for their potential to be supportive. The students emphasized the importance of meeting in smaller groups, having an opportunity for an informal chat and time for personal bonding with peers. They felt that meeting the lecturers in class-size groups for personal contact was more useful than sitting in big auditoriums listening to lectures. What the students were asking for was a time and space for social practice and personal contact with peers and lecturers, both important as resources or double stimulations to draw on in their studies. They needed to get to know each other and form a community that could function online between the face-to-face sessions. However, the usefulness of face-to-face sessions was questioned later on in the studies, except for subjects where hands-on practice and lecturer guidance were crucial, like in arts and crafts or oral performance.

The lecturer

The analysis shows that despite weakening control, it was important that lecturers continued to serve their roles as professional guides correcting possible misconceptions. The practice of learning from each other by sharing and discussing could also be misleading if not guided by a more advanced professional in the relevant subject. The ethics student called attention to the need for the lecturer's guidance was needed for advancing the dialogue and the three school-based students all emphasised the importance of support and inspiration from the lecturers. This is a reminder of the theories of Vygotsky where the importance of guidance of teachers as more advanced than students was stressed, and the role of the ideal for directing learning and development (Vygotsky, 1978, 1994) (Chapter 3.2.3).

Boundary crossing between schools and distance programme

Vygotsky (1978) saw the role of scientific knowledge to as a *double stimulation* (Chapter 3.3.3) for people overcoming troubles in dealing with everyday practices, thus supporting development of people's daily practice. The practice of students sharing their knowledge and ideas had drawn the attention of both students and lecturers to the usefulness of the teacher education curriculum in daily school practice. Lecturers responded to those circumstances by making an effort to plan for assignments that could be tried out in schools or with children. The students appreciated that and felt the assignments were enjoyable, which helped them in overcoming other challenges they came across. Lilith, Sarah, and Sam all emphasized the importance of being able to relate the studies in the programme to their practice as teachers.

The importance of grounding the theoretical in the practical reminds us of the mutual relationship of the theoretical and practical (Karpov, 2003); practical experience may act as double stimulation for theoretical work just like theories support development of practice. Sam, Sarah and Lilith also felt that they had been able to draw on their experience of teaching as a resource in their studies. The habit of sharing products on the online platform made students in general aware that their solutions could be useful for their peer students, both those who were already teaching and those preparing for teaching. The school-based students often took on the role of connecting academic studies to practice in schools thus drawing on their experience of teaching and providing resources for other distance students. Examples of this have been identified in their

contributions to the discussions. The contribution of school-based teachers is suggested to be an important resource for general student teachers learning to relate theories and practice.

A connection with the schools when school-based student teachers are enrolled has the potential to reinforce the connection of academic knowledge to practical knowledge. Engeström (2009b) has argued for the importance of boundary crossing as a source of double stimulation and here boundary crossing between the activity systems of the schools and the teacher training programme have served that role.

8.4.5 The emerging new model for teaching and learning

Engeström (2010b) has identified three steps in developmental work for expansive learning in activity systems. The first stage is characterised by actors coordinating their actions for facilitating the function of the relevant activity. The second step is when actors collaborate for finding solutions to problems and develop shared understanding of the object of activity. This calls for reflection and changes in communication as the third step in developmental work. He explains that shifts from coordination to collaboration and communication involve expansion of the object. The emergent new model that was developing within the distance programme may be understood in this light. The actions taken in the first phase of development may be looked at as lecturers and students attempting to coordinate their tasks. In developing their practice they had in fact worked towards a shared understanding of their object of activity as actors with different roles although not overtly accepted as such. This called for focusing attention on the mode of student lecturer communication.

The learning processes of the distance students may be described as a journey along the expansive learning cycle:

- Learning to function in the programme involved students reconsidering themselves as students and reassessing the roles of students and lecturers accordingly.
- The online tools and methods afforded the students opportunities for social practices in the form of dialogue and collaboration with their fellow students, supporting their learning.
- To be able to participate online, students learned to cultivate modes of communication which related to the revised understanding of the object of the programme activity.

- The distance students learned to use increased agency, which they gained with weakened teacher control, to take responsibility for their studies,
- The distance students learned to contribute to the community of the programme and its development; i.e. externalising what they had learned by internalising from participation and boundary crossing between schools and programme.

According to Vygotsky individual development depends on participation in social life, and development of culture depends on the creative contribution of individuals. The notion of the expansive learning cycle is built on this conceptualisation (Engeström, 1999a, 1999b). People enter an activity system and learn (internalize) by overcoming contradictions in developing their practice. Having learned, they are able to contribute to developing practice of the system. The learning processes of the student teachers reflect this cycle of internalization and externalization (Figure 3.2). Having learned by internalizing their experience of culture and having developed skills and capacity the individuals are then ready to externalize by contributing their knowledge and skills to the development of the activity systems in which they participate.

In learning to participate in the programme the student teachers contributed to an emerging new model of teaching and learning which may be described as follows:

- Changed understanding of distance student teachers as object of the programme activity.
- Role of students and lecturers revised together with mode of student lecturer communication.
- Increased student agency (autonomy), weakened teacher control.
- Increased student collegiality, collaboration, asking for, giving and receiving support from peers.
- Lecturers and students learning to respond to the needs of community members.

8.4.6 A need for responding to changed object on a system level

Although the general practice within the distance programme had been developing according to the new model, it disturbed the students when some lecturers did not act in accordance with the new script. The students felt that they had learned to function and participate in the programme according to a script for distance teacher education that they felt was generally accepted. Both the analysed courses and the interviews show how an older mode of practice caused tensions when individual lecturers acted like nothing had changed while the majority of both students and lecturers were acting according to changed conceptions. It was problematic when some lecturers were still acting according to the traditional model while others had weakened their control,

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assuming student autonomy, and abandoned the authoritative mode for student lecturer communication. Here individual responses to a changed object of activity is restricted and lecturers would need to develop responsive practices as collectives; i.e. develop collective responsibility in their distance teaching practice.

According to the expansive learning theory tertiary contradictions arise when some practitioners have developed qualitatively better ways of functioning in an activity system while others lag behind. Student teachers and their education as the object of the programme activity was in effect being reconsidered by students and lecturers in general as revealed in developing practices in the distance programme. However, the object had not been reconceptualised on a systemic level by the university as an institution.

The institution recognized that material online tools were needed for the distance teaching and provided support for both lecturers and students to learn to use the new technology. However, as revealed in the analysis in this study, this is only the tip of the iceberg. Since the changed object in interaction with changed practice had not been dealt with on a systemic level there were several models operating at the same time, leading to a rise of tertiary contradictions, which caused tensions (Chapter 3.3.3). While the practice in general was developing some of the lecturers were still planning their courses in accordance with the old model of university teaching and learning. Situations like this call for moves towards acknowledging the changed practice on a systemic level, and to adjust the rules and division of labour within the institution in accordance with the more advanced model. This course of action presumes that at the institutional level the new paradigm will be accepted as qualitatively better.

The example of practice teaching explains the need for reacting to the changed object of activity in the distance programme. The custom of planning practice teaching for school-based distance students according to the same rules as the conventional students, and then making individual exceptions without explicit principles, was causing tensions. Student teachers questioned the planning of their practice teaching and argued that their experience of teaching was not taken into consideration when their practice teaching was organised. Lilith was calling for a different practice more responsive to her need when she felt she would have learned more if the mentor and a lecturer from the university had guided her in teaching her own class. This matter would have to be dealt

with by responding to their need at a system level by making different rules for the school-based students.

For overcoming the contradictions between new tools and methods used by student teachers and lecturers on an individual basis on the one hand, and institutional factors of old rules and conventional definintions of roles of students and lecturers on the other hand, programme development would have to be dealt with collectively at a system level.

8.4.7 A need for co-configuration between schools and the distance programme

Not only had the organisation of the practice teaching been questioned by the school-based student teachers, it had also caused disturbances in the schools. Sam had to leave his school for more than five weeks while he was away for practice teaching in another district. The situation in his school was vulnerable and a lack of qualified teachers was a problem, and that problem increased while he was away. Problems and disturbances manifested a pressing need for changes in the practice that would have to be dealt with on an inter-organisational level. Disturbances in the school practices because of the organisation of practice teaching were initiated by quaternary contradictions between schools and the programme as interacting activity systems.

In general teacher education programmes collaborate with schools where practice teaching is carried out. In this case the collaboration of the schools and the university faculty consisted in making of agreements, between specialized individual staff members in the schools and subject lecturers and coordinators in the faculty. In terms of Engeström's suggestion of the developmental stages, it had been dealt with as the first step characterised by coordination. For taking the next step the challenge would be to develop understanding of practice teaching as a shared object of the schools and the teacher training faculty. Further development of the two interacting systems would need to assume inter-organisational collaboration which would include co-configuration of their activities on a collective system level (Engeström, 2004, 2007a) (Chapter 9).

The organisation of the face-to-face sessions was another matter of concern for the three school-based student teachers participating in the study. They were concerned about how disturbing it was for their pupils when they had to be away for too long, in addition to times when pupils were especially vulnerable, like in the beginning of the school

year. Lilith, Sarah and Sam all called for the needs of school-based student teachers to be taken into account when face-to-face sessions were being planned. The principal in Waterside School pointed out that as student teachers they missed an important opportunity to learn from colleagues when they were away at a time when the school year was being planned and in its starting phase. Here quaternary contradictions between two interacting activity systems were causing problems. To solve that and develop the practice the two systems would need to negotiate for coordinating their time schedules as the first step.

In negotiating shared objects in inter-organisational developmental work between activity systems Engeström et al. (1995, p. 333) point out the importance of identifying concrete problems, especially in the initial phases. *Quaternary contradictions* have caused tensions and disturbances regarding practice teaching and face-to-face sessions (Chapter 9). In boundary work this would be a practical task suitable for being dealt with in the first phase of inter-organizational collaboration where rules on the organisation of practice teaching and face-to-face sessions would be negotiated with the aim of overcoming tensions between the systems and developing practice. The practice teaching of the school-based student teachers is a concrete problem shared by the two systems and therefore it might be used as a springboard, enabling the two systems to compare and contrast their views. The timing and nature of face-to-face sessions is another concrete problem. Results from the study inform discussion about their role, their importance and timing of sessions (Chapter 9).

In this kind of work it is important to understand and actively coordinate multiple needs, and appreciate and actively overcome tensions in the interacting institutions. Engeström (2007a) suggests that 'experiencing', defined by Vasilyuk as 'working out of contradictions human beings encounter in maintaining their activities' (ibid, 37), can serve as a bridge between design of future solutions in boundary work and their implementation in practice (Chapter 3.3.4). In keeping with this idea it is claimed here that having been a school-based student teacher, enrolled in the distance education programme, and experiencing the challenge of overcoming tensions in both systems, can be a valuable resource in expansive learning in boundary knot-working and co-configuration work relating schools and the university programme.

8.5 Findings

The analysis of the student teachers learning in interplay with practice developing in the activity system of the programme has enhanced understanding of the process of learning to be a student teacher when situated in a school and being enrolled in a teacher education programme at a distance. The expansive learning cycle assumes that both individual and system level analyses are accounted for and by analysing the trajectories of the student teachers it has been shown how the *zone of proximal development* for students is intertwined with the developmental stage of the programme.

Here the results of the analysis will be presented as theoretical assumptions that may be inferred from the empirical data. The findings are put forward in the form of intermediate concepts which could be used in developmental work by programme leaders, lecturers and students working on programme development (Chapter 5.6).

Images and models are claimed to be powerful for describing what is important in a situation (Engeström, Pasanen, et al., 2005). I suggest that the matrix descriptions of the activity systems of the programme with student teachers as subjects are useful since the theoretical constructs have been grounded in practice and made more comprehensible for practitioners. Likewise the learning trajectories of the student teachers analysed in real recognizable circumstances and modelled in the expansive learning cycle make the processes of breaking away from contradictions when developing practice more understandable. The analysis of the experience of student teachers in the programme has clarified the process of learning to be participants in the online programme in terms of challenges and problems which students were faced with and affordances for double stimulation in their actions. I have shown how they learned to overcome primary and secondary contradictions, as they responded to the need of a changed object and contributed to programme development by their changed practice. Shifting the focus to the system level in the expansive learning cycle shed light on how development was hindered when it was not dealt with on a collective or institutional level.

8.5.1 The practice in the teacher education programme

In 2004-2005 student teachers teaching in schools while enrolled in the distance programme represented a substantial part of the student group; that is about 40 percent. To be able to participate in the programme the student teachers had to learn to use new

technology and online communication for learning which proved to be a challenge. A new model for university teaching and learning had been developed with increased student agency and weaker teacher control than in conventional older models. The new model was also characterised by increased student collegiality with collaboration and sharing of resources for learning. The emerging collective subject (Lektorsky, 2009) had supported development of responsive practices among students and lecturers.

Since the changed model was not being dealt with on a system level there were tensions and frustrations when some lecturers and student teachers had not realised or accepted the demands for changed practice within the programme. For overcoming problems of this kind the teacher education department has to accept and facilitate the changes on an institutional level for example, by changing rules and revising the way in which division of labour is defined.

The school-based student teachers were also having problems related to timing of face-to-face sessions and the organisation of practice teaching since it interfered with school practice. The organisers did not acknowledge the importance of the situation of the school-based student teachers in planning their own activities. In overcoming problems of this kind and developing practice the schools and the university need to look at the education of the student teachers as a shared responsibility and negotiate for acceptable arrangements for both institutions involved.

8.5.2 Emerging concepts and issues of concern

The emerging concepts pointing towards issues of concern are accounted for here and they will in turn be used for formulating the proposal of hypotheses for use as *double stimulations* in developing practice (Chapter 4.4) presented as conclusions in Chapter 10.

The central issue for directing developmental work

Learning to be responsive to other people's needs is the central issue for supporting construction of visionary models for guiding school development within the teacher education programme. The analysis has revealed a need for developing responsive practice at individual, collective and system levels. The most important factor for student teachers in overcoming difficulties and learning to function in the programme was to get support from their fellow students. In contrast a lack of contact with teachers

and a feeling of isolation were frustrating and caused tensions. In the community of the distance learners the affordances of social mediation were imperative. In learning to participate in the programme it was of crucial importance to learn to ask for help, receive help and be helpful to others.

Shared understanding of the object

In developing responsive practice in the distance learning programme it is important that lecturers and students develop a shared understanding of the object. Coordination of tasks for making teaching and learning actions more manageable is the first developmental step but not enough. Problems in schools may be related to teachers and pupils having different understandings of the object (Engeström, 2010b). Leontiev reminded us of the importance of focusing on the object when developing practice in an activity and Engeström has explained how a changed understanding of the object calls attention to a changed mode for communication. One result of this research is that lecturers who emphasise teaching methods based on collaboration support the process of developing a shared understanding of the object of activity in distance teacher education.

New online tools as powerful mediators

New tools have made online distance teaching and learning possible, and innovative developments are constantly being introduced. Vygotsky's theories on the interplay of material tools and conceptual tools (Vygotsky, 1978) remind us of the importance of being aware of the way in which new tools affect the way subjects act on the object of activity. The instrumentalities, i.e. the interplay of online tools and new methods for teaching and learning, have initiated changes in the the object of activity and played an important role in urging students to change their understanding of themselves as student teachers. This does not happen without tensions, reminiscent of Engeström's claim that actions taken to break away from double-bind situations 'typically involve an under-explored aspect of emotional tension, resistance and insecurity' (Engeström, 2006, p. 29).

Mode of communication

New online instruments have set off the development of complicated multilevel toolkits that have served as powerful mediators in developing practice in the distance

programme. The analysis has revealed the *importance of focusing on communication* in online teaching and learning. Development of online distance education requires that lecturers and students *communicate* for developing a shared understanding of the object of activity. Conventional lecturer-student communication needs to be reconsidered, abandoning for example the habit of lecturers addressing students from hierarchical positions, and fostering *personalised communication*. With changed communication teacher control is weakened and student agency increased. It is important to understand how the mode of communication is an important part of developing a shared understanding of the object.

The school-based student teachers as important links to practice in schools

For the development of practice in the programme school-based student teacher contributions became an important link to practice in schools. Since the school-based students have comprised around forty percent of the distance students enrolled in the programme (Björnsdóttir, 2009) (Chapter 1.3.2) their contributions could be an important link to practical knowledge in the schools, drawing the practical side of teaching more into the academy than in conventional programmes. Thus the distance student teachers were contributing to expanding the object of activity in teacher education. As for lecturers the awareness of the situation of the school-based student teachers is thought to have enhanced their sensitivity to the needs of students and provision of support in developing responsive practices.

Responsibility

The central issue identified as *learning to be responsive* to the needs of others in the community of the distance programme, is relevant for individuals, and for students and lecturers *as collectives* as well as being an appropriate vision for directing the future development of the faculty of teacher education as an institution. *Individual responsibility, collective responsibility, system level responsibility* and *shared responsibility* on a system level are proposed as important concepts for use in developmental work. Following Lektorsky (2009, p. 81) collective responsibility only becomes possible when individuals have a sense of belonging to a collective subject in the activity in which they participate.

CHAPTER 9: DEVIATIONS FROM THE CONVENTIONAL: CONTRADICTIONS AS SOURCES OF CHANGE IN TEACHER EDUCATION[4]

The theory of expansive learning put forward by Engeström (1987, 1999a, 2001a, 2007a) offers a systematic way of analysing disturbances caused by inner contradictions within activity systems, considered as the driving force for development of the systems. Contradiction analysis is used in this Icelandic case study to analyse the development of student teachers, the schools where they work and an online teacher education programme. The analysis reveals how student teachers and teacher educators develop their practices by dealing with contradictions. The method opens up an understanding of possibilities and constraints for development at individual and collective levels and uncovers motives that may direct possible future development of interacting activity systems like schools and teacher education.

Activity theorists argue that a qualitatively better form of an activity always begins as an exception from the rule (Engeström, 1999b, Ilyenkov, 1982). The distance programme under study deviates from the conventional form of teacher education in Iceland. The inception of the programme in 1993 is analysed before turning to the situation in 2003-2006 in order elicit possibilities for school development and the development of teacher education. The affordances for both student teachers and schools of having simultaneous access to the activity of the teacher education programme and the development of practice in the schools are explained. This Icelandic interplay between schools and teacher education sheds light on the issue of partnerships between schools and higher education, a concern in developing teacher education (Darling-Hammond 2005; Edwards & Mutton, 2007; Furlong, Barton, Miles, Whiting & Whitty, 2000; Hallinan & Khmelkov, 2001).

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[4] This chapter was published as an article (Jóhannsdóttir, 2010b) in January 2010 in a book titled *Cultural-historical perspectives on teacher education and development* (Ellis, et al., 2010). Since it was published as an independent article, some repetitions are inevitable.

9.1 Context in Iceland

Iceland is a small nation of 320,000 people in a big country, where more than two thirds of the inhabitants live in the urban southwest. Following introduction of stricter legislation about the professional responsibilities of those holding teaching positions in 1978, shortages became evident as up to 25 percent of teachers in compulsory schools (age 6-15) did not have the qualifications required (Jóhannsdóttir and Skjelmo, 2004). Responding to pressure from school districts and from uncertified teachers, in 1993, the University College of Education in Reykjavík launched a full distance learning programme for the Bachelor of Education degree for teaching in compulsory schools.

At the time a grassroots movement of small schools in sparsely populated areas had started to build up internet connections with the aim of connecting all schools in Iceland to the World Wide Web (Jónasson, 2001). It grew into a nationwide network, The Iceland Educational Network, in which the contribution of the teacher profession to the project of developing the programme was crucial. Emerging ideas on lifelong learning and social justice regarding access to education for marginalized groups together with affordances opening up with the internet facilitated the realisation of the distance B.Ed. programme. Further, professionals in schools and the state district educational services played an important role. The interaction of new technology and new ideas made it possible to initiate the programme in response to the need for teachers with appropriate education in the schools (Mýrdal, 1994).

Early on in the programme, student teachers generally worked as teachers in districts where there had been a shortage of certified teachers. In a 1996 survey conducted as a part of an evaluation study on the first cohort (Jónasson, 1996, 2001), about 90 percent lived in rural areas and nearly 90 percent were teaching alongside their studies. With the development of information technology, increasing emphasis has been put on the compatibility of online and on-campus programmes and special rules for admission as a distance student have been abolished. Student teachers may now apply for either programme, distance or conventional, irrespective of residence. In 2004, the percentage of distance students living in rural districts had decreased to 57 percent (Kennaraháskóli Íslands, 2006) yet 42 percent of distance student teachers were teaching in schools (Björnsdóttir, 2009). Thus despite the changed rules for admission, the programme still serves rural communities and meets the need for professional qualifications of non-certified teachers.

9.2 Field of study and data

In the distance programme, the conventional three year B.Ed. course of study has been lengthened to three and a half or four years, or longer if needed. A blended approach is used where face-to-face sessions at regular intervals play an important role. Initially the course schedule was adapted to students who were teaching while being enrolled in the programme. Face-to-face sessions were usually held during school holidays and off campus sessions were more or less independent study, although students could phone or e-mail teachers for support. The development of online tools has made the distance sessions more tangible as students and lecturers are expected to actively participate online. However, face-to-face sessions are still looked upon as important (Jakobsdóttir 2008) although their duration has diminished and the sessions held on ordinary working days.

The research being reported on here and the argument being developed in this article has its origins in a doctoral study of a distance learning programme for initial teacher education in Iceland . It is based on ethnographic fieldwork where cultural-historical activity theory has guided the collection, analysis and interpretation of rich data collected over three years (2003-2006). The main research questions explore the significance for school development of being linked to the teacher education system over time. At the same time I explore the significance of student teachers working as teachers during their university studies, on the one hand for student teachers' learning and for the possibilities it brings to the potential development of teacher education on the other.

The study began in 2003 when a group of researchers, including myself, examining the use of information and communication technology, were visiting schools in a sparsely populated coastal district. During the visit, I came to realize that in some of the schools several of the teaching staff were enrolled in initial teacher education through the distance programme and that in some schools distance student teachers had been regularly employed since 1993. In one small school, all the teachers had got their teacher qualification in the distance programme while a principal in another was regretting that teachers without certification in his school had not gained access yet. This beginning developed into ongoing fieldwork and regular visits to five schools in this district for the next three years.

In three of the schools I interviewed teachers that had been enrolled as pioneers when the programme started in 1993 in order to gain insight into the experience of the first cohort and explore the history of the distance programme from their perspective. In this article I refer to one of them, Elisabeth, who at that time was and still is employed in Waterside School, situated in the biggest town with about 3000 inhabitants and a service centre for the region. At the time of fieldwork I interviewed several teachers in Waterside who were then enrolled in the distance programme. The main participant representing student teachers enrolled in 2003-2006 however was Lilith, a woman in her thirties, who had just started in the programme at the time of my first visit and was willing to let me follow her for the next three years. In Coastline School, situated in a fishing town of about 1000 inhabitants, the situation was similar to Waterside: distance student teachers had been employed since 1993 and among those enrolled in 2003-2006 was Sarah, in her thirties, in the second year of the programme when I first met her and who agreed to participate. On the other hand, Creek School, situated in a small village with around 300 inhabitants was having its first experience of distance students during the time of fieldwork and Sam, a student teacher in his forties, chose to participate in the study.

During spring term 2005, I obtained access to several online courses in which these three students were enrolled. I had an opportunity to trace their inputs on the course web-boards and explore student and teacher online interactions. I also observed the face-to-face sessions in the beginning and middle of the term. Transcripts of interactions in three courses were analyzed using Engeström's triangular model (Engeström, 1987, 1990, 1999a) to capture individual actions in the context of the collective activity. By conceptualising two interacting activity systems as the unit of analysis in analysing the distance student teachers' actions in their schools and in the programme, as suggested by Engeström in third generation activity theory (Engeström, 2001a), it has been possible to explore the development of individuals in the context of systemic development. Such analyses have been conducted with data concerning all three main participants, Lilith, Sarah and Sam; both as teachers in their schools and students in the programme, where their individual development have been explored in the context of the relevant activity, providing detailed descriptions on which the contradiction analysis used here is based.

9.3 Theoretical background

Cultural-historical activity theory is based on the dialectical perspective on development requiring that all phenomena are studied as processes in motion driven forward by contradictions inherent in the unit being investigated (Blunden, 1997; Ilyenkov, 1977). Based on Hegel's dialectical philosophy, development is explained in terms of how people overcome the constraints of a situation by breaking away and transforming it (Skirbekk & Gilje, 1999, p. 486). In such circumstances people find themselves in a double bind situation meaning that they receive contradictory messages on which they are unable to react (Engeström, 1987).

9.3.1 Second stimulation for mediating development

Vygotsky developed the method of double stimulation where a mediating tool is made available to the subject for mastering such situations (Ellis, 2010; Vygotsky, 1978) with the aim of enhancing agency and self-regulation of subjects. Engeström suggests that the method can be applied for enhancing agency in collective activities such as workplaces. He explains that we can think of 'the potential second stimulus as something that has culturally appropriate general affordances but also sufficient ambiguity and malleability so that the subject will have to transform it into a situationally effective mediating device by 'filling' it with specific content' (Engeström, 2007b, p. 374).

Engeström (2007a) has also addressed the importance of understanding the interplay between conceptual and material tools. New material tools bring about the need for new concepts, visions and ideas just as new ideas and visions call for new material tools. This challenges typical approaches in studying technology-mediated learning and work by regarding concepts and visions as an essential part of the technology (Engeström, 2007a, p. 36). The interplay of material and conceptual tools form integrated toolkits to be used for mediating learning and developing practice. Engeström suggests the notion of instrumentality (or a tool constellation) to represent this kind of composite of mediating tools and argues that this kind of toolkit is needed for developing an activity. Access to integrated toolkits can serve as a powerful second stimulation for subjects in breaking away from double bind situations and transforming work and learning. Online programmes with interplay of new ideas and new tools may function as such toolkits.

9.3.2 Contradiction analysis

Activity systems are constantly dealing with outside influences that have to be appropriated and modified to internal factors in the relevant systems (Engeström, 1990, 2001a). This process of appropriation causes disturbances in the systems as contradictions arise in the wake of intruding elements. Contradictions in activity theoretical terms are historically accumulating structural tensions that become noticeable in disturbances and innovative solutions (Engeström, 2005a, p. 314). The imbalance has to be dealt with by the systems, keeping them going and in constant development. In this way, historically new forms of social activity emerge when internal contradictions are resolved (Engeström, 2007a).

Engeström's theory of expansive learning (Engeström, 1987, 1999a, 2001a, 2007a) suggests that contradictions can be identified at four levels. The method is based on ascending from the theories of inner contradictions inherent in all human activity to concrete disturbances in practice within activities (Engeström, 1999a). The resolution of first level contradictions leads to an emergence of contradictions on the second level, and so on. Conflicts, disturbances or tensions in the systems are my analytic focus and are explored to identify contradictions and their resolution. The latter process is an important source for development of both individuals and activities and is a driving force for change whereas a lack of resolution limits development leaving people in a double bind situation.

The method of contradiction analysis is embedded in an expansive learning cycle which presupposes that four levels of contradictions may be detected. The cycle depicted in Figure 9.1 is used as a framework for understanding development in activity systems.

The cycle begins with individuals questioning or criticizing the practice of the activity of which they are a part. The need state of an activity system arises from primary contradictions which may be identified within each element of the activity system. The questioning reflects a need for change in the practice because of tensions or disturbances caused by primary contradictions, the most important being in the object of activity. Primary contradictions are recognized as inner conflicts between use value and exchange value and are reflected in conflicts between an ideal type of work and reality in practice (Pasanen, Toiviainen, Niemelä, & Engeström, 2005).

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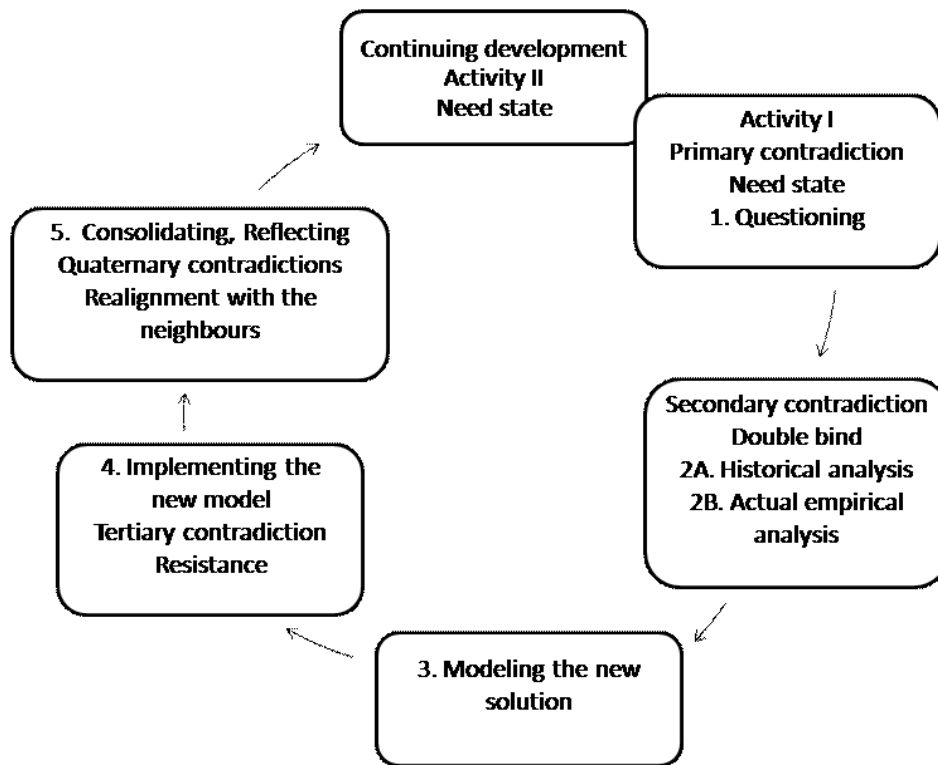
Figure 9.1 The expansive learning cycle (adapted from Engeström, 2001)

The second step is initiated when people experience a double bind situation when tensions caused by secondary contradictions disturb the practice. The double bind situation puts a pressure on people to search for solutions. Changes from outside constantly change the object of an activity initiating new contradictions. Secondary contradictions arise between the components of activity systems and Engeström (1990) claims that they are the driving force behind disturbances and innovations. For example, changed objects or new tools with an unchanged division of labour or rules cause disturbances and prevent development of the activity. Individuals learn and develop as they face and resolve such contradictions (Toiviainen, 2003 p. 36).

The third step includes forming new models for enhanced practice by re-conceptualizing the object and motive of the activity or forming new ones in search of future oriented innovative solutions to the problematic situation. The fourth step is the implementation of the new model which in turn may cause tertiary contradictions to arise between new and old forms of practice when some practitioners resist reforms or there is a resistance in the system where the conventional activity continues to be the general practice. The process of appropriation of novelties into an activity system

causes imbalances and disturbances which have to be dealt with on a collective basis so that all elements and their interplay are reconsidered because:

> every new mode of man's action in production, before becoming generally accepted and recognised, first emerges as a certain deviation from previously accepted and codified norms (Ilyenkov, 1982, pp. 83-84).

The last step in the expansive learning process is evaluation and consolidation of the new form of practice. However a new way of functioning of one activity system may initiate disturbances in its neighbouring activity systems. Quaternary contradictions thus arise on a systemic inter-organizational level where interacting systems need to collaborate on co-configuring their activities for developing a qualitatively better way of functioning (Engeström, 2001a, 2005b).

Using contradiction analysis within the framework of the expansive learning cycle opens up an opportunity to study the development of individuals in the context of their activities as well as the development of collective activities, i.e. the schools and the distance programme. Analysing quaternary contradictions between two interacting systems enhances understanding of the zone of proximal development for teacher education and school development.

9.4 Individuals and collective activities: developing practice

The expansive learning cycle serves as a framework for presenting and interpreting how student teachers develop their practices in the schools and the teacher education programme between which they move. First, the historical phase of the programme is examined to sharpen understanding of the interplay of the two activities. Secondly, an example is given of one student teacher enrolled some ten years later (2002-2006) developing her practice as a teacher while studying. Thirdly, contradictions in the activity system of the distance programme, based on the online course web-boards and interviews with the three main participating student teachers, are analysed. Lastly, contradictions arising between the two interacting systems and emerging shared motives are identified. In the contradiction analysis, motives of the activities emerge and may be used to direct future development (Toiviainen, 2003).

The theory of double stimulation (Engeström, 2007b; Vygotsky, 1978) is used to explain how participation in two different activity systems might open up possibilities for using experience gained in one system to break away from a double bind situation in

the other. Engeström's notion of instrumentality (Engeström, 2007a) can help to explain the interplay of material and conceptual tools and how they may serve as a second stimulation for individuals in breaking away from challenging situations at the same time as initiating new contradictions.

9.4.1 The distance programme as stimulation for school development: the example of Elisabeth

Elisabeth was one of the pioneers in the first cohort of distance student teachers. She explained how problems that the schools in the district had been encountering increased pressure on authorities to establish an unconventional programme to meet the need for qualified teachers. At the time she taught in Waterside which is rather a big school (400-500 pupils) in the main town of the district. She recalls that the school had a poor reputation in the community and results from national examinations confirmed that pupil attainment was not satisfactory. Elisabeth describes how a group of women teachers, without formal certification, started to question aspects of the school and wanted to enhance professional practice. In terms of activity theory they were in the first phase of the expansive learning cycle dealing with primary contradictions in the activity of the school. They were experiencing a double bind situation when dealing with conflict between ideal type of work and reality in practice.

These women had undertaken other kinds of further education but felt that in order to be able to make an impact on school development they needed teacher education. They and others in the same situation put pressure on district authorities to explore alternatives to on-campus education. Concerted pressure from such sparsely populated districts around Iceland led to the establishment of the distance education programme. Six women who were teaching in Waterside school were among the first distance learning students. Elisabeth explained how their education made them more secure and enhanced their position as teachers, allowing them to stand up and make arguments for change, using newly acquired knowledge from courses in the programme. Their mission was to change the image of the school in the community. They wanted to change how they talked about pupils and how they interpreted the role of the school and of teachers. Elisabeth recalls that they had an ideal type of work for school practice to guide their development of reality in practice:

> We wanted to […] become a sort of good school […] the pupils happier so that we could look at the group leaving the 10th grade standing here outside the school and look proudly into the future (Interview, May 2004).

They were expanding the object of activity of the school by rethinking what a good school should do for pupils. For them education was not only about knowledge and attainment in exams but also about happiness and well-being and caring about their future. In dealing with the primary contradictions between what they found to be the ideal school practice and the reality in daily practice they started by trying to change the ways in which teachers talked about the pupils:

> We stopped talking about how tedious Jacob could be and difficult, 'just like his grandmother used to be'. Instead we began talk about what we could do to make Jacob feel better, and how we could organize our teaching so that the slower pupils could manage their learning tasks somehow (Interview, May 2004).

They were dealing with secondary contradictions between new understandings of the pupils and old ways of talking about them. They also had to change old mediating tools such as ideas and methods for teaching and learning that caused disturbances and for that they intended to use the study programme as stimulation. When looking back they felt they had succeeded in developing professional talk and that participation in the programme gave them self-confidence to make their case in support of their ideal form for practice. In this case the distance education programme may be seen as a second stimulus for the teachers to break away from the double bind situation and develop school practice.

9.4.2 Dealing with contradictions in school development: the example of Sarah

Coastline School is (in Iceland) a medium-size school (100-150 pupils) situated in a typical fishing industry town. Like other compulsory schools in Iceland, the object of activity has been changing in accordance with demands from society where ideas on the role of schools have been changing. School authorities have tried to enhance learner autonomy by promoting changed teaching methods and breaking up of the traditional schedule. This has worked for short periods but then teachers have returned to the original setup. The teachers seem to be in a double bind situation since they admit they would like to work according to a more ideal type of work while being unable to change their practices in reality.

Sarah was teaching in Coastline and studying in the distance programme during 2002-2006. Monitoring her for three years provided an opportunity to analyse and understand how she overcame the double bind situation and developed her teaching practice. The experience of working as a support teacher in another school before she started to teach in Coastline made her question the practices there:

> I think like at home you see, there are many good ideas for doing some kind of developmental work but somehow it stops, we do not arrive at working them out all the way. Yes I think that there is a bit of stagnation you see (Interview, January 2006).

The earlier experience supported her in generating her ideal form for school practice and, after entering the teacher education programme, the ideal form was supported both in individual courses and in practice teaching.

Sarah feels that for teachers the most important thing is to reconsider how they think of pupils, and how they look at each of them as individuals, with their personal characteristics and needs. She regards personal communication and mutual respect between teacher and pupils, and among pupils, as the foundation for good teaching. Sarah dealt with the primary contradictions by reinterpretation of the object of school activity, the pupils' education, more or less without discussing it with her colleagues. What supported her were perspectives and ideas from outside, from another school and from the teacher education programme.

Secondary contradictions arise between old tools and the re-conceptualized object when it comes to the use of teaching methods and learning material to fit the changed object of activity. In this case the tools, textbooks and workbooks in interplay with teaching methods, include primary contradictions as their ideal function is to be instructive as a resource for pupils' learning but in reality teachers use them to control pupils' behaviour. Sarah explains how she had to use workbooks as an instrument of control while she was getting to know the children and developing acceptable way to communicate. That took several months and she admits that after four months she was about to give up but then her methods started to work.

> I remember the first lesson when everybody was working. They were all working and no disturbance. I remember it was an enormous triumph, in January I was really about to give in (Interview, April 2005).

After that she could start to use the learning material in an ideal way as a resource for pupil learning, choosing according to individual needs and giving pupils agency to select material to work on and progress at different rates. The tool that she used for support was exact documentation of each pupil's progress using a spreadsheet. This material tool, in interaction with conceptual tools (in the form of theories of teaching and learning she had come to know in the teacher education programme), seems to have served as the second stimulation she needed to break away from a double bind situation and develop her practice. This is in accordance with Engeström's claim about the importance of interaction of material and conceptual tools for mediating actions in an activity.

At the time of data gathering, tertiary contradictions had not arisen between Sarah's advanced practice and the school practice in general as her mode was still in the form of innovation from below and had not been worked with collectively on a systemic basis. However other incidents in the school suggest that it would have to react collectively to changes from outside. A problematic situation had come up when the older pupils complained about how teachers addressed them and didn't take their perspectives into account. Having re-conceptualized their role and status according to contemporary discourse on individualized teaching, where the school is supposed to meet their personal needs, pupils did not accept the old form of authority where school authorities control without listening to their views. These are identified as secondary contradictions between a changed object of activity and old rules for communication in the school as a collective activity system.

Sarah is an example of an individual change agent working on implementing a qualitatively better model of practice in Coastline. She dealt with the contradictions in the old form for activity and worked out new solutions and tried them out. The next step in the development would be that the new form is then taken over by others (Ilyenkov, 1982) and Sarah related how her colleagues were starting to come to her in order to learn from her approaches.

9.4.3 Students and lecturers dealing with contradictions in the programme

Now we turn to how contradictions cause disturbances in the activity system of the programme and how both students and lecturers need to break away from double bind situations brought about by the contradictions for developing the practice.

The most important primary contradiction is found in the object of each activity. In teacher education this is between its use value, where a student's motive for learning is its usefulness for developing one's practice as a teacher, and the exchange value, i.e. the grades achieved and the professional licence necessary for a teaching career. The situation of the student teachers in this study, makes the ideal form more attainable since having responsibility as teachers is likely to support them in acting as responsible students and working as teachers makes them likely to appreciate the use value of their studies.

The internet played an important role in launching the programme in 1993 and has since in interplay with new ideas about teaching and learning become a powerful tool, initiating tensions that call for resolutions. Learning management systems have become part of general practice in the programme affording tools such as threaded discussion and possibilities for sharing documents which have opened up space for students' online collaboration. This has developed in interplay with educational theories that stress the sociocultural side of learning. Lecturers have in turn developed instructional approaches enhancing student agency to participate and contribute to the online activity.

Analysis of the development of the programme reflected how teacher educators dealt with primary contradictions between supporting and controlling student learning. The theories of Vygotsky (1978) remind us of the importance of enhancing agency in learning situations which calls for teachers to weaken their control. That affects the traditional division of labour between teachers and students and analysis of interviews with students and transcripts of courses reveal how students and lecturers are dealing with transformations in their roles.

When student teachers are given agency in their learning tasks they struggle with contradictions that arise between the conventional old rule of students who were supposed to take directives from the teacher and the transformed new role where they are supposed to take responsibility for their studies. Sarah recalls:

> I thought it was really difficult because I did not know what she wanted us to do. But at the same time I thought: Why is it bothering me? I should be doing this for me and not for her (Interview, January 2006).

Sarah experiences tensions when the teacher educator weakens control but at the same time her reactions reveal how she is reinterpreting her role as a student and learning to take responsibility. However lecturers might go too far in weakening the control thereby depriving students of guidance. Lilith gives an example:

Yes, sometimes he needs to control better what is going on in WebCT. He definitely should be more active but he says that he is afraid of controlling too much and directing our discussions so that we would try to do what we think the teacher would like us to do. So we dig through it on our own (Interview, January 2006).

This reflects how both students and lecturers were dealing with contradictions in the process of transforming their ideas although not necessarily being in tune with each other. Secondary contradictions are found between the new transformed understanding of the student teacher (the object), and old teaching methods and modes of communication. Teaching methods that imply more student control demand a reconsideration of communication built on hierarchical status where the lecturer has power and students take orders. In addition both teachers and students have to learn to communicate online where the traditional social cues of the school environments are absent. Lilith describes how student teachers deal with this:

It takes the first year to learn how to communicate on the WebCT. […] Someone says something that turns everything upside down. […] We are putting forward our opinions but we need to mind how we say things. […] Because, communicate online is so new to most of us. […] (Interview, January 2006).

The problem however has been that only some of the teacher educators participate in this process while others are absent or hesitant, not knowing their role in the new situation (online communication and changed roles). Conventional teacher-student communication lags behind the advanced form which is being developed online. The contradiction analysis showed tensions when teachers' communication was perceived authoritative by students who don't accept the traditional power relations between teachers and students once they have transformed their understanding of their roles respectively. In such cases teacher educators act as if the object of activity is still the old one while students feel that they are participating in a more advanced programme. That leads to tertiary contradiction arising between the object/motive of the older form of the activity and the object/motive of a developed form of the activity. Sam's experience of this is shown in the following.

Normally, online learning management systems are platforms for teaching and learning and students experience them as an importance replacement of classrooms. Online discussion has become a common form for communications and students are accustomed to using the web for collaboration. Therefore it causes tensions when lecturers use old approaches based on one-way delivery of material where no online

activity is assumed. Describing one course, Sam recalls that: 'They sent a letter every ten days […] we were only supposed to read.' (Interview, January 2005). The teachers didn't use the WebCT and that became problematic since the students felt that they were deprived of support both from the teachers and each other and also of the right to respond, to write back to what they had been reading. Because there were no obligations to participate online (or hand in assignments) the students neglected the course and about one third of them did not finish the course. The students had developed their practices as online learners in accordance with what they had interpreted as the accepted model for distance learning. Their reaction was to interpret the teachers as remnants from the old days: 'still living in the turf cottages' as they put it, and bit by bit their activity decreased and about one-third did not complete the course.

9.4.4 Interaction of the schools and the programme

The last phase in the expansive learning cycle is to identify quaternary contradictions that emerge between the activity system of the programme and the activity systems of the schools. Despite causing disturbances, principals appreciate the positive effect on school development when teachers are enrolled in the distance programme. Face-to-face sessions and practice teaching however are problematic since in both cases the students have to be away from their classes. On-campus sessions collide with the school start in the fall, an important time for planning and preparing internal work and procedures as well as receiving new pupils; all especially valuable for professional development of student teachers and of themselves as learners. Pupils are vulnerable if their teachers are absent when schools start in the autumn and, like Lilith says, 'it is ridiculous that this is not shown regard for when the face-to-face sessions are planned. […] It is a precious cargo we have onboard' (referring to the pupils in the classroom) (Interview, April 2005).

Two contradictions are identified here. First, a programme for student teachers to develop professional competence plans its schedule in a way that deprives them of a valuable opportunity to do so. Second, teacher education, the ideal form of which builds on notions of children's education and well-being, operates without regard to the situation of those students working as teachers in schools, planning for them to be away at a time when pupils are vulnerable. The quaternary contradiction analysis reveals emerging common motives and objects of activity of two interacting systems. Here the

original motive of the distance programme of serving the schools and the pupils emerges. In order to further develop, both the schools and the teacher programme need to focus on their shared objects and negotiate co-configuration of their activities on a systemic level.

9.5 Summary and conclusion

Using the expansive learning cycle in analysing student teachers encountering school development by dealing with contradictions in schools opens up an understanding of the interaction of individual and systemic development. Their example shows how teacher education can serve as a second stimulus for school teachers, supporting them in breaking away from their double bind situations when dealing with primary and secondary contradictions and developing their practices. However, it also shows the constraints of individual development since, when it comes to tertiary contradictions, they have to be dealt with at an institutional level, which in turn may initiate quaternary contradictions between interacting systems.

In the teacher education model focused on here, the student teachers work as teachers while enrolled in initial teacher education. Contradiction analysis reveals disturbances arising in the programme when the objects of activity as well as tools are changing; i.e. student teachers working as teachers instead of pre-service students and online tools instead of classrooms. The interplay of new online tools and new theories on learning and teaching, along with policies to meet social as well as individual needs, have initiated new approaches in the programme. Both students and teacher educators, although not all of them, have reacted by redefining their roles. In dealing with tensions arising in this situation, student teachers can use their experience as teachers in the schools as a second stimulation supporting them in taking responsibility in the student role. Acting as a responsible student includes adopting the ideal form where the use value of learning has higher priority than the exchange value. The distance students are in this respect different from conventional student teachers and their case can be interpreted as a deviation that points towards future development where the object of teacher education could be expanded.

Historically, the object of teacher education programmes has been to educate teachers. The object of the schools is to educate children but at the same time to be a workplace where teachers participate in professional development. In the schools where the student

teachers work, the object of the activity has been expanded and the schools have in effect shared the responsibility for educating teachers and the teacher education institution, by implication, shared the responsibility of professional development. This new object has affected the schools and thus caused disturbances. To develop the systems by resolving disturbing contradictions, negotiation on a systemic level is needed with shared objects as a point of departure.

Contradiction analysis and the expansive learning cycle reveals how fruitful it is to consider schools and teacher education as interacting activity systems and the need to co-configure their activities (Engeström 2004). Analysing the contradictions arising between the schools and the teacher education has shown the original motives that are supposed to direct these activities towards their ideal form. Taking the historical phase into account in the analysis has also been of crucial importance. It is remarkable to notice that the distance programme was initially launched as a 'deviant' form of teacher education in response to a need state in the schools. Realizing how the district schools took the initiative, supported by a grassroots movement of teachers interested in using new technology to serve educational needs, seems to be a good example of how interplay of new tools and new ideas (instrumentalities) initiate change in activity systems. Ten years later (2003-2006) my claim is that student teachers teaching in schools use their access to the distance programme as a means of second stimulation. Within the activity system of the programme, student teachers experience interplay of new tools and new ideas which supports them in breaking away from double bind situations in developing their practices.

Analysing the distance programme from an activity theoretical perspective offers a powerful way of understanding its significance for school development. Enhanced understanding of schools and teacher education as interacting systems reveal the need for co-configuring their activities and to direct their future development by building shared motives.

CHAPTER 10: SUMMARY AND CONCLUSION

10.1 Introduction

This research project has focused on an alternative form for teacher education where the place of learning is simultaneously in schools and in university. The relationship of schools and universities when student teachers work in schools while enrolled in a distance teacher education programme opened up an opportunity for research into the meaning and importance of the relationship for student teacher learning, for school development and for development of the relevant teacher education programme in particular and teacher education in general.

Activity theorists argue that a qualitatively better form of an activity always begins as an exception from the rule (Engeström 1999b, Ilyenkov, 1982). The distance programme under study was initially launched as a 'deviant' form of teacher education in response to a need state in the schools. The district schools and heads of regional educational offices took the initiative and called for an alternative form for teacher education for teachers that were not in a position to move to Reykjavík for the regular programme. The Iceland University of Education responded to the call, supported by a grassroots movement of teachers interested in using new technology for serving rural schools. An alternative programme began in 1993 stimulated by interplay of new online tools and new ideas on life-long learning.

The study has provided useful insights into how school-based student teachers learn to become teachers when studying in a distance programme. By analysing their developing practice in the situational context of the activity systems in which they act we can comprehend how individual and collective developmental possibilities are intimately interrelated to developments of both the system of the schools and the programme. My research aimed to reveal the developmental possibilities of teacher education and school development and my research questions were:

1. What is the zone of proximal development for *individual student teachers* in relation to the activity systems of the school in which they are situated? (Chapter 7 and 9)
2. What is the zone of proximal development for the *schools as activity systems*? (Chapter 7 and 9)

3. What is the zone of proximal development for the *teacher education programme as an activity system*? (Chapter 8 and 9)

4. What is the zone of proximal development for the *schools and the programme as interacting activity systems*? (Chapter 9)

Cultural-historical activity theory founded on the theories of Vygotsky, Leontiev and Luria (Chapter 3.1) has been used as a theoretical framework in the research. The expansive learning theory and methodology developed by Yrjö Engeström and the method of contradiction analysis for analysing development as an expansive learning cycle has been my research tool. Contradiction analysis where the learning trajectories of the student teachers have been examined as a journey through the expansive learning cycle has led me to conclude that the *zone of proximal development* for the student teachers is dependent on system development in the schools as well as in the programme. Therefore the findings from the analysis of the trajectories of student teachers working in the schools (Chapter 7) and of distance students studying in the programme (Chapter 8) are presented in the form of hypotheses for use in school development and programme development respectively.

Analyses of the possibilities for individual as well as system level development of the schools and the university as interacting activities (Chapter 9) have given weight to possibilities for inter-organizational boundary work between schools and teacher education. For overcoming the disturbances arising between two interacting activity systems it becomes necessary to focus on the relationship of the university programme and the schools and consider their *zone of proximal development* as interacting activity systems.

10.2 Key findings and hypotheses for developmental work in schools

10.2.1 The zone of proximal development for individual student teachers in the schools and for the schools as activity systems

The discourse on personalised or individualised approaches in teaching, which had become pervasive in the Icelandic school community, called for changed practices in schools. In two of the cases in this study, the methods and theories promoted in the teacher education programme supported the student teachers in learning to be teachers that could meet these new demands. The prerequisite, however, for using new teaching methods and learning materials differently, was their reconsideration of their object of

activity. For student teachers learning to be teachers in schools it is important to have a future vision of pupils' lives when recognising the role of teachers and schools in educating children. Such a future vision arises from experiencing practice with children with different needs which calls for developing responsive practices which includes cultivation of sensitivity to children's needs where a key issue is listening to pupils and collaborating with them.

The analysis of the three student teachers working in their home schools shows clear differences in their opportunities for developing their professional practice as teachers. In the schools where affordances for social practices as well as models for ideal forms for practice were available student teachers had more resources to draw on in developing their practice. Van Huizen et al. (2005) emphasise the importance of supporting student teachers by providing them with affordances where they are able to draw on other people's experience. In one of the schools collective responsibility was identified and following Lektorsky (2009) this means that there is a sense of a collective subject in the school which make possible development of collective responsibility. The analysis of the student teachers' learning processes in their home schools has led me to conclude that to support their education as teachers there is a need for developmental work in the schools in which they are situated. Therefore my conclusions are presented in the form of hypotheses proposed as a double stimulation for practitioners in school development.

10.2.2 Hypotheses proposed as double stimulations in developmental work in schools

The following hypotheses are generated from the analysis for stimulating developmental work in schools that will work towards social inclusion and implementation of differentiated teaching methods:

a) It is argued that a *future vision of pupils' lives* is important for teachers and student teachers when recognising the role of teachers and schools in working with children in motivating responsibility.

b) Emotional experience (*perezivania*) in actual school practice is a key issue in the formation of visionary models for directing/guiding teaching and school development.

c) In working for inclusion in schools teachers paying attention to pupils and listening to them is important.

d) Development of differentiated teaching methods indicates that teachers and pupils collaborate in developing a shared understanding of the object of school activity.

e) In the process of developing a shared understanding there is a need for reconsidering teacher pupil communication. The importance of communication requires a focus on the script of school practice as an independent object.

f) To develop practice it is important to enhance *individual* and *collective responsibility* of teachers as well as *system level responsibility* of schools as institutions.

g) Participation in a distance teacher education programme can be inspiring and supportive. The way in which school-based student teachers are able to use participation to support their learning depends on conditions in the schools where they are employed.

10.3 Key findings and hypotheses for developmental work in the teacher education programme

10.3.1 The zone of proximal development for the programme as an activity system

Results point to the importance of developing responsive practice at individual, collective and system levels. The most important factor for student teachers in overcoming difficulties and learning to function in the programme was support from their fellow students. In the community of the distance learners the affordances of social mediation were imperative. It was of crucial importance to learn to ask for help, receive help and be helpful to others. In contrast a lack of contact with teachers and a feeling of isolation led to frustration and caused tensions. Teaching methods based on collaboration support formation of *collective subjects* among student teachers which enhance sensitivity to the need of others. The analysis has revealed the importance of *collective responsibility* in developing collegiality and mutuality in the community of distance learners as well as how a lack of collective responsibility of lecturers caused problems and frustration among students. The lack of a system level response to distance student teachers in general and school-based student teachers in particular, as a changed object of activity in teacher education, has hindered development and caused disruptions.

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10.3.2 Hypotheses proposed as double stimulations in developmental work in the teacher education programme

a) *Being responsive to participants in the programme community* is a central issue for developing a sense of a *collective subject* in the distance programme.

b) In developing responsive practice it is important that lecturers and students develop shared understandings of the object.

c) Lecturers emphasising teaching methods based on *collaboration* support the process of developing a shared understanding of the object of activity in distance teacher education.

d) The mode of *communication* is an important part of developing a shared understanding of the object as well as formation of a *collective subject*.

e) New online tools call for new concepts and visions, initiating change in the object, affecting how subjects experience their participation in the activity and demonstrating the need to change the practice.

f) To develop practice in the distance programme *individual* and *collective responsibility* of students and lecturers as well as *system level responsibility* on an institutional level is needed.

g) *Being able to work as teachers in schools* while enrolled in the teacher education programme is important for students when overcoming the primary contradiction inherent in the object of their activity between the use value and the exchange value of their studies. The use value is becoming better teachers the exchange value is getting teacher certification. This dual experience has the potential to make school-based student teachers desirable participants in developmental work where the use value and ideal form for practice are expected to guide developmental work.

10.4 Key findings and hypotheses for developmental work in inter-organisational boundary work

10.4.1 The zone of proximal development for the schools and the programme as interacting activity systems

When the schools and the teacher education department collaborate on a system level they are expected to work together as partners. In order to develop practice of two

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interacting activity systems Engeström (2007a) has suggested co-configuration work where two systems focus on their shared object with the aim of radically broadening it. Co-configuration work assumes that organizational authorities are involved in the boundary work. Negotiated knot-working is another form of boundary work suggested as an emerging form of developmental work (Engeström, 2005b; 2008, p. 208; Engeström, Engeström, et al., 1999). Knot-working is based on individual and collective agency of practitioners where success is based on deviation from standard procedures and the challenge is to attain distributed agency (Engeström, 2008) (Chapter 3.3.4). This kind of horizontal collaboration assumes that systems meet on an equal level and use dialogue for creating knowledge and transforming activity, 'by crossing boundaries and tying knots between activity systems' (Engeström, 2007a, p. 38) (ibid, p. 38). In knot-working collaboration between partners is crucial, though more spontaneous than co-configuration and initiated by practitioners without predetermined rules or central authority.

For taking the inter-organisation development beyond a straightforward coordination of tasks, collaboration would be needed for developing shared understanding of the possible shared motives and objects of the school and the teacher education. By analysing the contradictions arising between the schools and the teacher education the need for expanding the object of activity of both systems has been revealed as a necessity for the schools to embrace teacher education and a need of the university programme to recognise and work towards school development. Individual student teachers, as boundary crossers between their home schools and the university programme, were able to draw on their participation in the teacher training programme as a double stimulation in developing their practice as teachers in schools, and vice versa; the experience of teaching supported their academic learning and the experience of learning in the programme supported their work as teachers.

In inter-organisational boundary work the focus is not only on the possible shared object but also on the mediating tools needed to develop mutual understanding (Engeström, 2007a, p. 24). Such complicated tasks call for multilevel artefacts or instrumentalities to serve as double stimulations for practitioners in expanding the object of work and opening possibilities for new knowledge creation. This study provides such multilevel tools in the form of hypotheses referring to different levels to be taken into account in developmental work (Engeström, 2007a, p. 34). In the first

place the study emphasises that the construction of future visions for teacher education and school development is supported by the *central issues* proposed for directing future development of the activities (Chapter 7.5 and 8.5). The central issue identified for developing responsive school practice is *paying attention to the learner*. For developing responsive school practice this means listening to pupils and for developing practice in the teacher education programme this means *being responsive to the needs of student teachers*.

The theories of learning and development have the role of explaining why development should move in the direction proposed. The theoretical models of cultural-historical activity theory, such as the triangle model of an activity system and the model of the expansive learning cycle, explain development. Models of the learning processes of the student teachers, resulting from the analysis in this study, ground the theoretical models in Icelandic reality and may be used to explain how learning processes evolve in practical situations (Engeström, 2007a, pp. 34-35). The study has shed light on the importance and power of material online tools for dialogue and sharing in the collaboration process. However, technology calls for new visions, ideas and concepts for serving as instruments in situations where new knowledge is being produced. Such material tools are important for anchoring collaboration and communication in practice.

10.4.2 Concepts, visions and hypotheses proposed for use in inter-organisational boundary work

The key issues call for both sensitivity to learners' needs and the importance of responsive practice in schools and programme development. Expanding the focus from individual responsibility to embrace collective responsibility, be it fellow students or colleagues, is necessary and attention has been called to system level responsibility of the schools and the university as institutions. Therefore the *key hypothesis* suggested as a double stimulation in inter-organisational developmental work between the faculty of compulsory school teacher education and the compulsory schools in Iceland is as follows:

> In order to develop the practice of compulsory schools and of the department of teacher education, as interacting activity systems, *individual* and *collective responsibility* of students and lecturers and *system level responsibility* of the university and the schools at an institutional level is needed.

By revealing the *zone of proximal development* for the schools and the distance programme as *interacting systems* the analysis has provided a vision for the development of teacher education as a shared object between schools and faculties of teacher education. The central issue proposed for stimulating inter-organisational developmental work is therefore:

> An acceptance of *shared responsibility by the schools and the teacher education department* is the central issue in guiding collaboration in the construction of a future visionary model to direct the development of teacher education.

In order to clarify why *shared responsibility* is proposed as a central issue and why the *key hypothesis* above involves multilevel responsibility several issues of concerns will be discussed below and some subordinate hypotheses presented.

The place of teacher education

The study has enhanced understanding of how teacher education embraces both academic and practical learning where both the university and the schools have a role to play. Teacher education should be considered as a shared object of the schools and the university-based teacher education programme. The department of teacher education should recognize both the importance and the role of schools in the process of student teachers learning to be teachers. In the same way the schools would have to appreciate the potential value for school development of looking at initial teacher education as a shared object and therefore shoulder responsibility by including education of teachers in their object of activity.

In negotiating the place of teacher education when co-configuring the practices of schools and teacher education the following subordinate hypothesis is proposed as a double stimulation in developmental work:

> Teacher education embraces both theoretical and procedural learning. Interplay between the two is important for learning and development. Schools are the places where student teachers learn to develop practice as teachers and the teacher education programme is the space where student teachers get acquainted with theoretical knowledge. For enhancing their practice both schools and teacher education should collaborate for planning and managing education of teachers that is for *sharing responsibility*.

Responsive practices on system level as well as individual level

Awareness of the different situations of school-based student teachers calls for developing a practice that would be responsive to their needs. Just as teachers in schools are presumed to differentiate their teaching methods to meet different individual needs of pupils so too would the university offering teacher education be required to take into account the different needs of school-based student teachers and the schools where they are situated. Teacher educators responsible for the distance programme, recognizing the *zone of proximal development* of the student teachers in their situations in schools, would have to take into account the needs of student teachers. *Schools as systems* have to be taken into account, since the individual student teacher's development is related to the development of the activity system of the school where she or he is working. Teacher education institutions would also have to embrace school development as part of the object of their activity, shared with the schools, therefore calling for collaboration.

When the connection of schools and the teacher education institution is seen in terms of interrelating activity systems the role of the teacher education institution, to generate theoretical knowledge for stimulating school development, becomes apparent. Research and theories are of limited value, or to a certain extent misplaced in professional education, if they cannot be used for developing practice. When the focus moves to the system level attention is drawn in more detail to development within institutions, that is, the generation of theoretical knowledge in the faculty of teacher education and procedural knowledge in the schools.

The core of cultural-historical activity theory is based firmly on the dialectical understanding of the interrelation of theory and practice (Engeström, 1999a). Therefore dialogue between procedural development in schools and theoretical development in the university is crucial. Vygotsky (1986, p. 171) claimed that scientific knowledge can be used as a mediating tool to break away from the constraints of the immediate situation of everyday practices. The theory of double stimulation presumes that people overcoming everyday challenges are afforded scientific concepts as a double stimulation for support (Engeström, 2007b; Vygotsky, 1978).

Furthermore, it is important to realize that knowledge created in practice is apt to stimulate the development of theoretical knowledge. Therefore it is important for the

teacher education faculty as a research institution to be in close connection with the schools as workplaces and recognize the nature of practical problems, tasks and knowledge developing there and in what way this might stimulate researchers and make their generation of theoretical knowledge useful for the schools.

The object of the teacher education programme would be to serve the schools, providing student teachers with academic knowledge to support their practice as teachers. Moving this object from the context of individual students to the system level focuses attention on the role of educational research in serving the need of schools for knowledge with which to develop their system level practice. Thus the teacher education programme is not only interacting with individual student teachers, but also in a very fundamental way, with the schools as systems. Examining the vertical relationship of schools and teacher education revolves around the usefulness of theory for practice development and of the importance of grounding theoretical development in practice. In effect the connection of teacher education institutions to schools should be recognized as a fundamental resource and vice versa.

For the university to be responsive to the need of the schools lecturers need to collaborate and talk to practitioners in schools and listen to their needs. For the schools to be able to use the knowledge produced in universities a dialogue between academics and practitioners would facilitate its use in practice. Research that does not reach the ears of practitioners is of no use for school development and at the same time academics need to learn to be responsive to the need of actors in the schools. Thus school practitioners need to learn to listen to contributions from academia and vice versa.

Another subordinate hypothesis suggested for supporting the key hypothesis is therefore:

> Dialogue between practitioners in schools and teacher educators on procedural development in schools and theoretical development in the university is crucial. For collaborating on a system level and developing *shared responsibility* it is important to work towards enhancing understanding and awareness of how theory and practice interrelate and depend on each other.

The potential of online technology

This study has enhanced an understanding of the important role that the new online technology has played in the development of the distance programme and the learning processes of distance student teachers. The interplay of online tools and new ideas, such as an emphasis on lifelong learning and socio-cultural learning theories, has initiated changes in and played an important role in the development of a new model for teacher education as seen in the distance programme. Vygotsky's theories on the interplay of material tools and conceptual tools (Vygotsky, 1978) remind us of the importance of being aware of the need to develop new concepts and ideas when new tools are introduced into an activity.

This generates the following subordinate hypothesis:

> Material tools are important for anchoring collaboration and communication in practice. It is important to be aware of the complicated effects that new tools bring into a situation. In complex developmental work there is a need for powerful mediators, both material and conceptual. New technology in interplay with new visions, ideas and concepts serves as important double stimulation in such work.

The role of school-based distance student teachers in inter-organisational boundary work

In developing teacher education through collaboration between schools and the university institution, the experience of having been a school-based student teacher while studying for teacher certification via a distance programme is of great practical value when negotiating connections between future visions and practical solutions. Such students have the experience of participating in both systems and of boundary crossing. Their contribution to development is possible and valuable. Being based as teachers in schools while enrolled in the teacher education programme was important for students when overcoming the primary contradiction inherent in the object of their activity; that is between the use value of the studies for enhancing their practice as teachers, and the exchange value of their studies, which involves getting teacher certification and thereby enhancing their situation in the labour market. This experience makes the school-based student teachers desirable participants in developmental work where the use value and ideal form for practice are expected to direct developmental work. This brings us full

circle and leads to the final subordinate hypothesis proposed for use in developing teacher education in school-university collaboration:

> It is important *to listen to school-based student teachers* with regard to their contributions based on their experience of boundary crossing and developing practical solutions directed by future visions.

10.5 Some afterthoughts

When I decided to use activity theory as a theoretical framework for my study I felt that the expansive learning theory and methodology developed by Engeström would be fruitful. My first challenge has been understanding the theory and the second learning how to apply it in the research work. During that journey I have experimented with different models and concepts for analysing my data, such as Star's concept of boundary object, Wenger's concepts brokering and change agents and the idea of horizontal developmental transfer proposed within activity theory (Chapter 3). Although they were not used in the final analysis they have been useful and supported my understanding of the theory and I believe they will become useful in the developmental work presumed to be a sequel of the thesis.

The research work has convinced me of the fruitfulness of the expansive learning approach and it continues to be an eye-opener for me when thinking about development in education. During the last days of the work on preparing the manuscript for print I have realized the importance of the formation of collective subjects in activity systems. I would like to take that as a challenge to explore the concept of collective subjects in relation to the concept of relational agency developed by Anne Edwards and Bourdieu's concept of social capital. I think it might be worthwhile examining the potential inherent in bringing them together for developing a powerful double stimulation for supporting agency of people of all ages living and working together in communities.

10.6 Final words

The journey I have undertaken in this thesis started during a visit to fishing villages similar to the village I come from. At the time I had recently written a master's thesis on the promises of ICT in education which I called *Let's set the net to catch education* (Jóhannsdóttir, 2001) and was preoccupied with the idea of how the new technology

could open up access to the world of education for teachers and pupils in the regions typical for rural Iceland.

Researching the experience of student teachers in their situation as teachers in local schools required me to take a journey into the theoretical world of academia where I became acquainted with theories and concepts from cultural-historical activity theory. I came to realize that although the technology is an important material tool it is only the tip of the iceberg. For the student teachers enrolled in the distance programme the Internet was connecting the world of academia and the world of practice. My focus turned to the nature and importance of the relationship of these worlds and the importance of cultivating their relationship for developing better practices in education and society. Through my work I have developed my understanding of the importance of interrelationship of theories and practice and realized that education is not a one-way route from academia to the world of practice. The Internet and new technology have potential as boundary crossing tools to connect the two worlds with traffic in both directions. The importance of practice for developing theoretical knowledge is no less important than access to theoretical knowledge for developing practice.

I have learned to look at schools as workplaces where teachers develop their practice for the benefit of children. In similar ways teacher education is a part of academia and is the workplace where lecturers develop their practice for the benefit of children and schools as places for nurturing children in our society.

In working on this thesis, the importance of not losing sight of the future visions that direct our activities has become clear to me. I hope that in my personal journey between the village and the world of academia that this research contributes to better schools for our village kids.

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List of appendices

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Appendix I: Fieldwork for generating data – an overview of school visits, monitoring of courses and interviews

Date	Waterside School	Coastline School	Creek School	Cove School	Marwick School
1-2 April 2003	School visit and interview with Elisabeth, vice-principal, enrolled in the first cohort in the distance programme 1993 and Lilith, ICT teacher and distance student in her 1st year.	School visit and interviews with the principal, who recently had graduated with a master's in the distance programme, and the ICT-teacher who was a former distance student.		School visit and interview with the principal and the ICT teacher.	School visit and inter-views with Helen, the principal, enrolled in the first cohort in the distance programme 1993 and the ICT teacher.
4-6 Feb 2004	Visit to the the centre for adult education in the region placed in Waterside. Interview with the director regarding distance education. Interview with a focus group of three distance students in Waterside not teaching while enrolled, to discuss distance teacher education. Interview with a focus group of three teachers for discussing use of ICT in the school: Olga, a teacher and a distance student in her 3rd year Vera, a subject teacher and former distance student and Lilith, a teacher and ICT specialist, distance student in her 2nd year . Interview with a focus group of lower secondary pupils from Waterside (4) and Coastline (2), 4 girls 2 boys.	School visit and interviews for discussing distance teacher education: Two distance students, Sarah in her 2th year and Susan in her 4th year. Two former distance students. Jenny enrolled in the first cohort in the distance programme and Julia enrolled in the second cohort. Both studying in the graduate programme via distance at the time of visit. The principal Alexandra on the value of distance education for the school. Focus group of teachers for discussing ICT: Jane, a teacher and a distance student Anne, a subject teacher, and Jenny, see above.		Interviews with one teacher and a focus group of all pupils in the 10th grade age 15, 2 girls, 3 boys.	Interview with Helen on her experience of being in the first cohort in the distance programme. School visit and interviews with all five teachers in the school including the principal on the use of ICT in teaching and learning.
Late May 2004	School visit and interview with Elisabeth on her experience of being in the first cohort in the distance programme.		Interviews on distance teacher education: Two distance students, Sam and Emma who had just finished their first year in the programme.		School visit and interviews for discussing ICT with a focus group of all pupils in the lower secondary level, age 13-16, 4 girls 2 boys.
Jan and April 2005	Interview with Lilith in her 3rd year while she was attending a face-to-face session on-campus in Reykjavík.		Interview with Sam in his 2nd year while he was attending a face-to-face session on-campus in Reykjavík in January and again in April.		

Date	Waterside School	Coastline School	Creek School	Cove School	Marwick School
March 2005		Observation in an on-campus session in a textile-course which Sarah was attending, followed by short interview with her and Mary a distance student from the region working in Creek school that school-year.	Classroom observation of Sam teaching practice in a school in the north and follow up interview with Sam and the practice teacher. Two days observation in a face-to-face session in Reykjavík in a course which Sam was attending.		
12-20th April 2005	School visit. Two whole-day field observations and interviews. Interview with the principal Donald on the value of distance education for the school. Interview with Lilith, finishing 3rd year and one day classroom observation in her class. Informal interviews with many teachers both on ICT and the distance teacher education programme of which many teachers have experience. Visit to the the centre for adult education.	School visit. Two whole-day field observations and interviews: Interview with the new principal Rachel on the value of distance education for the school. Interview with Sarah, finishing her 3rd year and one day classroom observation in her class. Informal interviews with many teachers both on ICT and the distance teacher education programme of which many teachers have experience.	School visit. One whole-day field observations and interviews. Interview with Sam, finishing 2nd year and one day classroom observation in his class. Informal interview with the principal and Emma who dropped out of the programme this year and is moving to Reykjavík.		
Late May-June 2005	School vistit. Interview with the compulsory school counsellor for Waterside municipality, including Cove and Creek. Interview with Olga, a distance student who has just graduated with B.Ed. degree.	School visit and interview with Sarah, one of the tree main participants at the time of visit just having finished her 2nd year.		School visit and interview with two distance student teachers finishing their first year in distance learning. Interview with the principal on the value of distance teacher education for the school.	Interview with the principal Helen on the value of distance teacher education for the school.
Spring semester 2005	Followed an online courses, *Science and creative art for lower primary* in which Lilith participated.	Followed an online course, *Arts and crafts* in which Sarah participated.	Followed an online courses, *Ethics* in which Sam participated.		
Fall semester 2005	A telephone interview with Lilith.				
Jan 2006	Interview with Lilith attending an on-campus session in Reykjavík.	Interview with Sarah attending an on-campus session in Reykjavík.	Interview with Sam attending an on-campus session in Reykjavík.		

January 2005

To student teachers in the [...] course

I, Thurídur Jóhannsdóttir, am working on research on the distance programme for compulsory school teachers at the Iceland University of Education. In the research I use qualitative methods with the aim of understanding the way in which student teachers in the distance programme learn what is needed for being professionals in teaching and how their learning changes their practice and views. The research is based on interviews with student teachers living in rural areas, observations in face-to-face sessions on campus and practice teaching of some student teachers. I strive for understanding learning in the programme from the point of view of the student teachers.

The message of this letter is to ask for permission to monitor the progress of the course [...] on the course web WebCT. It would be a kind of field observation and I as a researcher would get permission to monitor what happens on the course web which may be looked upon as an online classroom for the distance programme. When refering to what happens in the course anonymity will be respected; personal data will be encrypted and when information is generated from the data it will not be possible to trace the information to individual teachers or student teachers.

With this letter I ask for an agreement on behalf of student teachers for letting me use their input in the online course as data in my research. Those who permit participation are asked to answer this email by writing agreed in the reply (reply – agreed or not agreed). It shall be mentioned that those who agree to participate have the right to withdraw if they so wish, whenever they like.

I hope that the research will enhance understanding of distance education, make it better and support its reinforcement in the future.

<div align="right">
With thanks and respect
Thurídur Jóhannsdóttir
</div>

<div align="right">
Specialist at The Research Centre of the Iceland University of Education and doctoral student at the University of Iceland
</div>

Homepage: http://ust.khi.is/tjona

Email: tjona@khi.is

P.S. the research presented here is part of so-called LearnICT project (see information on the web http://namust.khi.is) which is funded by the Research Center of Iceland [under the Information Technology research program] and is intended for a doctoral degree at the University of Iceland

Appendix III: A list of articles, papers and presentations of results from the research

Book sections

1. Jóhannsdóttir, Thurídur and Skjelmo, Randi. (2004). Flexibility and responsibility in teacher education: Experiences and possibilities in Iceland and North Norway. In L. Pekkala, W. Greller, A. Krylov, L. Kullerud, S. Mýrdal, O. Snellman & J. Spence (Eds.), *On top of it. Overcoming the challenges of ICT and distance education in the Arctic.* (pp. 85-98). Rovaniemi: University of the Arctic Press and University of Lapland, Faculty of Education.
2. Skjelmo, Randi and Jóhannsdóttir, Thurídur. (2004). Fleksible læringsformer i norsk og islandsk lærerutdanning. Hvilke erfaringer har vi gjort og hvor går veien videre? [Flexible forms of learning in Norwegian and Iclandic teacher education. What are our experiences and where are we heading?] In M. Brekke (Ed.), *Norsk lærerutdanningsdidaktikk i endring.* [Change in Norwegian teacher education didactics] (pp. 77-91). Kristiansand S: Høgskoleforlaget.
3. Jóhannsdóttir, Thurídur (2005). Fjarnám sem lykill að þróun [Distance education as a key to development]. In Gretar L. Marinósson, Þórunn Blöndal & Þuríður Jóhannsdóttir (Eds.), *Nám í nýju samhengi. Erindi á málþingi um framtíðarskipan náms við Kennaraháskóla Íslands* [Learning in a new context. Lectures held at a conference on the future of learning in the Iceland University of Education] (pp. 203-212). Reykjavík: Rannsóknarstofnun Kennaraháskóla Íslands.
4. Jóhannsdóttir, Thurídur (2010). Deviations from the conventional: contradictions as sources of change in teacher education. In V. Ellis, A. Edwards & P. Smagorinsky (Eds.), *Cultural-historical pespectives on teacher education and development* (pp. 163-279). London: Routledge.

Articles published in conference proceedings and online databases

1. Jóhannsdóttir, Thurídur (2004). Fjarnám í ljósi athafnakenningarinnar [Distance learning in light of activity theory]. In Úlfar Hauksson (Ed.), *Rannsóknir í félagsvísindum V.* [Research in social sciences V] (pp. 483-493). Reykjavík: Háskólaútgáfan.
2. Jóhannsdóttir, T. (2007). Spjallfrelsi. Kenningum Bernstein beitt í rannsókn á fjarnámi [Freedom for chatting. The theories of Bernstein applied in a research on distance learning]. In Gunnar Þór Jóhannesson (Ed.), *Rannsóknir í félagsvísindum VIII.* [Research in social sciences VII] (pp. 771-781). Reykjavík: Félagsvísindastofnun Háskóla Íslands.
3. Jóhannsdóttir, Thurídur (2008a, May). *Boundary crossing between school and university. Exploring the possibilities for developmental transfer in teacher education.* Paper presented at the 10th Nordic congress on teacher education. Iceland University of Education, Reykjavík. Published in an online database http://gestamottakan.is/images/stories/khi2008/rapport/A6_thuridur-johannsdottir.pdf
4. Jóhannsdóttir, Thurídur (2008c, September). *How to configure classification and framing in distance teaching.* Paper presented at the ECER – The European Conference on Educational Research, Gothenburg, Sweden. Published in ECER online database

http://www.eera-ecer.eu/fileadmin/user_upload/Publication_FULL_TEXTS/ECER2008-_1356_Johannsdottir.pdf

5. Jóhannsdóttir, T. (2008, April). *Contradictions and deviations from the traditional as sources of change in teacher education*. Paper presented at the OSAT (Oxford Centre for Socio-cultural and Activity Theory Research) Conference on Teacher Education and Development: New Directions for Research, University of Oxford. Published online in Oxford University Research Archive http://ora.ouls.ox.ac.uk/objects/uuid%3A6d7e550c-deda-469e-ba4e-1f411d3caf60

Paper presentations at conferences

1. Jóhannsdóttir, Thurídur (2004a, September). *The Activity of learning at a distance: A case study from teacher education in Iceland*. Paper presented at the The Third Nordic Conference on Cultural and Activity Research, Copenhagen.

2. Jóhannsdóttir, T. (2005, September). *Boundary crossing between local schools and web-based learning management systems in teacher education*. Paper presented at the First international ISCAR – International Society for Cultural and Activity Research Conference, Seville.

3. Jóhannsdóttir, Thurídur (2005, November). *Að tengja fræðileg hugtök og verklag. Kennaranám í fjarnámi í ljósi kenninga Vygotsky og athafnakenningarinnar* [Connecting theoretical concepts and practical procedure. Teacher education in a distance programme in light of Vygotsky's theories and activity theory]. Paper presented at the Málþing FUM – Félags um menntarannsóknir [Conference of IERA – Icelandic Educational Research Association], Kennaraháskóli Íslands [Iceland University of Education] Reykjavík.

4. Jóhannsdóttir, Thurídur (2006a, October). *Að stilla saman þróun kennaranáms og skólaþróun* [How to co-configure development of teacher education and school development]. Paper presented at 10. Málþing Rannsóknarstofnunar KHÍ [The 10th congress of Iceland University of Education Research Institute], Reykjavík.

5. Jóhannsdóttir, Thurídur (2006b, September). *The agency of student teachers in the activity system of a distance programme. Understanding (how to support) online learning practices?* Paper presented at the BERA – British Educational Research Assosiation Annual Conference, University of Warwick.

6. Jóhannsdóttir, Thurídur (2006c, September). *Unrecognized possibility for co-configuration between teacher education and local schools*. Paper presented at the ECER – European Conference on Educational Research, Geneva, Switzerland.

7. Jóhannsdóttir, Thurídur (2007b, June). *'We carry such precious cargo.' The importance of co-configuration for development of teacher education and school development*. Paper presented at the Fourth Nordic Conference on Cultural and Activity Research, Hønefoss, Norway.

8. Jóhannsdóttir, Thurídur (2008d, September). *Sameiginleg ábyrgð vettvangs og háskóla á menntun kennara* [Shared responsibility of schools and universities for educating teachers]. Paper presented at the Ráðstefna um menntamál. [A conference on education], Akureyri, Iceland.

9. Jóhannsdóttir, Thurídur (2010c, February 27). *Frávik frá því venjulega. Mótsetningar sem uppspretta breytinga í kennaramenntun* [Deviations from the conventional. Contradictions as sources of change in teacher education]. Paper presented at the Málþing FUM Félags um menntarannsóknir [Conference of IERA Icelandic Educational Research Association], Reykjavík.

10. Jóhannsdóttir, Thurídur (2010a, May). *Concepts for facilitating dialogue in developing teacher education*. Paper presented at Den 11 Nordiske Læreruddannelseskonference. [The 11th Nordic congress on teacher education], Hjørring, Danmark.

11. Jóhannsdóttir, Thurídur (2010d, May). *Providing tools for second stimulation in educational settings, by doing ethnography and applying contradiction analysis*. Paper presented at the FISCAR – Nordic Conference on Activity Theory and the Fourth Finnish Conference on Cultural and Activity Research, Helsinki, Finland.

6.3 The experience of three student teachers enrolled in the first cohort

English	Icelandic
We simply wanted to enhance professional discussion in the school, and yes, to be able to title ourselves teachers. We were women who were really interested in teaching and we had been reading articles and books, etc. So we talked to Peter, who at that time was the head of the school district office, had many meetings with him and he fought for this and made it possible (Elisabeth, Interview May 2004).	Við vildum bara hreinlega fá meiri faglega umræðu inn í skólann og jú, geta titlað okkur kennara. Konur sem höfðu mikinn áhuga á kennslu og höfðu lesið greinar og bækur og annað. Við vorum hérna nokkrar sem tókum okkur til of fengum fund með Pétri sem var þá á fræðsluskrifstofunni [...] Við funduðum oft og iðulega með Pétri og han nsem sagt barðist fyrir þessu og það má segja að hann ahfi gert þetta kleift (Elísabet, viðtal í maí 2004).
What we wanted to do was to change the situation, change the image of the school in the community. We wanted to increase respect for the school in the community, and get rid of some negative aspects that had created an unpleasant atmosphere in the school; […] … make the school better, the pupils happier and that we could look at the group leaving the 10th grade standing here outside the school and look proudly into the future (Elisabeth, Interview May 2004).	Það sem við vildum gera var að breyta ástandinu, vildum breyta sýn samfélagsins á skólann. Við vildum sem sagt auka virðinguna úti í samfélaginu fyrir skólanum, draga úr því ástandi sem var inni í skólanum og jú verða svona góður skóli, eða sem sagt gera skólann betri, nemendurna ánægðari og að við horfðum á eftir hóp út úr 10. bekk sem gat sko stoltur staðið hér á hlaðinu og horft inn í framtíðina (Elísabet, viðtal í maí 2004).
He really encouraged everybody, phoned the schools asking if we weren't ready to do it, to try to get into the distance programme to get a teacher education, which would make it possible for us to continue living in our home towns and to keep our work as teachers (Helen, Interview February 2004).	Hann virkilega hvatti alla, hringdi í skólana, spurði hvort að við værum ekki tilbúin til þess að drífa í því og reyna að fara í fjarnám og ná okkur í þessa menntun, þar sem við gætum þá haldið áfram (að kenna) ef við vildum, að hafa kostinn að vera hér áfram (Helena, viðtal í febrúar 2004).
There was a sort of a tension linked to it, something was always going wrong. We had only this one computer at the school which we could use; we didn't have it at home (Elisabeth, Interview May 2004).	En svona var spennan í kringum þetta. Þetta var alltaf að klikka. Tölvurnar hérna báru þetta ekki. Þetta var eina tölvan sem við gáðum notað því við vorum ekki með þetta heima (Elísabet, viðtal í maí 2004).
The email was very primitive and something we were not familiar with. And not all the teachers were capable of using the email. From some of them you never heard a word (Jenny, Interview February 2004).	Þetta var mjög frumstætt fyrstu tölvupóstsamskiptin – eitthvað sem maður hafði ekki komið nálægt áður. Mér fannst nú kennararnir vera misvel í stakk búnir til að vera í tölvusamskiptum. Frá sumum heyrði maður aldrei (Jenný, viðtal í febrúar 2004).
It doesn't matter how old you are. If you have a task and someone is the manager, you have to be in contact with that person. You have to get some feeling… not only through the computer. And Some of them [the teacher educators] gave us great access to them, saying like: Just send me questions any time, or you just phone me, etc., while others had a scheduled time for such questions. Most of them, though, were easy to access (Helen, Interview February 2004).	Það er alveg sama hvað þú ert gamall. Ef þú ert ert ert að í einhverju verkefni þar sem einhver er yfir, þú verður að hafa eitthvað kontakt við viðkomandi ...ekki bara í gegnum tölvuna sko. Sumir (kennararnir í fjarnáminu) til dæmis gáfu rosalega frjálsann aðgang að sér. Sumir sögðu sko: Sendiði bara fyrirspurnir hvenær sem er eða: Þú hringir. Aðrir héldu að sér og sögðu bara: heyrðu við erum með viðtalstíma á milli þetta og þetta, og svona. En meirihlutinn var svona mjög opinn (Helena, viðtal í febrúar 2004).

If I had been alone with so little connection to the teachers, I would have just given up with such a disaster (referring to an incident when assignments had got lost in computer communication) (Elisabeth, Interview May 2004).

When we started to separate we helped, got phone calls, one of us chose English and collaborated with a student in the East (Elisabeth, Interview, May 2004).

Look, if you just said; look; it is really working out well with me in mathematics if I teach it this and that way. Then someone would come and say: Oh god, can you help, I heard you were teaching this class, the 3rd grade. It is really going badly. What is it you are doing? And then you told them what you were doing, something like that and then that person went home strengthened …. And then maybe you were sending them material and all kinds of things afterwards (Helen, Interview February 2004).

You would always adapt to your own situation. Look, this was your world, the school, where you were teaching and you applied all the material you got. You were always trying to apply, asking: How can I use this in my teaching? And immediately when we had learned how to make a teaching plan and things like that; integrate – make social studies by integrating geography, history, home economics and things like that, then you could organize a tourist bureau here with the pupils. And everything worked out well and you went back happy [to the programme]. […] And then we shared, you always shared with the others right away (Helen, interview February 2004).

Ellen [a colleague and distance student] maybe phoned me and said: Helen, I need to talk to you, I really do. And then we'd chat; yes, but you could write about for example […]. And then she had got some catch phrases which made her see the light at the other end of the tunnel you know. […] And then, the next morning she would show up saying: 'Look I just sat all night and everything worked out well, so I just finished it, it was just great!' […] Sometimes it is enough just to pat someone on the shoulder saying: 'Oh, I know what you are talking about'. Often that's quite enough, you know (Helen, interview February 2004).

Ef ég hefði verið ein í svona litlu sambandi við kennarann þá hefði ég bara gefist upp við svona áfall (vísar til atviks þar sem verkefni sem send voru í tölvupósti höfðu týnst) (Elísabet, viðtal í maí 2004).

Við aðstoðuðum, við fengum hringingar þegar við fórum að skipta. Ein fór í enskuval og hún hafði samband við Hornafjörð (Elísabet, viðtal í maí 2004).

Sko, ef þú bara, ef þú sagðir sko: Það er að koma rosalega vel út hjá mér, stærðfræðin með því að kenna hana svona, svona og svona. Þá kannski kom einhver og sagði: Ó, gvuð getur þú, ég heyrði að þú værir að kenna þessum. Hópi. 3. bekk. Og það gengur svo illa hjá mér. Hvað ert þú að gera? ... Og þá sagði maður frá því, eða eitthvað svona, og þá var, tvíefldist viðkomandi og fór heim sko alveg hérna. Og svo kannski varstu að senda gögn og... ýmislegt eftir það sko. (Helena, viðtal í febrúar 2004).

Þú heimfærðir alltaf. Sko þetta var veröldin þín. Skólinn sem þú varst að kenna í. Og þú heimfærðir alltaf allt efni sem þú fékkst. Varst alltaf að reyna að heimfæra. Hvernig get ég notað það í kennslu? Maður náttúlega bara um leið, þegar maður var búinn að læra hvernig átti að gera kennsluáætlun og eitthvað svona. Samþætta, búa til samfélagsfræði, taka saman landafræði, sögu, heimilisfræði og svona sko, þá bara setti maður hér upp ferðaskrifstofu með unglingunum.
Og prófaði strax sko. Og allt virkaði og maður fór alltaf glaður sko til baka. Já! Þetta! Þetta er fínt. Þetta er gott. Svo deildi maður. Þú fórst alltaf strax í það að deila með hinum (Helena, viðtal í febrúar 2004).

Þá kannski hringdi Ellen og sagði: Helena, ég verð að tala við þig, ég bara verð. Hvað erum við að tala um hérna? Þá ræddum við um: Já en þú gætir, gætirðu ekki skrifað um...dadadadada, þú veist eitthvað. [...] og þá, og svo varstu kannski kominn með slatta að stikkorðum sem gerðu að verkum að þú svona já, sást ljós þarna hinu megin í göngunum, skilurðu. Og það var nóg. Heyrðu og svo kom kannski bara daginn eftir. Heyrðu ég sat bara við í nótt, þetta gekk svo vel. Bara kláraði þetta, þetta var alveg frábært. [...] Það er nóg stundum að klappa á öxlina og segja: ó, ég veit hvað þú ert að að tala um. Þetta var oft nóg skilurðu?(Helena, viðtal í febrúar 2004)

The teacher education we got at that time made us more secure and enhanced our position as teachers. We began to come forward, the teachers without professional teacher education, just finishing a course in didactics of social studies and knew perfectly that we were talking about something that made sense, knew how we wanted to do this and said that we were not satisfied with how things were done now, and we want it this way (Elisabeth, interview May 2004).

I think that when these six women started their studies then the other teachers began to talk together more than before… there was a kind of renewal. There was a group of qualified teachers here but when the rate of unqualified is so high a professional discussion doesn't thrive. We are quite sure that this [enrolling in the programme] has totally changed the school. The school ethos and the attitude of the community towards the school have changed (Elisabeth, interview May 2004).

The situation had begun to improve before he came. […] We were maybe not thanked for that, but we want to say that it is because we got that opportunity (referring to enrolling in the distance programme) (Elisabeth, interview, May 2004).

We stopped talking about how tedious Jacob could be and difficult, "just like his grandmother used to be." Instead we began talk about what we could do to make Jacob feel better, and how we could organize our teaching so that the slower pupils could manage their learning tasks somehow (Elisabeth, interview, May 2004).

Hún [kennarmenntunin í fjarnáminu] skilaði sér náttúrulega í öryggi. Við fórum alveg að standa upp hér leiðbeinendurnir nýkomnar úr kúrs í kennslufræði samfélagsgreina og vissum alveg að við vorum að tala um eitthvað af viti, vissum nákvæmlega hvernig við ætluðum að gera þetta [...] Við sögðum: Við erum ekki ánægðar með þetta eins og þetta er núna, við viljum hafa þetta svona (Elísabet, viðtal í maí 2004).

Ég held að með þessum sex konum sem fara í þetta nám þá hafi þeir kennarar sem voru fyrir meira farið að geta spjallað saman ... þetta var svona endurnýjun. Það var hér hópur af menntuðum kennurum en þegar leiðbeinendahlutfallið er svona mikið verður þessi faglega umræða ekki. Við stöndum alveg fastar á því að þetta (að þær komust í fjarnám) hafi gjörbreytt skólanum. Skólandinn breyttist og viðhorf samfélagsins til skólans (Elísabet, viðtal í maí 2004).

Hinsvegar var ástandið farið að batna áður en hann kom. [...] En það var kannski ekkert skrifað á okkur en við viljum segja að það sé vegna þess að við fengum þetta tækifæri (að komast í fjarnámið) (Elísabet, viðtal í maí 2004).

Á kennarastofunni hættum við að ræða hvað hann Jakob var leiðinlegur og erfiður og amma hans var nú alveg eins. Við fórum að ræða hvað við gætum gert til að Jakobi liði betur og hvernig við getum byggt upp kennsluna þannig að seinfærir nemendur nái einhverjum tökum á einhverju námi (Elísabet, viðtal í maí 2004).

English	Icelandic
Certainly immigrant pupils have put their mark on the school culture, not least in our district. I think that this infusion has gone well and it has been very maturing for us natives to welcome new members to the community. […] I know this from my own experience as I taught a Polish girl last year. I had to contact her parents because of some problems at school. I could not phone the mother as she did not speak Icelandic or English, only Polish. And the nature of the problem was such that it was not appropriate to ask the girl to interpret. So I had to phone her work place and ask the boss to give her a message to meet me with an interpreter. That worked (Interview, Olga June 2005).	Vissulega hafa nýbúar sett mark sitt á skólastarf, ekki hvað síst á Vestfjörðum. Ég tel að þessi samblöndun hafi gengið vel og hafi verið mjög þroskandi fyrir innfædda að taka við nýbúum. […] Ég kynntist þessu vandamáli sjálf þar sem ég kenndi pólskri stúlku í fyrra. Ég þurfti nokkrum sinnum að kalla til foreldri hennar vegna vandamála í skólanum. Ég gat ekki hringt og talað við móðurina þar sem hún var mállaus á íslensku og ensku, talaði eingöngu pólsku. Þetta var þannig mál að ég gat ekki fengið nemandann sjálfan til að túlka. Ég varð því að hringja á vinnustaðinn móðurinnar og biðja verkstjórann að koma skiloaboðum til hennar og hitta mig með túlk með sér. Það gekk (Olga viðtal í júní 2005).
I use gestures a lot, a facial expression, a tone, and you know they learn it right away. When I interfere then I try to do it on an individual basis, not to scold them in front of the whole class. And even just walking over to them, laying my hand on their back, and saying: aren't you gonna do fine love? And well, kind of training them to work together and sort things out for themselves (Lilith, interview January 2006).	Ég nota mikið bara fasið, andlitssvip, tónn og hérna þau taka því strax. Ég er ekki þegar ég er að stoppa þau af þá reyni ég að hafa þau einstaklingslega ekki að ég sé að skamma þau fyrir framan bekkinn. Og jafnvel þá bara að labba aðeins að þeim og leggja hendina á bakið og, ætlar þú ekki að standa þig vel elskan, jú jú. Og hérna og sem sagt þjálfa þau í að vinna saman og leysa úr sínum málum (Lilja, viðtal í janúar 2006).
But then they come to me when I have been away and say: yes it is just that I felt so bad when this one was, because … And I ask why? This one was noisy and that one was noisy and there was no peace. […] We talk about things like that in class meetings, so they learn to understand that their behaviour affects the group and the wellbeing of others (Lilith, interview, January 2006).	En sem sagt svo koma þau til mín þegar ég er búin að vera í burtu og segja; já, það er bara mér leið svo illa, þegar þessi var af því að það. Og ég segi, af hverju? Þessi var með læti og hinn var með læti og það var engin friður. […] …þetta tölum við um á bekkjarfundum þannig að þau læra svona að skilja að þeirra hegðun hefur áhrif á hópinn og líðan annarra. (Lilja viðtal í janúar 2006).
You can let them loose inside the box but the box has to be clearly demarcated (Lilith, interview, January 2006).	Maður getur sleppt þeim inni í kassanum en kassinn þarf að vera skýr (Lilja viðtal í janúar 2006).
Then I take the workbook and say, well kids, like you I have not done my workbook. Well, what do you think should be put into this box? What are we supposed to do here? And someone says here, and we help each other, and you know they take it as a given that I don't know what should be put where (Lilith, interview, January 2006).	Svo tek ég vinnubókina og segji, jæja krakkar mínir, ég er ekki búin að vinna vinnubókina heldur. Hérna hvað ætli eigi hvað á að fara í þennan kassa? Hvað eigum við að gera hérna? Og einhver segir, og hérna, við förum á milli og hérna, og þau taka því svo sjálfsögðu að ég viti ekkert hvað eigi að fara þarna (Lilja, viðtal í janúar 2006).
And I allowed them to choose, so if they wanted to choose enchantment they did so, and if they wanted to choose animals in Africa they did, and things like that. And if they wanted to do an assignment using a calculator they were allowed to, all depending on what they were comfortable with and what they wanted to do (Lilith, interview, January 2006).	Og leyfði þeim að velja sér úr þannig að ef þau vildu velja töfra þá tóku þau það eða ef að þau vildu velja dýr í Afríku þá tóku þau það og svona. Og var bara með, og ef þau vildu taka vasareiknishefti þá gátu þau tekið það. Og allt eftir því hvernig þeim fannst þægilegt og það sem þeim langaði í. (Lilja, viðtal í janúar 2006).

And those who are working in the same book can choose together, help each other and things like that. And they are really good at helping each other, and it doesn't often happen that they sit a long time with their hand up waiting for help. It hardly happens anymore because they just ask the next guy and if he doesn't know they ask the next one. And then if I say: you are not supposed to shout like that across the classroom they would say: yes but I needed help with maths and he knows how to do it.

And someone is walking around and I say: why are you wandering around? I'm helping because I'm already done (Lilith, interview, January 2006).
So I'm really happy with that, and also you know, those who knew used to be so arrogant towards those who didn't know. But just as well that is disappearing bit by bit (Lilith, interview January 2006).

For example: Well kids now we're going to look at two pages here in the math book, take a look. Now let's get the measuring sticks, which measuring sticks do you think we need? Then we go out to the playground and start measuring. And then in the next class we write on the page: done outside on the playground, and then these two pages are done. I would like to work much more like this, the Icelandic and all kinds of things. I want to get away from the workbooks because I think they learn so little from workbooks; much more from playing (Lilith, interview, January 2006).

Yes, it is a kind of safety net of people, and you know if you make a mistake it is not the end of the world. And it is so incredibly strong that you always feel that people are thinking: How can I do my job better? [...] There is nothing like: Oh this one is quite impossible and there is nothing we can do for him. Rather: Well we have a problem here and what can we do? Because how will life be for him when he grows up, we have to do something now (Lilith, interview, January 2006).

All this chat in the staffroom on, yes I was reading this article and things like that (Lilith interview, January 2006).

Actually I have already sent the web address to the principal because I think this can be useful in teaching right away (Lilth, Digital portfolio May 2005).

Of course many enrolled in distance learning and many in the graduate programme. Yes, because such a large part of the group is in distance learning. It is such a large part you see, if I was the only one in the distance programme and there weren't people constantly getting these ideas and theories. Then you would just be overruled, but since there are so many

Og þeim sem eru í sömu bók geta valið sér saman þið getið hjálpast að og svona. Og þau eru orðin ofsalega dugleg að hjálpast að og það er alls ekkert oft skilur þú, að þau sitji heillengi með upprétta hönd til þess að fá hjálp, það gerist varla lengur vegna þess að þau bara spyrja næsta og ef hann veit ekki þá spyrja þau næsta. Og svo ef ég segji; það á ekki að vera hrópa svona yfir hálfa stofuna. Já en mig vantaði hjálp í stærðfræði og hann kann þetta. Og einhver sem var að ráfa um. Af hverju ertu að ráfa um stofuna? Ég er að hjálpa því að ég er búinn. (Lilja, viðtal í janúar 2006).

Þannig að ég er orðin ofsalega ánægð með það og sömuleiðis að þá er sko, það var so mikill hroki í þeim sem að kunnu, gagnvart þeim sem að kunnu ekki. Og hann er smám saman að hverfa. Sem betur fer. (Lilja, viðtal í janúar 2006).

Til dæmis: Jæja krakkar nú ætlum við að fara, það eru tvær blaðsíður hérna í stærðfræðinni, skoðið það. Og nú skulum við taka mælitækin og hvaða mælitæki ætli við þurfum? Við förum út á skólavöll og förum að mæla. Og svo skrifum við bara næst á síðunna, unnið úti á skólavelli og þá eru þessar tvær síður búnar. Ég vil vinna þetta miklu miklu meira svona, íslenskuna og allt mögulegt. Ég vil komast burtu frá vinnubókavinnunni vegna þess að ég helda að þau læri svo lítið á vinnubókunum. Miklu meira af leikjunum (Lilja, viðtal í janúar 2006).

Já, það er þessi, það er þetta svona öryggisnet af fólki og það er komið inn sko ef maður gerir mistök þá endar heimurinn ekkert. Og hérna og það er svo rosalega sterkt að maður finnur alltaf fyrir því að fólk er stöðugt að hugsa hvernig hvernig get ég gert mitt starf betra. [...] Það er ekki svona; Æi, þessi er alveg ómögulegur og það er ekkert hægt að fást við hann. Bara jæja, við erum með vandamál hérna og hvað getum við gert? Af því að hvernig verður lífið fyrir þeim þegar hann er orðinn fullorðinn, við verðum að gera eitthvað núna (Lilja, viðtal í janúar 2006).

Allt þetta spjall inni á kennarastofu um, já ég var að lesa þessa grein og svona (Lilja, viðtal í janúar 2006).

Reyndar hef ég nú þegar sent skólastjórnenda hér slóðina, því ég tel að þetta geti nýst í kennslu núna (Lilja, rafræn ferilmappa, maí 2005).

Náttúrulega margir í fjarnámi og margir í framhaldsnámi. Já vegna þess að það eru svo, það er svo stór hluti af okkur sem að er í fjarnámi. Það er svo stór hluti af skilur þú, ef að ég væri ein í fjarnámi og það væri ekki fólk væri ekki stöðugt að fá þessar

distance students and many that have been distance students and many doing graduate studies – it has opened up the door to the mind of many energetic individuals (Lilith, interview, January 2006).

And you know, he [the principal] listens and listens and listens and thinks and then later you get a response. And you know, the vice-principals, they are very, very busy and it has been a bit difficult recently, much illness among the staff. But we have all just tackled this jointly […] They, the management group, give us the freedom we need to take control, and work things out for ourselves (Lilith, interview, January 2006).

Yes and the kids, they really, if they're having some kind of trouble then they walk into their offices, and it is completely open for communication there (Lilith, interview, January 2006).

All the fluidity is lacking, it is all so closed inside the little boxes in the schedule (Lilith, interview, April 2005).

hugmyndir og kenningar. Þá væri manni bara vísað á bug en vegna þess að það eru svo margir fjarnemar og margir búnir að vera í fjarnámi og margir í sem sagt framhaldsnámi. Það er búið að opna ofsalega dyrnar á huginn hjá kröftugum einstaklingum (Lilja, viðtal í janúar 2006).

Og hérna, hann hlustar og hlustar og hlustar og hugsar og svo seinna færðu viðbragð. Og, hérna, aðstoðaskólastjórnendurnir, þeir hafa ofsalega ofsalega mikið að gera og það hefur verið svolítið erfitt undanfarið þá hafa verið svo mikil veikindi hjá starfsliðinu en við höfum öll bara tekið höndum saman og tekist á við þetta. […] þau skólastjórnendurnir gefa okkur þetta frelsi sem við þurfum til að taka vald og vinna úr eigin… og sækja sjálf sko (Lilja, viðtal í janúar 2006).

Já og krakkarnir, þau voðalega mikið ef þau eiga í einhverjum vandkvæðum þá rölta þau inn til þeirra og svona það er alveg opið fyrir samskipti þarna (Lilja, viðtal í janúar 2006).

Það vantar allt þetta flæði, þetta er allt svo fast í litlu kössunum í stundaskránni (Lilja, viðtal í apríl 2005).

English	Icelandic
Maybe it was because people work closer together there, because there you are maybe in an age grade team or teaching the same subject as someone else. Here people are more independent workers. I don't know if that has an effect (Interview, Sarah April 2005)	Kannski var það af því að fólk vinnur þéttar saman þar, vegna þess að þá ertu kannski í árgangi eða ert að kenna sama fagið með einhverjum. Hér eru meiri einyrkjar. Ég veit ekki hvort það hefur áhrif (Viðtal, Sara í apríl 2005)
It is both difficult and boring to work alone; it enhances work satisfaction to try to work a little together (Interview, Rachel April 2005).	Erfitt að vera að vinna svona einn og bara leiðinlegt, það eykur starfsánægju að reyna að vera svolítið saman (Viðtal, Rakel í apríl 2005).
They are of course children, they have to move, that's my opinion. […] They are difficult and they use any chance they get, but they know exactly what they are allowed to do in my class (Interview, Sarah January 2006).	Þetta eru náttúrulega börn, þau verða að hreyfa sig, mér finnst það. […] Þau eru erfið og þau nota tækifærið um leið og þau geta en þau vita alveg hvað þau mega hjá mér (Viðtal, Sara í janúar 2006)
I remember the first lesson when everybody was working. They were all working and there was no disturbance. I remember it was an enormous triumph, in January I was just about ready to give in (Interview, Sarah April 2005).	Ég man eftir fyrstu kennslustundinni sem allir unnu. Það voru allir að vinna og engin truflun. Ég man eftir því, það var rosalegur sigur, ég var alveg að gefast upp hérna í janúar (Viðtal, Sara í apríl 2005).
When it comes to the work of pupils I think it should be visible in the school. In my school there are samples of the teachers' work covering the walls of the arts and crafts classroom, but none from the pupils, which I think is a shame. There is artwork by pupils in the halls though (Web entry, Sarah April 24 2005).	Einnig finnst mér að verkefni nemenda verði að vera sýnileg í skólanum. Í mínum skóla eru sýnishorn kennarans upp um alla veggi í handmenntastofunni en ekkert af verkum nemendanna og það finnst mér miður. Það eru reyndar á göngum skólans textílverk eftir nemendur (Innlegg í umræður á WebCT, Sara 24. apríl 2005).
Now I know that there are many approaches, not just one presented in this particular book (Interview, Sarah April 2005).	Nú veit ég að það eru margar leiðir, það er ekki bara ein í þessari bók (Viðtal Sara í apríl 2005).
I think it is necessary to be able to choose. You have to be able to choose what you are going to do (Interview, Sarah January 2006).	Mér finnst nauðsynlegt að geta valið. Þú verður að geta valið hvað þú ætlar að gera (Viðtal, Sara í janúar 2006).
I think it's no problem. […] I always have surveys in Icelandic, writing and mathematics. […] Just to see how they are doing and how I am doing (Interview, Sarah April 2005).	Mér finnst það ekkert mál. […] Ég er alltaf með könnun í íslensku, skrift og stærðfræði. […] Bara til að sjá hvernig þeim gengur og hvernig mér gengur (Viðtal, Sara í apríl 2005).
I like being able to have influence because I thought things were so rigid here. I think things need to be shaken up more, even though there's a lot being done (Interview, Sarah April 2005).	Mér finnst gott að geta haft áhrif því að mér fannst þetta vera í föstum skorðum hérna. Mér finnst þurfa að hrista meira upp þó svo að margt sé að gerast (Viðtal, Sara í apríl 2005).

I noticed it as soon as I arrived here, because I had worked up north in a compulsory school. And of course, that school is so big with many classes in each grade. And then I came here and entered my room. Somehow the structure takes over and everyone just tries on their own (Interview, Sarah January 2006).	Ég tók strax eftir þessu þegar ég kom sko, af því að ég var búin að vera fyrir norðan í grunnskóla. Og það er náttúrulega svo stór skóli og margir bekkir sko í sama árgangi og svona. Og svo kom ég þarna inn og kom inn í mitt herbergi Einhvern veginn formið tekur yfir sko og hver reynir þá bara inn í sínu (Viðtal, Sara í janúar 2006).
I think like at home, see, many good ideas come up for doing some kind of developmental work, but somehow it stalls out, we don't manage to see it through. Yes I think there's a bit of stagnation, see. […] It's like you're inside a box, your own box (Interview, Sarah January 2006).	Mér finnst eins og heima sko, það koma margar góðar hugmyndir að vinna eitthvað svona þróunarstarf, ein einhvern veginn stoppar það, við náum einhvern veginn ekki að vinna alla leið. Já mér finnst vera svolítil stöðnun sko. […] Maður er einhvern veginn inní kassa bara, sínum kassa (Viðtal, Sara í janúar 2006).
She is just amazing. […] If you go in there [into the classroom] she is doing great things. […] She was like born to be a teacher. She has multi-age classes, two age grades, and everything is somehow organized and functioning. I mean, the parents were very sceptical in the fall if it would work out. […] She has convinced all the parents that not only is this possible but it is also very good. And she is very well liked by the staff, the parents, just everybody. […] She is quite simply the best teacher in Coastline after Mary [a retired teacher, well-known in the town as an excellent teacher] (Interview, Rachel April 2005).	Hún er bara dúndur. […] Ef þú ferð þarna inn [í skólastofuna] þá er hún að gera frábæra hluti. […] Hún er bara fæddur kennari. Hún er þarna með samkennslu, tvo árganga og þetta er einhvern veginn allt skipulagt og allt fúnkerar. Ég meina, foreldrar voru mjög efins í haust hvort þetta mundi ganga. […] Hún er búin að sannfæra alla foreldra um að þetta sé ekki bara hægt heldur mjög flott. Og mjög vel liðin af samstarfsfólki og foreldrum og bara öllum. […] Hún er bara besti kennari á Strönd á eftir Maríu [kona komin á eftirlaun, þekkt sem frábær kennari í bænum] (Viðtal, Rakel í apríl 2005).

English	Icelandic
I'm pleased to be able to tell you that I just introduced a new principal to Creek School yesterday, and in doing so we are facing quite a new situation for the next school year. We will have three or four fully certified teachers, in addition to the two student teachers. It is quite revolutionary (Interview, counsellor June 2005).	Ég er akkúrat núna, gaman að geta sagt þér frá því […] ég var að setja nýjan skólastjóra inn í starf í Króki í gær og það er allt í einu bara ný staða. Það sýnir að næsta vetur verða þar þrír til fjórir kennarar með full réttindi auk tveggja í réttindanámi. Þetta er bara eins og bylting (Viðtal við grunnskólafulltrúa í júní 2005).
The teenagers of foreign descent, it would happen that they didn't show up for lessons for several days, were either working with fish or hanging around doing nothing, and the parents could not be reached (Interview, Sam, April 2005).	Útlendingarnir hér í eldri bekkjunum, það kom fyrir að þeir mættu ekki heilu dagana í skólann og voru bara að beita og slóra og það var bara ekki hægt að ná í foreldrana (Viðtal við Samúel í apríl 2005)
Now I feel like a magnificent opportunity is opening up, to really start vigorous collaboration and developmental work between the small schools; with these new people coming in with new energy (Interview, counsellor June, 2005).	Núna sýnist mér að það verði stórkostlegt tækifæritil að hefja virkilega öflugt Samúelstarf og þróunarstarf milli litlu skólanna. Mað þessu nýja fólki og þessum nýja krafti sem fylgir (Viðtal við grunnskólafulltrúa í júní 2005).
Honestly, if I'm going to keep living here, I have no interest whatsoever in working in the blood and gore; the fishing or baiting. That time has passed, I am done with my quota there (Interview, Sam May 2004).	Í hreinskilni sagt þá ef ég hef hugsað mér að búa hér og þá hef ég engan áhuga á að fara í slorið, á sjóinn eða í beitninguna. Sá tími er bara búinn, ég er búinn með minn kvóta þar (Viðtal, Samúel í maí 2004).
I really like teaching and that the kids learn. I wouldn't like it if I thought I couldn't teach them anything (Interview, Sam April 2005).	Ég hef rosalega gaman af því að kenna og að krakkarnir læri. Ég hefði ekki gaman af þessu ef ég héldi að ég gæti ekki kennt þeim neitt (Viðtal, Samúel í apríl 2005).
That the children are more knowledgeable afterwards and enjoy it as well […] I think that's important. […] that what you are teaching hits home and that somehow it's useful (Interview, Sam May 2004).	Að þau séu einhvers vísari eftir og hafi gaman af líka […] mér finnst það vera mikið atriði. […] að það skili sér það sem maður er að kenna og að sé eitthvað gagn í því (Viðtal, Samúel í maí 2004).
A new Polish girl arrived who didn't speak any Icelandic but she's been learning the language. Her progress is slow; I let her write in Polish when she can't follow the class or do what has been planned (Interview, Sam January 2006).	Það kom ný pólsk stelpa sem talaði enga íslensku en hefur verið að læra hana. Það gengur hægt; ég læt hana skrifa á pólsku þegar hún getur ekki fylgt bekknum eða gert það sem lagt er upp með (Viðtal, Samúel í janúar 2006).
It may depend on the competence and interest of the teacher, if he wants to teach this or that, in a way it is quite open. […] This has been rather haphazard, taking the chance, and then when pupils reach the 10th grade an attempt is made to fill in the gaps (Interview, Sam April 2005).	Þá getur það ráðist af getu og áhuga kennarans hvort hann vilji kenna þetta eða hitt, þetta er svolítið fljótandi þannig. Þetta hefur verið tilviljanakennt og sjensinn tekinn og svo þegar komið er í tíunda bekk er reynt að fylla í götin (Viðtal, Samúel í apríl 2005).
For instance, like the plan for the week, which books they have and things like that, I have it written in a table; these two are working in that book and those	Til dæmis eins og vikudagskráin hvaða bækur þau eru með og svona, ég er bara með skrifað í reiti; þessar tvær eru í þessari bók og þessar tvær eru í þessari. Og áætlunin um það hvað við ætlum að klára yfir veturinn

two in another. And the plan for what we are going to finish during the winter, like in the maths. There are ten of them [pupils in the class at that time] but in fact they are split into four groups in terms of how far along they are in maths. Then I think that one mustn't compartmentalize them too much. It can change overnight, if someone catches on in maths and other areas (Interview, Sam April 2005).	eins og í stærðfræðinni. Þau eru tíu og eru eins og fjórir hópar í rauninni uppá hvað þau eru komin langt í stærðfræðinni. Svo finnst mér að maður megi ekki hólfa þau of mikið niður. Það getur bara breyst á einni nóttu ef einhver kveikir á perunni í stærðfræði og í öðru (Viðtal, Samúel í apríl 2005).
Having more solutions, when you have read more and know more, you are better able to piece together appropriate solutions for different situations (Interview, Sam May 2004).	Hafa fleiri úrræði, þegar maður er búinn að lesa meira og kynna sér fleira getur maður púslað betur saman við ólíkar aðstæður (Viðtal, Samúel í maí 2004).
I'm not like all the other teachers who come and can leave without notice. I live there and am tied down with housing and other things, so that also comes into play, my own interests and feelings for the place, naturally (Interview, Sam January 2005).	Ég er ekki eins og allir hinir kennararnir sem koma og geta farið fyrirvaralaust. Ég bý þarna bundinn með húsnæði og annað þannig að það spilar líka inní, eigin hagsmunir eðlilega og taugarnar til staðarins (Viðtal, Samúel í janúar 2005).
The new principal is good and life is different. Everything is more structured, and the cooperation and atmosphere have greatly improved. Now for example staff meetings are held regularly and minutes are taken, which the case was never before. The pupils notice this and talk about it, e.g. the 10th graders (Interview, Sam January 2006).	Nýi skólastjórinn er fínn og allt annað líf. Allt í miklu fastari skorðum og samstarfið og andinn hefur batnað mikið. Nú eru t.d. haldnir kennarafundir reglulega og skrifaðar fundargerðir en það var aldrei áður. Nemendur taka eftir þessu og tala um það t.d 10. bekkingar (Viðtal, Samúel í janúar 2006).

Quotations in chapter 8: development of teaching and learning in the distance programme

8.2.1 Ethics

English	Icelandic
It is a real pleasure to monitor your discussion. You are doing well and hopefully this is just the beginning. […] However, with such a potent group of students, I have to take the liberty to break my promise of giving comments on Fridays. Your discussion is well worth spending a Friday night and Saturday reflecting on it. I hope you will not hold this against me Web entry, Teacher January 28, 2005).	Það er sönn ánægja að fylgjast með umræðum ykkar. Þið standið ykkur vel og vonandi eruð þið bara rétt að byrja. […] En með svona öflugan hóp nemenda verð ég að taka mér það bessaleyfi að svíkja loforðið um comment á föstudögum. Umræður ykkar eru alveg þess virði að verja til þess föstudagskvöldi og fram á laugardag að pæla í þeim. Ég vona að þið misvirðið það ekki við mig. (Kennari í jan. 2005)
Now I think it is time to compliment you for intensive discussion this term. It has been a pleasure to see good progress in group dialogues, and increased competence in analysing the ethical essence of topics (Teacher, webentry April 20, 2005).	Það er kominn tími til að hæla ykkur fyrir öflugar samræður í vetur. Það hefur verið ánægjulegt að fylgjast með góðum stíganda í rökræðum hópanna og aukinni færni ykkar í að greina siðferðilegan kjarna umfjöllunarefna (Kennari í apríl 2005)
I think that this arrangement isn't working and I am not much of a better thinker after this assignment. In the first place we haven't received any criticism on our writing this term, which I feel is necessary to improve the writing. […] I think that since our writing [on the discussion web] is part of the grade, you should plan it so that all students get a comment on their writing at least once (Student, April 18, 2005).	Finnst mér þetta fyrirkomulag ekki vera að virka og er ég litlu skárri hugsuður eftir þetta verkefni. Í fyrsta lagi höfum við enga gagnrýni fengið í vetur á skrif okkar en ég tel það nauðsynlegt til að bæta skrifin. […] mér finnst að þú ættir að koma því þannig við að allir fengju komment a.m.k. einu sinni á sín skrif þar sem þau eru hluti af einkunn nemenda. (Nemandi í apríl 2005)
I also have opinions on what my peer students write and I think their contributions are of varying quality and often give reason for criticism. Your letters do not satisfy the need for personal criticism, though they do give us deeper insight into the subject each week, which is good. […] The problems we are dealing with in the discussions are interesting but we tend to get stuck in discussion of a general kind. There I think you could interject with some comments to keep us on track, but then again you probably are given too little time for such activities (Student, April 19, 2005).	Ég hef líka skoðanir á því sem samnemendur skrifa og tel ég þau skrif misjafnlega góð og oft vel til þess fallin að fá gagnrýni. Bréf þín uppfylla ekki þessa persónulegu gagnrýni en veita manni hins vegar dýpri innsýn á viðfangsefni hverrar viku sem er vel. […] Vandamálin í umræðum sem við erum að kljást við eru skemmtileg en oft hættir okkur til að festast í ákveðinni umræðu sem er almenn. Þar tel ég að þú gætir smellt einhverju inn til að halda okkur á réttri braut, en enn og aftur er það líklegast sá tími sem þér er skammtaður sem er of naumur. (Nemandi, 19. apríl 2005)
In fact it is not justifiable that I get a grade for how other people are doing. My grade should be based on my competence and my contribution. For example, it would be absurd that my group members would get a deduction in their grade book because I was absent for two weeks! (Student, April 18 2005).	Í raun ekki forsvaranlegt að ég fái einkunn fyrir það hvernig aðrir standa sig. Mín einkunn á að byggjast á minni getu og framlagi. Það væri t.d. fáránlegt að þeir sem eru með mér í hópi fengju mínus í kladdann núna þar sem ég lét ekki í mér heyra sl. tvær vikur! (Nemandi, 18. apríl, 2005).

8.2.2 Arts and crafts along with subject didactics

English	Icelandic
The course is designed around the idea that you exhibit your work, otherwise I can't guide you. I also find it very important that you see each others' products so that you have a basis for comparison, and learn (Teacher, February 12 2005).	Námskeiðið byggir á að þið leggið fram verkefnin, að öðru leyti get ég ekki leiðbeint ykkur. Ég tel einnig mjög mikilvægt að þið sjáið verkefni hvors annars þannig að þið hafið samanburð og lærið (Kennari, 12.febr. 2005).
I will try to answer your questions once a week. Each question is generally useful for more than the student who asked and I think that you can all gain from seeing other people's questions and my answers (Teacher, February 12 2005).	Ég mun reyna að svara fyrirspurnum og svara ykkur vikulega. Hver fyrirspurn nýtist yfirleitt fleiri nemendum og tel ég að þið getið öll grætt á því að heyra fyrirspurnir annarra og hverju ég svara… (Kennari, 12. febrúar 2005)
Keep in mind that you are mediating to the group but not submitting an assignment to me. I certainly take into account your contribution to discussion, like everything else, in the final assessment (Teacher, March 18 2005).	Hafið í huga að þið erum að miðla til hópsins en ekki að skila verkefni til mín. Ég mun að sjálfsögðu taka mið af umræðum eins og öðru í lokamati (Kennari, 18. mars 2005).
Dear Anne This sample cloth is what we got during class, if you weren't in that session with Christina. Aren't you the Anne who was sick the night before and had to take the ferry to the Vestmann Islands the next day when we were doing machine sewing and form? You were on the final stage of the white skirt!	Sæl Anna Þessi prufuklútur eða stykki er það sem við fengum í tíma, ef þú hefur ekki verið í þessum tíma hjá Guðrúnu. Ert þú ekki Anna sem var með gubbupest um nóttina og varðst að fara í Herjólf daginn eftir þegar við vorum í vélsaum og form? Þú varst á síðasta snúning með hvíta pilsið!
Anyway, this assignment is nr. 3 on a paper titled needlework I with Christina. She gave us textile and yarn to start with. If you can't figure it out don't hesitate to ask us. This discussion is so we can help one another. Regards, Heather (Student, January 20 2005).	Annars er þetta verkefni no 3 á blaði sem heitir útsaumur I hjá Guðrúnu. Við fengum jafa og garn hjá henni til að byrja. Ef þú áttar þig ekki sendu þá bara aftur á okkur fyrirspurn. Við höfum þessar umræður til að hjálpast svona að. Kv. Heiða (janúar 2005).
Wow. Great ideas, I had not thought of it that way. There you see how important it is to have an opportunity to communicate. Just to see what the others are doing is generating one's own ideas. Good luck. Best regards, Jenny (Student, January, 19, 2005).	Vá frábærar hugmyndir, Mér hafði nú ekki dottið þetta í hug. Sjáið hvað það er mikilvægt að hafa einhver samskipti. Bara að sjá hvað hinar eru að gera myndar hugmyndir hjá manni sjálfum. Gangi ykkur vel. Bestu kveðjur Jenný (janúar 2005)
Hi, we got the assignment guidelines in the face-to-face lesson – don't you have them? If not I can copy it and send to you. I can also try to take photos of e.g. the samlple and send to you – I have a digital camera but I don't know how to save the photos on the computer, but I am going to learn it anyway so then I might be able to help you (Student, January 31, 2005).	Sæl, verkefnalýsinguna fengum við í tímanum – ert þú ekki með hana? Ef svo er ekki þá get ég ljósritað hana fyrir þig og sent þér. Ég get líka reynt að taka myndir af t.d. prufunni og senda þér – ég er með digitalvél en kann bara ekki að setja myndir inn í tölvuna en það ætla ég mér að læra svo ég get þá kannski aðstoðað þig (Nemandi, 31. jan. 2005).

8.2.3 Science and creative art in early compulsory school teaching

English	Icelandic
I have read all the descriptions here and find it enormously interesting to see from where they originate. I think that this is going to empower us as a group, now we can connect many faces with names, but this is something more than that. I just wanted to express my pleasure with this assignment. Regards, Maggie (Student, January 19 2005).	Ég hef lesið hverja einustu lýsingu hérna og finnst rosalega gaman að sjá hvaðan fólk á rætur sínar að rekja. Ég held að þetta eigi bara eftir að styrkja okkur sem hóp, því nú eru mörg andlit ásamt nöfnum alveg komið á hreint hjá manni en þetta er aðeins meira en það. Langaði bara að lýsa ánægju minni með þetta verkefni. Kveðja Margrét (Nemandi, 19. jan. 2005). Sæl. Gott að heyra að verkefnin gleðji :-).
Hi. Good to hear that the assignments are enjoyable :-) It is probably correct, in regards to the glasses, because they function as a soundboard that boosts the tone. As for the string in the last experiment, it is similar to the difference between a violin string and a base string, i.e. the shorter (and actually finer) the higher the tone. And to finish up, the sound waves form vibrations causing the salt to bounce and the higher the frequency the more the vibration (Teacher, February 9 2005).	Þetta er sennilega rétt varðandi glösin því að þau virka eins og hljómbotn sem magnar tóninn. Þetta með strenginn í síðustu tilrauninni er eins og munurinn á fiðlu og bassastreng þ.e. því styttri (og reyndar mjórri) því hærri tónn. Svo að lokum þá eru það hljóðbylgjurnar sem mynda titring sem veldur því að saltið skoppar og því hærri sem tíðnin er því meiri titringur (Kennari, 9. febrúar 2005).
Now I'm surprised – is it possible that the differing movement of the salt affected by your daughter's and husband's voices depends on the strength and not the pitch? My books say the higher pitched voice should cause more vibration? Not sure!! Entertaining hobby for the family and hopefully you will use this experiment in your teaching. Maybe you can come up with some more (Teacher, February 10 2005).	Nú er ég hissa - getur verið að munur á hreyfingu salts út frá röddum dóttur þinnar og eiginmanns liggi í raddstyrk en ekki tónhæð? Samkvæmt mínum kokkabókum ætti hærri röddin (skrækari) að valda meiri titringi? Veit ekki!! Skemmtilegt heimilishobbý og vonandi áttu eftir að nota þetta í kennslu. Það er spurning hvort þið getið búið til fleiri. (Kennari, 10. febr. 2005).
Hello. Apparently the assignments we have been doing in this course are very family friendly. Mothers have been good about taking their children and husbands with them on various nature study trips and have enjoyed it. As well as giving concerts at home with the kitchenware. Lots of fun, lots of joy. Regards, Joe (Student, March 2, 2005).	Halló. Það er alveg greinilegt að þau verkefni sem við höfum verið að gera á þessu námskeiði eru mjög fjölskylduvæn. Mæður hafa verið duglegar að taka börnin og manninn með sér í hinar ýmsu náttúrskoðunarferðir og haft gaman að. Einnig haldið tónleika heima með eldhúsáhöldunum. Mikið fjör og mikið gaman. Kv. Jói. (Nemandi, 2. mars, 2005).
Hi. I am confused about all this, when shall I hand in assignments. This assignment for example is not on the schedule for assignments to be handed in and therefore it becomes confusing. Where did you find information about this assignment that is to be handed in now? Regards, Liz, Denmark (Student, January 23, 2005).	Hæ. Ég er orðin svo rugluð af þessu öllu, hvenær á ég að skila verkefnum. Þetta verkefni er t.d. ekki inn á planinu um skilaverkefni þannig að þetta verður svo ruglingslegt. Hvar funduð þið upplýsingar um þetta verkefni sem á að skila núna? Kveðja Lísa Danmörku (Nemandi, 23. jan. 2005).
I think it is rather strange to hand in something half-baked since we have done so many solid teaching plans. How will this be assessed? Is it maybe just pass/fail on whether or not we submit it? Just wondering? Regards, Maggie. (Student, January 23 2005)	Mér finnst frekar skrýtið að vera að skila einhverju inn svona hálfsoðnu þar sem við erum búin að gera svo mikið af heilsteyptum kennsluáætlunum. Hvernig verður þetta metið? Er kannski bara um að ræða skilaskyldu og ekkert mat? Bara að spá? Kveðja Sigga (Nemandi 23. jan. 2005).

This is very nifty. The kids must have liked it a lot. This one I will put in my idea bank, like so many other things that have been posted on here. Thanks for that ;), regards, Sophie (Student, May 1, 2005).	Þetta er rosalega sniðugt. Krökkunum hefur örugglega þótt þetta mjög skemmtilegt. Þetta set ég í hugmyndabankann minn eins og svo margt annað sem hér hefur komið inn. Takk fyrir þetta ;), KK Soffía (Nemandi, 1. maí 2005).
You've got very good ideas Lilith and good luck with the experimental days. It really is true that this course has generated ideas for a whole book of experiments. Regards, Rebecca (Student, May 3, 2005).	Mjög góðar hugmyndir hjá þér Lilja og gangi þér vel á tilraunadögunum. Það eru orð að sönnu að á þessu námskeiði eru hugmyndir í heila tilraunabók. Kv Rebekka (Nemandi, 3. maí 2005)
It is so uncomfortable to have so many teachers in the Same course. […] I have been going round in circles, and have come to understand that I really have to work hard to understand which way is up, so that I don't miss deadlines! (Student January 21, 2005).	Það er svo óþægilegt að vera með svona marga kennara í sama faginu […] Ég er komin í marga hringi og sé það að ég verð virkilega að hafa mig alla við til að komast til botns í þessu máli svo að ég klikki ekki á skiladögum! (Nemandi, 21.jan. 2005)
It would be incredibly good to know exactly what we are supposed to do here. It is April 25 already :) Regards, Hilary (Student, April 25 2005).	Það væri nú rosalega gott að fá að vita nákvæmlega hvað sé ætlast til af okkur hér það er kominn 25. apríl. kv Hildur (25. apríl 2005).
I totally agree. I log in several times a day since I am keen to finish this course. What is the name of the teacher in this part again? Can't we email him? He has obviously gotten carried away somewhere. Regards, Sue. (Student, April 25 2005).	Ég er alveg sammála. Ég fer hér inn mörgum sinnum á dag þar sem ég vil endilega fara að ljúka þessum áfanga. Hvað heitir aftur kennarinn í þessum hluta? Getum við ekki sent honum póst? Hann hefur augljóslega eitthvað gleymt sér. Kveðja, Embla (25. apríl 2005).

8.3.1 Lilith as a distance student

English	Icelandic
Yes, then when you take courses that change how you see things. It opens up another dimension for you, and you think: I can do that with the kids (Interview, Lilith April 2005).	Já, svo þegar maður fer í fög sem breyta því hvernig maður horfir á allt. Það opnast fyrir manni önnur vídd og maður hugsar: Ég get gert þetta með krökkunum (Viðtal, Lilja í apríl 2005).
There are so many concepts, just for instance, the curriculum course, when we were learning about individualized curriculum and national curriculum and identifying things in the national curriculum. When I first started at the school I found it awfully confusing. But then having that experience, when I started in the curriculum course it was all so easy.All the same, there was an awful lot of concepts to learn, your head would start to hurt. Then I started to understand better what was being talked about around me in the school, and at the same time I understood better why I had goals in my teaching plans, like I did. I had a superficial understanding of this in the school, which helped me gain a deeper understanding of the learning content at the university (Interview, Lilith January 2006).	Það eru svo mörg hugtök, svo ég noti bara námskrárgerð, þegar við vorum að læra um það, einstaklingsnámskrár og aðalnámskrá að lesa úr aðalnámskránni. Þegar ég kom inn í skólann fyrst var þetta rosalega ruglandi, þarna var aðalnámskrá og svo var skólanámskrá og svo átti ég að gera kennsluáætlanir og þetta var allt ógurlega ruglandi. En svo var maður komin með reynslu af því og þegar ég fór í Námskrárgerðina var þetta allt svo auðvelt. En það var samt ofboðslega mikið af hugtökum sem maður lærði það brakaði í hausnum á manni. Þá fór ég að skilja betur hvað var verið að segja í kringum mig í skólanum en á sama tíma skildi ég miklu betur afhverju ég set fram markmiðin í kennsluáætlununum eins og ég gerði og ég hafði yfirborðsskilning á þessu í skólanum sem hjálpaði mér að öðlast dýpri skilning á námsefninu í Kennaraháskólanum (Viðtal, Lilja í janúar 2006).
We stared to collect insects and examine them in a microscope as a part of the science curriculum. Then we collected seeds from the fruits that the children brought in their packed lunches. We planted them in empty milk cartons that we had collected after the lunchbreak. The seeds grew well in the windowsill. The pupils sometimes forgot to water the plants and in the beginning I made the mistake of watering the plants for them. When some of the plants began to be a bit limp we discussed what could be the reason for that. Some mentioned that they forgot to water them but then one pupil said: No, I have almost never watered mine but it is ok! I had to tell them that I had watered the plant for him, but decided then that I would stop watering the plants for them so that they would have the right preconditions for their learning ;) (Portfolio, Lilith May 2005).	Við byrjuðum á því í þriðja bekk að tína skordýr og skoða þau í víðsjá sem hluta af náttúrufræðikennslu. Síðan söfnuðum við fræjum úr þeim ávöxtum sem börnin komu með í nesti. Þau gróðursettum við í tómar mjólkurfernur sem við höfðum safnað eftir nestistímana. Fræin spruttu vel í gluggasyllunum. Nemendur gleymdu stundum að vökva plönturnar og til að byrja með gerði ég þau mistök að vökva plönturnar fyrir þau. Þegar nokkrar plöntur voru orðnar aumingjalegar ræddum við um hvað gæti hafa orsakað það. Nokkrir nefndu að þeir hefðu gleymt að vökva plönturnar, en þá sagði einn: Nei, ég hef eiginlega ekkert vökvað og það er allt í lagi með mína! Ég áréttaði að ég hefði vökvað plöntuna fyrir hann en ákvað að hætta að hugsa um blómin fyrir þau svo nemendurnir myndu nú læra á réttum forsendum ;-) (Ferimappa Lilju í maí 2005)
There are always certain teachers who are technophobic … the technique exists and the technique is the tool we need to use but it isn't fully taken advantage of (Interview, Lilith April 2005).	Það er alltaf svolítil tæknifóbía í ákveðnum kennurum… tæknin er fyrir hendi og tæknin er það verkfæri sem við þurfum að nota okkur en hún er ekki fullnýtt (Viðtal, Lilja í apríl 2005).
There it is well used. We use the technique both to work on the assignments and to hand them in. We use digital cameras, we scan pictures, and this is integrated into the assignments. We were supposed to take photos but could choose if we used traditional cameras and scanned the photos or if we used digital cameras and put the pictures in directly. I did both actually. Likewise we always sent the poems we were writing by email (Interview, Lilith April 2005).	Þarna er það vel nýtt. Við notum bæði tæknina til að vinna verkefnin [og skila þeim inn]. Við notum stafrænar myndvélar, við skönnum myndir og þetta er innbyggt í verkefnin. Við áttum að taka myndir er réðum því hvort við tækjum þær á hefðbundna myndavél og skönnuðum inn eða hvort við notuðum stafræna myndavél og settum beint inn. Ég gerði reyndar bæði. Sömuleiðis sendum við altaf í tölvupósti ljóðin sem við unnum (Viðtal, Lilja í apríl 2005).

We weren't necessarily working together, but just nice to have a chat. It's kind of like meeting people in the hallway on campus (Interview, Lilith April 2005).

In one course our group was living all over the country, and if we had to discuss the assignment it was just like: Let's meet tonight at this time on MSN, five people working on our assignment there (Interview, Lilith April 2005).

She [name of the teacher] managed it so well and you got the feeling that she was concerned about you: while with others it is like they throw the documents at you, and there you are, figure it out for yourself (Interview, Lilith April 2005).

Example 1: And there they managed very well you see. The lecturer was really motivating, which didn't take her long, you were immediately interested. And the assistant teacher had such good control of WebCT so as soon as you asked you usually got an answer the Same day. That's wonderful. There they had perfect control. But we did our assignments. In a way it could be said that we [the students] had too little agency because we got such clear instructions: You are supposed to do this and this in that way, interpret this and that. So they used the technology very well in this course. If that's done well then – it's a bit of a good feeling sometimes to let go of control. But then you have to trust the teacher (Interview, Lilith January 2006).

Example 2: Then there are lecturers who are such sticklers for facts, who often misread what you write, get mad because of something you have written in WebCT, and just lose their temper completely, you just get dumped on. And yes, just yell, and send completely misguiding messages like: Don't be afraid to ask, and then you ask, and then we get like: 'Why are you asking about this' reactions. Of course you ask if you don't know. If we had gotten an explanation before then we didn't understand it. Then you need to reformulate and not just repeat. And you quickly get the feeling that the teacher doesn't trust you. But the teacher isn't in control (Interview, Lilith January 2006).

Example 3: But then there are lecturers who make it clear from the beginning that we are going to contemplate. […] It is different how people react. People say: What am I supposed to do? Then I say: you are supposed to contemplate. And then you have freedom and can put in whatever comes to mind. And then he sometimes responds […] People get really offended by it. But he is challenging our understanding and there we need to take responsibility; I am going to

Við unnum ekki endilega saman en bara næs að hafa þetta spjall. Þá er þetta eins og maður hitti einhvern frammi á gangi í Kennaraháskólanum (Viðtal, Lilja í apríl 2005).

Á einu námskeiði var hópurinn okkar út um allt land og ef við þurftum að ræða saman um verkefnin þá bara: hittumst í kvöld klukkan þetta á MSN … svona fimm í einu að melda verkefnið okkar þar (Viðtal, Lilja í apríl 2005).

Hún [nafn á kennara] hélt svo vel utan um það og maður fann alltaf að kennarinn var að hugsa um mann; en það eru mörg fög þar sem það er bara hent í mann skjölum og hananú reddaðu þér sjálf (Viðtal, Lilja í apríl 205).

Dæmi 1: Og þar stjórnuðu þeir mjög vel sko. Kennarinn kveikti voða mikið í okkur, en hún þurfti ekki langan tíma til þess, maður var strax kominn með áhuga. Og aðstoðarkennarinn hélt svo vel utan um WebCT að um leið og maður spurði fékk maður yfirleitt svar sama dag. Það er æðislegt. Þarna höfðu þær fullkomna stjórn. En við unnum okkar verkefni. Það mætti eiginlega segja að þarna hefðum við [nemendur] litla stjórn vegna þess að við fengum svo skýr fyrirmæli: Þú átt að gera svona og svona og svona, og túlka þetta og þetta og þetta. Þannig að þær nýttu sér ofboðslega vel tæknina þarna. Ef það er vel gert þá – það er svolítið góð tilfinning stundum að sleppa ábyrgðinni. En maður þarf að treysta kennaranum (Viðtal, Lilja í janúar 2006).

Dæmi 2: Svo eru kennarar sem að akkúrat þeir sem eru svo harðir á staðreyndum sem oft mislesa það sem maður skrifar, verða reiðir út í mann yfir einhverju sem maður hefur skrifað inn á WebCT og hella sér yfir mann, maður fær svona reiðilestur. Hérna sem sagt, já bara skammast og segja akkúrat misvísandi skilaboð eins og: Verið ekki hrædd að spyrja og svo spyr maður og þá koma svona: Hvað ertu að spyrja að þessu viðbrögð. Auðvitað spyr maður ef maður veit ekki. Ef við erum búin að fá útskýringu áður þá skildum við það ekki. Þá þarf að umorða það en ekki bara endurtaka það. Og maður fær mjög fljótt á tilfinninguna að kennarinn treysti manni ekki. En kennarinn stjórnar ekki (Viðtal, Lilja í janúar 2006).

Dæmi 3: En svo eru kennarar sem gera manni grein fyrir því strax [...] að við ætlum að pæla. [...] það er mismunandi hvernig fólk bregst við því. Fólk segir: Hvað á ég að gera? Þá segi ég: þá áttu að pæla. Og þá er frelsi ef maður getur sett inn hvað sem manni dettur í hug. Og þegar hann svarar stundum [...] fólk móðgast heilu ósköpin yfir því. En hann er að ögra okkar skilningi og þarna er það að við þurfum að taka þá ábyrgð, að ég ætla að segja mitt inn í þessar umræður.

give my opinion in this discussion. And when it gets going properly the groups become like really dynamic […] like what about this and that and yes what – and it becomes so alive. Yes, sometimes he needs to keep a better eye on what is going on, he should definitely be more active, come online more often. But he says he is afraid of too much control and directing our discussions so that we would try to do what we think the teacher would like us to do. I understand his point of view. So we dig through it on our own. But he almost has too little control (Interview, Lilith January 2006).

I really like it when the teachers encourage us to contribute to web discussions with our own experience. […] It gets the discussion going. And then the teacher has to interject and bring the professional side into the discussion, link it to the learning material. And bit by bit we start to do it ourselves and say like – I was reading this article and then I saw it was related to that and started to think… It is important when the teacher realises this. But in the beginning we need freedom to talk about ourselves, to get a feeling of owning the space (Interview, Liltih January 2006).

It takes the first year to learn how to communicate on WebCT. In the beginning you see, it is either people that enter the discussion excusing themselves, you see, I'm not saying this, or that, but…. And then someone says something that upsets everything. Then later in the course someone says like: hello, what are you getting excited about, we're just talking here. We are not trying to offend each other. We just have to take it as a given that we are all learning here, we are putting our opinions forward but … yes we need to watch how we say things (Interview, January 2006).

And this is very much in the discussion and that is why during the first year we need to meet. This one maybe said that, and you meet her and she says; I didn't mean it that way you know. And the teacher meets some of the students who have been so why, why, why, and just noisy on WebCT. Then the person turns out to be very likeable and sweet. So you see, the first year you are learning to communicate, because online communicatation is so new to most of us.

And then right away in the second year then WebCT has become so strong – and the discussions there (Interview, Lilith January 2006).

Og þegar þetta fer á flug að þá verða svona ofsalega dýnamískir hópar [...] hvað um þetta og þetta og já og hvað svona og svona og þetta verður svo lifandi. [...] Já hann þarf stundum að fylgjast meira með, hann þyrfti alveg hiklaust að vera meira virkur inni, koma oftar inn. En hann setur það frá sér að hann er of hræddur við það að hann meiki umræður okkar og sveigi þær í þá átt að við séum að gera eins og kennarinn vill. Ég skil það vel hjá honum. Við pælum þetta sjálf. Við pælum þetta sjálf. Þannig að hann er svona næstum því með of litla stjórn á okkur (Viðtal, Lilja í janúar 2006)

Og það er akkurat það sem mér finnst svo æðislegt þegar, þegar að kennararnir hvetja til þess að komum með okkar eigin reynslu af því að inn á Web CT [...] Að það kemur þessu á flug og svo þarf kennarinn að koma inn og draga fagmennlegu hliðina inn í þetta. Tengja þetta við námsefnið. Og smám saman förum við að gera það sjálf. Og segja, ég var að lesa þessa grein og þá tengdi ég það þessu og fór að pæla út frá þessu og þegar að kennarinn sem sagt nær því. En fyrst þurfum við að fá svolítið spjallfrelsi um okkur til þess að við eignumst svæðið (Viðtal, Lilja í janúar 2006).

Fyrsta árið fer ég í þetta og fyrsta árið þarf maður að læra hvernig maður á að tjá sig inn á Web CT. Og hérna og til dæmis fyrst sko annaðhvort kemur fólk, kemur svo afsakandi og sko passi þið ég er ekki að meina þetta svona eða hinsegin og svona og svona og svona. Og svo segir einhver eitthvað og kemur öllu í uppnám. Og sem sagt og í seinna á því námskeiði kemur oft bara halló, hvað eru þið að æsa ykkur. Við erum bara að tala hérna. Við erum ekkert að reyna að móðga hvort annað. Við þurfum bara að taka því sem sjálfsögðu að við erum öll að læra, við erum að setja okkar skoðanir fram en já við þurfum að passa okkur hvernig við orðum þetta (Viðtal, Lilja í janúar 2006).

Og þetta er mjög mikið umræðuefni og það er þess vegna sem að fyrsta árið þarf maður …. Þá þarf maður að hittast og þessi sagði þetta og kannski hittir maður einhvern og hann er bara, ég meinti þetta ekkert svona. Og kennarinn hittir einhvern sem er búin að vera þvílíkur af hverju, af hverju, af hverju. Og svona brussulegur inn á hérna Web CT. Hittir svo manneskjunna og þetta er indælasta manneskja. Þannig að, en fyrsta sem sagt, fyrsta árið þá er maður að læra þennan talsmáta. Af því hann er nýr fyrir svo bara flestum okkar.

Og svo hérna. Svo annað árið strax að þá er Web CT orðið svo sterkt. Og þessar umræður þarna (Viðtal, Lilja í janúar 2006)

Sitting in a lecture room getting transparencies that you know you will be reading on the screen in a while, listening to the teacher reading the text on them. Some teachers are just saying exactly what is written on the transparencies. So it becomes a real waste of time. But maybe the teachers think they are really delivering the message, they are so used to this format that if they don't do this maybe they feel like they aren't doing their job (Interview, Lilith January 2006).
The only face-to-face sessions that have been really useful were in the course on oral performance, really useful. And also the course on arts and crafts, because we got the opportunity to look at what other students had been doing and to talk about the ideas behind it and things like that (Interview, Lilith April 2005).

And a large part of the distance student teachers work as teachers, and so it's ridiculous that this isn't taken into account when face-to-face sessions are scheduled, and have the schedule tightly packed, and use the weekends so that we can take the Friday afternoon flight after our school day and then spend Saturday, Sunday and maybe Monday, and catch the later flight back Monday night so we could be in the school again as soon as possible. […] - We carry such a precious cargo (referring to the pupils in the classroom) (Interview, Lilith April 2005).

Repeatedly we are losing the teachers during the most important time of the school year, which is the end of August. That's when people come back to work after their holidays, the school activities get going, we're planning and preparing teaching, people are receiving new pupils and getting into the rhythm of things. There are courses held to prepare the inner work of the school, methods, procedures, etc., which are very important, not to mention for new teachers. And we lose them year after year during these days, which is very inconvenient (Interview, Donald a principal April 2005).

Að sitja í sal og fá glærur sem maður veit að maður á hvort eð er eftir að horfa á aftur, heyra, heyra kennarann lesa upp af glærunum. Sumir kennarar þeir eru bara að segja manni nákvæmlega það sem stendur á glærunum. Þannig að það verður voðalega mikil tímasóun. En þarna finnst kennurunum kannski vera koma þessu til skila þeir eru svo vanir þessu formi og ef að þeir gera þetta ekki þá finnst þeim kannski að þeir séu ekki að vinna sitt starf (Viðtal, Lilja í janúar 2006). Einu staðloturnar sem ég hef haft mikið gagn af var þegar ég fór í staðlotur í talað mál og framsögn, rosalega gagnlegar. Sömuleiðis listir í skólastarfi, það var gagnlegt vegna þess að við fengum tækifæri til að sjá hvað hinir hefðu gert og þau töluðu um hugmyndirnar og svona (Viðtal, Lilja í apríl 2005).

Og stór hluti af fjarnemahópnum er í kennslu og því þykir það fáránlegt að það sé ekki tekið tillit til þegar staðlotur eru skipulagðar og reynt að hafa dagskrána þétta sem og að setja þetta á helgar þannig að við getum flogið á föstudagseftirmiðdag eftir kennslu og verið laugadag, sunnudag og kannski mánudag og komist til baka með seinni vélinni svo að við getum mætt aftur til kennslu sem allra fyrst. […] – Það er svo dýrmætur farmur sem maður er með (Viðtal, Lilja í apríl 2005).

Við erum ár, eftir ár, eftir ár, erum við að missa kennara á mikilvægasta tíma ársins sem er lok ágúst. Þá er fólk að koma til starfa eftir sumarfrí, þá er verið að leggja upp með skólastarfið, það er verið að sem sagt undirbúa kennslu, menn eru að taka við nýjum bekkjum og að setja sig inn í allt. Það eru námskeið sem eru haldin bara út af innra starfi skólans, svona starfsháttum, ferlum og alla vega. Sem eru mjög mikilvæg, ég tala nú ekki um fyrir nýtt fólk. Og við erum að missa fólk út á hverju einast ári þessa daga sem er bagalegt (Viðtal, Halldór skólastjóri apríl 2005).

English	Icelandic
I think it is important that school teachers manage to present all assignments in diverse ways, using different teaching methods, because we are so extremely different. What suits me may not suit my best friend at all. One must be careful that the assignments don't take too long so the pupils don't lose interest in them. I think subject integration is very interesting and all teachers should look into the possibilities of integrating different subjects. But then it's how to organize this sort of work, all teachers fight with a lack of time, right? Although anything is possible if there is a will. My opinion is that the national curriculum in arts and crafts is a guideline; it is far too extensive to be followed exactly (WebCT entry, Sarah April 24 2005).	Mér finnst mikilvægt að kennarar nái að kynna öll verkefni á fjölbreyttan hátt [á við grunnskólakennara], vera með ýmsar kennsluaðferðir því við erum svo óskaplega misjöfn. Það sem hentar mér hentar kannski alls ekki besta vini mínum. Passa þarf að verkefni séu ekki of löng svo að nemendur missi ekki áhugann við verkefni sín. Samþætting námsgreina er að mínu mati mjög spennandi og ætti hvaða kennari sem era ð skoða hvort ekki væri hægt að flétta saman ólíkum námsgreinum. En svo er að skipuleggja svona vinnu, allir kennarar berjast við tímaskort ekki satt? Annars er allt hægt ef viljinn er fyrir hendi. Hvað varðar aðalnámskrá grunnskóla í textímennt lít ég svo á að þetta sé plagg til að styðjast við, það er allt of viðamikið svo hægt sé að fara eftir henni (innlegg á WebCT Sara 24. Apríl 2005).
I feel a big difference now in my second year compared to the first year because now we almost have a classroom with these audio lectures on WebCT. [...] Just like roughly once a week. [...] It's also when you have an ADSL connection it changes a lot, then you can be online on this [WebCT]. It is a much better connection than the email. You can see what everyone is saying (Interview, Sarah February 2004).	Mér finnst mikill munur núna á öðru ári og á fyrsta ári því að nú erum við nánast komin með kennslustofu með þessum hljóðfyrirlestrum í gegnum WebCT. . [...] Bara ca einu sinni í viku. [...] Það er líka þegar maður er kominn með ADSL tengingu breytir það mjög miklu, þá geturðu verið inni á þessu. [...] Þetta er miklu betri tenging heldur en tölvupósturinn. Þú getur séð hvað allir eru að segja (Viðtal, Sara í febrúar 2004).
I think it's best when we have to read and then submit input on WebCT. Like now in ethics, for example, we read a chapter and he puts forward a question and there is a kind of discussion around it (Interview, Sarah February 2004).	Mér finnst best þegar við þurfum að lesa og setja inn á WebCT .Eins og t.d. núna í siðfræðinni, þá lesum við kafla og hann kemur með spurningu og það eru svona umræður um þetta (Viðtal, Sara í febrúar 2004).
I find it extremely difficult to sit down and write. I write and then I erase it. I just find it difficult to put something in there (Interview, Sarah April 2005).	Mér finnst rosalega erfitt að setjast niður og skrifa. Ég skrifa og svo stroka ég það út aftur. Mér finnst bara erfitt að senda eitthvað þarna inn (Viðtal, Sara í apríl 2005).
Then we found it impossible not to have WebCT, where we could talk to each other, and we felt we needed to, you know (Interview, Sarah January 2006).	Þá fannst okkur ómögulegt að hafa ekki WebCT þar sem við gætum talað saman og okkur fannst við þurfa þess sko (Viðtal, Sara í janúar 2006).
Last year you see it was quite clear how we should do the assignments, but still had some free choice, she wasn't saying put a full stop here and here, you know, but clear guidelines. And then this year it was remarkable how she was not nearly as clear. I thought it was really difficult because I didn't know exactly what she wanted us to do. But at the Same time I thought: Why is it bothering me, I should be doing this for me and not for her? In the beginning I felt that I was doing the assignments for her, you know that was the way she wanted it done, not that's the way I want to do it. [Later] we know what we are supposed	Í fyrra þá var allt sko alveg bara hvernig við áttum að gera sko samt frjálst val. Hún var ekki að segja settu punkt hér og punkt hér, skilurðu, skýrar leiðbeiningar. En svo tók ég rosalega eftir því núna að það var engin nálægt því eins skýrt akkúrat hjá henni. Mér fannst það rosalega erfitt, þá vissi ég ekki alveg hvað hún vildi. Mér finnst þetta ekki rétt af því að mér finnst ég ekki vera að gera fyrir hana. Fyrst þegar ég var að byrja þá fannst mér eins og ég væri að gera verkefnin fyrir hana, þú veist svona vildi hún hafa þetta, ekki svona vildi ég hafa það. [Seinna] vitum við alveg hvað

to do, but at the Same time have some control over the process ourselves (Interview, Sarah January 2006).

I think that when you submit an assessment it is not enough to get 8.5. Why did you get 8.5, why didn't you get 7, or what. I was handing in a portfolio before Christmas, and got 8.5, but I don't know why. Last year I submitted a portfolio to another teacher, and got 9, but I also got an A4 piece of paper explaining what I could do better and what was well done. It is necessary so that we can improve (Interview,Sarah January 2006).

She answers quickly, you can phone her and you know she is always ready. And I like it, she explains, this was right but there you did something wrong (Interview, Sarah January 2006).

He was just there at the computer as if he was in the classroom. Answering immediately and explaining everything very well. There was no trouble. He always knew what he should do. He was always there and always answering. […While with others] you have to wait and wait and maybe something is forgotten, the assignment gets lost and the Same questions are asked again and again. I notice a big difference (Interview, Sarah February 2004).

I think it is because in the first year there were just so many lectures. You can't make a connection in such a big group. As soon as we have elected [a specialisation area] everything changes (Interview, Sarah January 2006).

Look, when you are up there in the academic subjects then you are only a letter on a computer screen. That's why it felt it terrific to come here to the arts and crafts. Then you are a human being and yes – you feel like one. You were nothing, there was just a group, going to school, going home and then just typed into a computer, and you were there, just a letter on the computer (Interview, Sarah January 2006).

Also because you see, we naturally get to know each other…. It felt kind of encouraging. […] It is so nice to come to this place I think. Speculate and reflect on things with someone you know, though of course you don't really know them (Interview, Sarah January 2006).

When you pick a specialisation a lot changes. And see, we know exactly what we have to do, but yes, are kind of more in charge (Interview, Sarah January 2006).

við eigum að gera en já en svona ráðum meira ferðinni (Viðtal, Sara í janúar 2006).

Mér finnst líka sko þegar maður er að fá og senda eins og svona verkefni þá er ekki nóg fyrir þig að fá 8,5. Af hverju fékkstu 8,5 af hverju fékkstu ekki 7 eða. Ég var að skila hérna möppu fyrir jólin. Og ég fékk hérna 8,5 og ekkert af hverju. Ég skilaði henni Hallfríði hérna í fyrra þú veist möppu og fékk níu en fékk samt A4 blað hvað ég mætti bæta og hvað var gott. Það er nauðsynlegt bara svo við getum bætt okkur (Viðtal, Sara í janúar 2006).

En hún svarar strax og það má hringja í hana. Þú veist hún er alltaf tilbúin. Það finnst mér gott. Og hún kemur með útskýringar. Þetta var rétt og þetta er bara vitlaust. (Viðtal, Sara í janúar 2006).

Hann var bara þarna við tölvuna eins og hann væri í skólastofuni. Hann svaraði um leið og útskýrði allt mjög vel. Það var ekkert vesen. Hann vissi alltaf hvað hann átti að gera. Hann var alltaf til staðar og kom alltaf með svör. […] [á meðan aðrir] maður þarf að bíða og bíða og kannski gleymist eitthvað og verkefnið týnist og það koma sömu spuringarnar aftur og aftur. Mér finnst ég finna mikinn mun (Viðtal, Sara í febrúar 2004).

Ég held að þetta sé bara af því að fyrsta árið þá voru bara svo mikið af fyrirlestrum. Þú nærð engu sambandi við svona stóran hóp. Um leið og þú ert búin að velja breytist þetta allt saman (Viðtal, Sara í janúar 2006).

Sko þegar maður er þarna uppfrá í bóklegu greinunum þá ertu bara stafur á tölvuskjánum. Þess vegna fannst mér æðisleg að koma hérna í textílinn. Þá ertu bara manneskja og já upplifir það þannig. Varst ekkert, það var bara einhver hópur sem fór í skólann og fór bara heim og svo bara pikkað á tölvu og þú varst bara stafur þarna á tölvunni (Viðtal, Sara í janúar 2006).

Líka bara sko, við náttúrulega kynntumst á …. Það einhvern veginn fannst mér traustvekjandi. […] Það er svo gaman að koma hingað finnst mér.
Spá og spegúlera með einhverjum sem maður þekkir en þekkir náttúrulega ekki neitt. (Viðtal, Sara í janúar 2006)

Þegar maður velur þá breytist svo margt. Og sko, við vitum alveg hvað við eigum að gera en já en svona ráðurm meira ferðinni (Viðtal, Sara í janúar 2006).

8.3.3 Sam as a distance student

English	Icelandic
There we had to put forward reasons for how the existence of small schools could be justified, and then we had to mention various issues that suggested it could be justified. […] And be able to refer to these professionals who are respected (Interview, Sam January 2005).	Þarna þurftum við að setja fram rök fyrir því hvernig væri hægt að réttlæta tilveru fámennra skóla og þá þurftum við að tína til ýmsa þætti sem hnigu í þá átt að það væri hægt að réttlæta það. […] Og geta vísað í þessa fagmenn sem eru virtir (Viðtal, Samúel í janúar 2005).
You have more answers to unexpected questions and things like that. Seeing more and more angles to point out all the time […] … then the question is if what I said [before] would have been taken as seriously (Interview, Sam January 2005)	Maður hefur fleiri svör við óvæntum spurningum og svona. Sér alltaf fleiri og fleiri fleti til að benda á. […] svo er spurningin er hvort það hefði verið tekið eins mikið mark á mér (Viðtal, Samúel í janúar 2005).
It is always being emphasised to the children that they have to learn addition, and they have to learn when to spell y, to be able to do something when you have finished school. But they spend ten years in compulsory school, four years in upper secondary school, five years in university. They are not supposed to live until after twenty years, when they have learned when to spell y and all this (Interview, Sam May 2004).	Það er alltaf verið að innprenta krökkunum að þau verði að læra að leggja saman og verði að læra upsilon til að geta gert eitthvað þegar þú ert búin í skóla. En þau eru tíu ár í grunnskóla, fjögur ár í framhaldsskóla, fimm ár í háskóla. Þau eiga ekkert eftir að lifa fyrr en eftir tuttugu ár þá eru þau búin að læra upsilon og allt þetta (Viðtal, Samúel í maí 2004).
I think there's no question that it matters to follow things online. I read everything that comes from others even if it's a lot, you also learn to scan. […] Yes and different information shows up, somebody asking about something, and then another student maybe knows the area well, and puts in good information (Interview, Sam, April 2005).	Ég held að það sé engin spurning að það skiptir máli að fylgjast með á netinu. Ég les allt sem kemur frá öðrum þó að það sé mikið maður lærir líka að skanna. […] Já og ýmsar upplýsingar koma svona, einhver spyr um eitthvað og þá er annar nemandi kannski alveg með það á hreinu og setur inn, góðar upplýsingar (Viðtal, Samúel í apríl 2005).
I learned a lot from reading questions from the other students and the answers from the teachers, or guidelines. They often gave hints, not necessarily the answer (Interview, Sam, Janury 2005).	Ég lærði mikið á að lesa spurningarnar frá hinum nemendunum og svörin frá kennurunum, eða leiðbeiningarnar. Þeir gáfu oft vísbendingar ekki endilega svarið (Viðtal, Samúel í janúar 2005).
Yes, one of us wrote something, the other read it through and sent it back and added some ideas, corrections and comments (Interview, Sam January 2005).	Já annað okkar gerði eitthvað og hinn las það yfir og sendi til baka og kom með hugmyndir á móti og leiðréttingar og ábendingar (Viðtal, Samúel í janúar 2005).
When we attended the later face-to-face session I talked to several students and it was the Same with everybody, nobody had looked at the subject. It was just put off because there were no obligations to hand anything in. […] We could have sent them email but we weren't working on any assignments or anything. They sent a letter every ten days, eight in all were distributed. We were only supposed to read (Interview, Sam January 2005).	Það var þannig að þegar við komum í seinni staðlotuna þá talaði ég við nokkra nemendur og það var sama hjá öllum að það hafði engin skoðað þessa grein neitt. Hún sat bara á hakanum vegna þess að það var engin krafa um að skila neinu. […] Við hefðum geta sent þeim tölvupóst en við vorum ekki að skila neinu verkefni eða annað. Þeir sendu á tíu daga fresti bréf, eitt til átta sem dreifðist á. Við áttum bara að lesa (Viðtal, Samúel í janúar 2005).

It was really good and admirable how diligent Christina was about answering. There were many questions because this was a new kind of mathematics for many students, and a bit complicated see, and she was good about answering. Even before the exams you noticed she was there, answering until late on Saturday and Sunday nights (Interview, Sam April 2005).	Það var mjög gott og aðdáunarvert hvað hún var dugleg hún Kristín að svara. Það var mikið spurt því þetta er ný stærðfræði fyrir marga og svolítið flókin svona, og hún var dugleg við að svara. Meira að segja fyrir prófin þá sá maður að hún var að svara langt fram eftir laugardags- og sunnudagskvöldum (Viðtal, Samúel í apríl 2005).
Several girls have repeatedly sent enquiries and they haven't even received a response (Interview, Sam January 2005).	Nokkrar stelpur hafa ítrekað sent inn fyrirspurnir og þeim er ekki einu sinni svarað (Viðtal, Samúel í janúar 2005).
But it is of considerable importance to meet the other students during breaks and compare ideas and things. It is just as useful as the teaching (Interview, Sam January 2005).	En það er töluvert mikilvægt að hitta hina nemendurna í frímínútunum og bera saman bækur sínar og skiptast á hugmyndum. Það er alveg jafn gagnlegt og kennslan (Viðtal, Samúel í janúar 2005).